DESIGN UND ZEIT:
KULTUR IM SPANNUNGSFELD VON ENTROPIE, TRANSMISSION, UND GESTALTUNG

Eine Systematik der Formen kultureller Transmission

Dissertation zur Erlangung des Doktorgrades der Philosophie, Dr. phil.
am Fachbereich 5, Design, Kunst- und Musikpädagogik, Druck
der Bergischen Universität GH Wuppertal

vorgelegt von:

Andreas Goppold

(Geb. in Fulda)

15.08.1999

Amtierender Dekan: Prof. Dr. h.c. Brock

1. Berichterstatter: Prof. Dr. h.c. Brock

2. Berichterstatter: Prof. Dr. Dr. Radermacher

Tag der Promotion: 30.06.1999

Inhaltsverzeichnis

Danksagung

Die innovativen Beiträge der Arbeit

Die folgenden Punkte stellen in der Sicht des Autors wie der sonst Beteiligten innovative Beiträge der vorliegenden Arbeit dar:

Das Hypertext Informations-Design der Arbeit.
->:INFO_DESIGN, p. 15

Das "Design in Spannungsfeldern", nach Goethes Designprinzip des 'Faust', in der hier entwickelten Sicht auf das Thema.
->:SPANNUNGSF, p. 22

Die Interpretation der Rolle des Mephistopheles in Goethes 'Faust' als Agent der Metamorphose aus der heutigen naturwissenschaftlichen Sichtweise von Thermodynamik und dissipativen Systemen.
->:GOETHEFAUST, p. 34, ->:MORPHOLOGIE, p. 40

Die gewählte Perspektive auf Epochen von Muster-Transmissionsklassen, die Einbettung der kulturellen Transmission in die Mustertransmissionen der Bio- und Semiosphäre.
->:MUSTEREPOCHEN, p. 45, ->:BIOSPHAERE, p. 50, ->:MUSTERTRANSMISSION, p. 48

Die Herausarbeitung der Bedeutung der Neuronalen Resonanz auf Basis von dynamischen neuronalen Patterns im Kontext der behandelten Thematik.
->:NEURO_RESONANZ, p. 52

Die Formulierung des dualen Bildes von "Kollektiver Erinnerung" und des "Kulturellen Musters" als polare Attraktoren, in der Sicht dieser Arbeit.
->:SYSTEMATIK_TRANSMISS, p. 64

Informations- und materialtechnische Faktoren zur Klassifikation von Medien, insbesondere mit Blick auf die Verwendung von Speichermedien in der Zivilisationsgeschichte, sowie die tabellarische Darstellung der Kombination von Medien und somatischen Faktoren.
->:INFORMATION_FAKTOR, p. 67, ->:TRANSMISS_TABLE, p. 73, ->:SPECTRUM_CMM, p. 143

Die Darstellung der Bibliosphäre als der Raum alles menschlichen Wissens, das in geschriebenen Texten abgelegt ist.
->:BIBLIOSPHERE, p. 195

Vorwort

Was die Welt im Innersten zusammenhält, ist fürwahr ein Spannungsfeld!

Mit dieser Anspielung auf die Eröffnungsszene von Goethes Faust (383) soll hier dem Spannungsfeld nachempfunden werden, das der Ur-Sprung aller Dinge, und damit auch der vorliegenden Arbeit, ist. Das deutsche Wort "Ur-Sprung" stellt in seinem Bedeutungsfeld auf unübersetzbare Weise genau das ihm innewohnende Spannungsfeld dar, und seine Be-Deutung entfaltet sich aus der inneren Dynamik des Wortbildes. Bevor etwas im "Ur-Sprung" Befindliches in die Welt der Erscheinungen ent-springen kann, muß es durch ein Spannungsfeld gehen, durch ein kulminierendes Anwachsen von Kräften, die im Widerstreit stehen, dem Kampf der Kräfte des Beharrenden gegen die Kräfte des Verändernden. Eine mathematische Darstellung dieser kulminierenden Klimax wurde von René Thom als *Katastrophentheorie* bezeichnet, von *kata strophae* (Wendung, Umsturz, Untergang). In der griechischen Kosmogonie des Hesiodos, und in vielen anderen uralten Kosmogonien der Menschheit, existierten im "Ur-Sprung" - "*en archae*", nicht einfach nur Spannungsfelder, sondern es herrschte Aufruhr, Kampf, und Gewalt, und da nimmt die christliche, das Abendland während der letzten 2000 Jahre beherrschende Mythologie eine gewisse Sonderstellung ein, indem sie den Anfang aller Dinge der ordnenden Stimme und Willensmacht eines Schöpfergottes unterordnet, nach der der *Kosmos* (griech: Schmuck, Zierde, Ordnung) geschaffen wird. Während der jüdische Entwurf der Kosmogonie ja noch voll von gewaltsamen Szenen ist, wie der Aufstand der Engel am Beginn der kosmischen Epoche, der Sündenfall, die Vertreibung aus dem Paradies, die Ermordung Abels, und die Austilgung der früheren Menschheit in der Sintflut, so ist die christliche Fassung von Joh. 1.1. eine im Vergleich dazu wesentlich geläuterte Version, in der das Schöpferwort Gottes in der Form des griechischen *Logos*, und des apollinischen Lichts (*phoibos*, *phaos*), in abstrakter Überhöhung als Prinzip (*principium := archae*), erscheint, das sich erst zu einer späteren Stufe in der materiellen Fleischlichkeit manifestiert. Wesentlich bestimmend für das christliche Bild von der Weltenordnung war nicht nur die jüdische Überlieferung, sondern auch Platons Entwurf der Weltschöpfung im Timaios, der ganz auf den alles durchwaltenden höchsten Prinzipien (*hier-archia*) des Wahren, des Guten und des Schönen, des Geordneten, beruhte. Auch wenn die religiösen Motive aus der Geschichte des Abendlandes langsam verblaßten, so blieb das Prinzip der Ordnung das Leitmotiv, das vor allem von den Naturwissenschaften übernommen wurde, unter der Führung der Physik in der mechanistischen, Newton-Cartesianischen Orientierung, auf Basis reversibler Prozesse, in energetisch geschlossenen Systemen. Dieses Prinzip ist vor allem in dem heute aktuellen Thema der Suche nach der "Weltformel" der Physiker erkennbar, und es wurde pointiert in Anlehnung an das theologische Motiv von Albert Einstein ausgedrückt: "Gott würfelt nicht". Die Weltherrschaft des Geordneten, des Wahren, des Guten, und des Schönen, wurde in der politischen Welt Europas vor allem von den Kräften des Ancien Regime vertreten, deren Herrschaft zur Zeit

Goethes mit der Französichen Revolution ihren ersten Einbruch hatte, und in der Katastrophae des ersten Weltkrieges ihr Ende fand. Seitdem wird die Welt mehr und mehr von einer Kraft beherrscht, die den anderen Gegenpol des Ur-sprunges vertritt, die Energien der Veränderung, der Bewegung, und des Wandels. In der heutigen Naturwissenschaft konkretisiert sich diese Sicht etwa in den Arbeiten René Thoms, und Chaos- und Thermodynamik- orientierten Ansätzen. Besonders das globale Finanzsystem bewegt sich mit immer größerer Geschwindigkeit in einem dynamischen abstrakten Raum von "Spaces of Flow", wie Manuel Castells es bezeichnet.[1]

Verfolgen wir den Werdegang der Auseinandersetzung zwischen den Kräften der Ordnung und der *hiero-archia* mit den dynamischen Prinzipien der Veränderung und der Metamorphose zurück zu den Ur-sprüngen der Zivilisationen, so finden wir eine bedeutsame *Bifurkation* in der Menschheitsgeschichte, die vor ca. 2500 Jahren stattfand, und die seit Jaspers unter dem Namen "Achsenzeit" bekannt ist. Ihr geschichtliches Er-Scheinen, die *phainosis*, fand sie in Persien, unter dem Namen des Religionsgründers Zoroaster[2]. Dort trat das Prinzip des Guten und der Ordnung als Ahura Mazda das erste Mal in eine ewige Todfeindschaft mit dem Prinzip des Bösen, Angra Mainyu. Gleichzeitig aber wurde hier auch das universale Herrschaftsprinzip der weltenüberspannenden Hegemonie (orbis terrarum) der persischen Herrscher mit diesem ideologischen Fundament begründet. Wie wir alle wissen, wanderte dann im Verlauf der Geschichte das *principium* des persischen Machtwillens mit Alexander in den mediterranen Kulturkreis, manifestierte sich im *Imperium Romanum*, und inkarnierte sich später in der Lehre der katholischen Kirche vom Hierarchieprinzip der Herrschaft Gottes und seiner Heerscharen. Mit der Entstehung des Dualismus, der Exklusion von Gut und Böse, Licht und Dunkel, Fest und Flüssig, Männlich und Weiblich, wurde auch das Tor zugeschlagen, durch das man zu einem Verständnis der Schöpfungskraft des Universums aus einer polaren Balance in Wechselwirkung und Ergänzung gegensätzlicher Prinzipien hätte gelangen können, wie es z.B. noch in der chinesischen Yin-Yang-Vorstellung weiterbestand, oder der indischen Balance der Kräfte des Erzeugenden und Zerstörenden in der Form des Tanzes des Gottes Shiva. Diese Exklusion fand auch im antiken Griechenland statt, vor allem in Form der Lehren der Eleaten und Platons vom statischen Sein und unter Zurückdrängung dynamischer Lehren, wie etwa Heraklits. Die alten dynamischen Prinzipien hielten sich noch in den Kulten, wie den Dionysischen und Eleusinischen Riten, die erst durch das Christentum liquidiert wurden. Das Prinzip des Ur-Bösen fand in dem Teufel der Christenheit seine charakteristische Ausprägung, der viele seiner äußeren Attribute von den bocksfüßigen und gehörnten Satyren und anderer antiker Fruchtbarkeitsgötter geerbt hatte,

---

[1] Castells (1996: 412): "The space of flows is the material organization of time-sharing social practices that work through flows."

[2] Wie bei den meisten der Kulturheroen der frühen Menschheitszivilisationen ist seine historische Existenz unsicher, und das Auftreten des Kultes unter Darius I ist als erstes gesichertes Datum wahrscheinlich ein recht spätes Stadium einer schon lange laufenden Entwicklung.

und in dessen Gestalt von nun an das Ur-Böse mit der Ur-Zeugung der Natur unheilvoll amalgamiert wurde.

Die hier in einigen groben Zügen nachgezeichnete Entwicklung eines Weltendramas von Spannungsfeldern wurde von Goethe in seinem 'Faust' als das Drama des Webens (*histourgia*) und Wirkens der Weltengeister in dem alchymischen Prozess der primordialen Elemente des Festen und Flüssigen, des Feurigen und Luftigen, in ihrer Trennung und Vereinigung, ihrem Widerstreit und ihrer Harmonie (*solve et coagula / diaballo, metaballo, symballo*), in höchster Ver-Dichtung dargestellt, ein Elementar-Drama, das sich mehr oder weniger *deut*-lich oder ange-*deutet*, hinter, und unter (im *mae-phainon*) der sichtbaren, als Theater-Vorstellung darstellbaren Rahmenhandlung des 'Faust', abspielt. Hier sehen wir die sichtbaren Prozesse, die *Phainomena*, welche uns als das Ringen von Faust dargestellt werden, mit den von ihm gerufenen, aber unkontrollierbaren und entfesselten Kräften der Dynamik, die durch *Mephistopheles* verkörpert werden, durch deren Unberechenbarkeit er immer wieder seine Absichten vereitelt sieht, und von denen er letztlich, im Tode, überholt, und wieder "heimgeholt" wird (zu den *Müttern*). Das elementare Hintergrund-Drama findet vor allem in den Szenen der beiden Walpurgisnächte statt, in denen die dionysischen und eleusinischen Mysterien wiedererweckt werden, und besonders durch seine Unsichtbarkeit ausgeprägt, in der sehr kurzen, für den Zuschauer völlig im *mae-phainon* verdeckten (*kalyptischen*) Szene des Abstiegs Faustens in das Reich des *A-peiron*, der *Mütter*, wie Goethe die Welt der *Materia*, der ungeformten, un-informierten *Hylae*, der *Protisten*, poetisch bezeichnet (*en archae... aetoi men protista Chaos genet* - Hesiodos). So erleben, oder vielmehr: ahnen wir hinter dem Drama des Sichtbaren, des *Phainomenon*, der Handlungen und der Taten (der *erga*), noch eine andere Welt, die der *en-ergeia*, der Web- Wirk- und Werde-Kräfte, die Welt des *Mae-Phainon*. Auf diesen "*Ur-Sprung der Ur-Sprünge*" weist uns Goethe dezent und unauffällig in der bekannten (Fehl-) Übersetzungsszene des Joh. 1.1. Textes hin, als Faust im Pathos der Überzeugung deklariert: "Im Anfang war die Tat" (*ergon*). Mit diesem gravierenden Ur-Sprungs-Irrtum hat er gleichzeitig schon sein Schicksal besiegelt, denn: "Im Anfang ist die *En-ergeia*". Er hat die wahren Ursachen des Weltgeschehens nicht gefunden, und kann in seinem ungestümen Schaffen und Handeln nur Unheil anrichten. Die tragische Geschichte seiner in allen Konsequenzen durchgeführten Kausal-Ketten der Taten, Ursachen und Wirkungen, seinen Irrungen und Wirrungen, wird uns in allen Einzelheiten von Goethe handgreiflich, drastisch, und genüßlich vorgeführt. Hierin zeichnet uns Goethe auch den Werdegang der techno-kapitalistischen faustischen Kultur des Abendlandes eindringlich vor, und weist auf das voraussagbare Ende dieser Entwicklung hin.

Der grandiose rituelle Höhepunkt des Webens, Wirkens und Werdens der *natura*, der *physis*, der Elementarkräfte der *En-ergeia*, der *Metamorphose*, findet in Goethes Werk in den Schluß-Szenen der klassischen Walpurgisnacht, in den "Felsbuchten des Ägäischen Meeres", statt.

Hier, in der exakten Mitte von Faust II, ist nach der dramatischen Anatomie von Freytag,[3] der Apex des Spannungsdreiecks erreicht, danach folgt nur noch der Abstieg (*katabasis*) in die *Kata-strophae*. Bezeichnenderweise ereignet sich diese Szene unter Ausschluß von Faust, der von alledem nichts mitbekommt, weil er damit beschäftigt ist, in seinem Abstieg in die Unterwelt sein Traumgespenst der Helena von Persephone herauszulocken, während das Mysterium der Schöpfung des kosmogonischen Eros in dem *Hieros Gamos*, der *heiligen Hochzeit der Elemente*, seinen Höhepunkt findet. Diese Szene findet im Element des Wassers statt, und die schaffende Kraft des Wassers ist in Goethes Sicht der Ur-Sprung aller Kreation:

> So herrsche denn Eros, der alles begonnen!
> Heil dem Meere! Heil den Wogen,
> Von dem heilgen Feuer umzogen!
> Heil dem Wasser! Heil dem Feuer!
> Heil dem seltnen Abenteuer!
>
> Heil den mildgewogenen Lüften!
> Heil geheimnisreichen Grüften!
> Hochgefeiert seid allhier,
> Element' ihr alle vier!

Im weiteren unaufhaltsamen Fortgang der Tragödie des Faust gebiert ihm der Schatten der Helena lediglich ein Wind-Ei, den sprunghaften Sohn Euphorion, der sich sogleich zu Tode stürzt, und Helena wieder mit in ihre Unterwelt zurückzieht. In der unvermeidlichen Katastrophe der Schlußszenen nimmt Faust direkt den Kampf gegen das Element des Wassers auf, in seinem Wahn, dem *Meere* das Land dauerhaft entringen zu können, und seinem Drang, das unheimliche Symbol der natürlichen Fruchtbarkeit, den *Sumpf*, unter seine Gewalt und Ordnung zu bringen, ihn trockenzulegen, und in diesem "letzten, schlechten Augenblick", ereilt ihn sein Geschick, und er fällt zurück, in sein Grab. Die Erde hat ihn wieder, und damit ist er wieder auf "dem Boden der Tatsachen" angelangt.

---

[3] Laurel (1991: 82)

Das Design der vorliegenden Arbeit

Für die vorliegende Arbeit ist das Drama der elementaren Spannungsfelder, wie von Goethe im 'Faust' dargestellt, eine *Matrix* (*hystera*, Mutterschoß, Gebärmutter), oder, in der alchymischen Terminologie Wagners, eine *Phiole*, in der sich neu Geschaffenes geschützt heranbilden kann:

> Schon in der innersten Phiole
> Erglüht es wie lebendige Kohle,
> Ja wie der herrlichste Karfunkel,
> Verstrahlend Blitze durch das Dunkel.
> Ein helles weißes Licht erscheint!

Goethes Werk wird in der vorliegenden Arbeit nach dem Hinweis von Bazon Brock interpretiert: "Die Funktion des zeitgenössisch Neuen besteht darin, dasjenige Alte aneignen zu können, zu dem wir ansonsten keinen Zugang hätten... Die historischen Bestände werden erst aus der Blickrichtung des zeitgenössisch Neuen als unwiederholbare und deswegen bewahrenswerte bestimmbar." In diesem Sinne bietet Goethes Werk die Leitmotive der vorliegenden Arbeit in der Interpretation aus Sicht heutiger thermodynamischer und chaostheoretischer Positionen. Zu behandeln ist:

Kultur im Spannungsfeld von Entropie, Transmission, und Gestaltung

Zu Kapitel 1

Hier erfolgt die Themenstellung der Arbeit. Die Wirk-Komponenten des Titelthemas werden als Aktoren einer *Vorstellung*[4] eingeführt: "Design und Zeit: Kultur im Spannungsfeld von Entropie, Transmission, und Gestaltung". Wie in Kapitel 2 näher erläutert, entwickelt sich aus dem Zusammentreffen der Aktoren ein Prozess, der in einem Theaterstück die Handlung ist, und im Rahmen der vorliegenden Arbeit in den weiteren Schritten der Behandlung des Themas besteht.

Zu Kapitel 2

Das Design-Prinzip der Arbeit beruht auf der Methode Goethes, wie in seinem "Faust" angewandt: dem Aufbauen von primären Spannungsfeldern, und der Entwicklung des Themas aus dem Aufeinander-Einwirken dieser Felder. Die Grundlage der Arbeit ist damit nicht *Struktur* als *Gewordenes*, *Fixiertes* (*ergon*), sondern *Dynamik* und *Werden* (*en-ergeia*). Dynamik kann in der Interpretation Goethes nach Sicht des Autors nur aus Dynamik

---

[4] Im doppelten Sinne, sowohl einer *Theater-Vorstellung*, als auch von Schopenhauer (1977), s.a. Heidegger (1971: 14-19)

verstanden werden. Damit werden die Gestaltungs-Prinzipien der Arbeit selbst-reflexiv und konstruktiv eingesetzt.

Kapitel 2.: "Die primären Spannungsfelder" behandelt diese dynamischen Prinzipien, auf denen die Arbeit beruht. Ein Haupt-Arbeitsmittel ist der "neuronale Attraktor", dessen Wirken mit einem bekannten Gestalt-Kippbild demonstriert wird. Dieses Prinzip wird dazu verwandt, um mit Hilfe des induzierten Umschlagens von Weltbildern, Perspektiven, und Kuhnschen Paradigmata,[5] neue Perspektiven und Betrachtungsfreiräume zu schaffen. Die wesentlichen primären Spannungsfelder der Arbeit sind:

"Das Spannungsfeld von Statik und Dynamik, Sein und Werden"

"Theoretik und Pragmatik, Kausalität und Gestaltungsfreiheit"

"Form und Substanz"

"Tri- und Mehr-polare Attraktoren" werden kurz angesprochen.

Für die Arbeit wesentlich ist das tripolare Spannungsfeld der zu vermeidenden Zerstörungsfaktoren der kulturellen Transmission:

1) Zerfall: Die Tendenzen der entropischen Zersetzung, und Auflösung.

2) Erstarrung: Die Tendenzen von mechanischer, rigider Transmission, Gerontokratie.

3) Hypertrophie: Die Tendenzen des chaotischen, und blinden Wildwuchses, Jugendwahn.

Die anzustrebenden, gegeneinander auszubalancierenden, Maximen des guten kulturellen Design sind:

1) Das *Bewahren*, die *Tradition* des Erreichten, die *Fortpflanzung* der kulturellen Güter und Errungenschaften von der Vergangenheit in die Zukunft.

2) Die *Kreativität*, die *Permanente Neugestaltung*, die *Selbst-Erneuerung* der "Kultur".

Zu Kapitel 3

Hier wird "Goethes Faust: der Archae-Typ des Designs in Spannungsfeldern" vorgestellt. Goethes Werk "Faust" bietet für die vorliegende Arbeit den *Archae-Typos* des *Designs in Spannungsfeldern*, die nach Goethe die Esszenz des Lebendigen ausmachen. Das Zentralthema der *Metamorphose*, der beständige Wandel der Formen, das Goethes Lebenswerk wie ein roter Faden durchzieht, bietet hier in einer extrem kondensierten Ver-Dichtung einen *uchronisch* wirkenden Kristallisations- und Ur-Sprungs-Punkt der oben genannten Spannungsfelder zwischen *Sein* und *Werden*, *Kreation* und *Zerstörung*, *Theoretik* und *Pragmatik*, *Freiheit* und *Notwendigkeit*.

---

[5] Kuhn (1962)

Zu Kapitel 4

"Meta-Morphologie: Eine Systematik der Muster, ihrer Transmission, und ihren Veränderungen". Dieses Kapitel behandelt die strukturellen Definitionen, die für die Systematik der kulturellen Transmission benötigt werden.

Grundlegende neuronale Aspekte von Mustern / Patterns folgen in dem Abschnitt: "Was *ist* ein Muster? Die neuronale Basis"

Eine globale spatiale und temporale Perspektive der Erd- und Menschheits-geschichtlichen Muster wird in "Die Epochen von Muster-Transmissionsklassen" gegeben.

Danach folgt "Die geosphärische System-Einbettung der Musterklassen".

Die wesentlichen konzeptuellen Voraussetzungen einer morphologischen Erfassung der kulturellen Transmission werden in: "Die Transmission phylogenetischer und ontogenetischer Muster" dargestellt.

Der Abschnitt: "Der 'Erinnerungs'-Bruch zwischen Prokaryoten und Eukaryoten" behandelt eine entscheidende Schwelle in der biologischen Mustertransmission.

"Der Bereich des Inter-Organischen: Das Ökosystem als Kommunikationsstruktur" wird anschließend behandelt.

Mit einem weiteren Exkurs auf Goethes "Faust" werden wichtige Aspekte zu "Virtuelle Unsterblichkeit, Kollektive Erinnerung, und Kulturelle Transmission" erörtert.

"Die Zeitstruktur des menschlichen Erlebens" behandelt einige für die Arbeit wesentliche Aspekte des menschlichen Zeiterlebens.

Zu Kapitel 5

"Die Systematik der Formen kultureller Transmission" stellt den Haupt- und Ergebnisteil der Arbeit dar. Zuerst werden die wesentlichen Bestimmungsparameter definiert: "Somatische und extrasomatische Faktoren der kulturellen Transmission"

"Der Menschliche Organismus als Überträger / Übermittler der kulturellen Transmission"

"Extrasomatische Faktoren der kulturellen Transmission: performativ - materiell; Die Medien: ephemär/dynamisch - speichernd/statisch"

Danach: "Sprachliche / Nichtsprachliche Transmission"

Diese Faktoren werden in einer "Tabelle kultureller Transmissionsformen" diagrammatisch zusammengefaßt und mit erläuternden Beispielen in den folgenden Abschnitten dargestellt.

Eine dazu komplementäre Sicht ist die Aufstellung der "Kulturellen Transmission nach Altersstufen".

Weiterhin findet sich eine Detail-Darstellung der Ergebnisse in der "Materials Section: A Morphology of Cultural Patterns", in den Abschnitten 12: "The Cultural Memory System (CMS)" bis 20: "Panetics as transmitted cultural pattern". Die hier dargestellte Klassifikation und Kombination von somatischen Faktoren und Medien wurde in der konsultierten Literatur so nicht vorgefunden, eröffnet aber interessante Bezüge.

Zu Kapitel 6

In: "Kultur im Spannungsfeld von Tradition und Innovation" werden in einem kurzen Ausblick aus der Sicht der oben gewonnenen Ergebnisse einige wesentliche Aspekte und Desiderata des *Social Design* dargestellt.

Zusammenfassung

Eine kurze Zusammenfassung der Ergebnisse schließt den Hauptteil der Arbeit ab.

Das Informations-Design der Arbeit: Erläuterung der Hypertext-Prinzipien

@:INFO_DESIGN

Die Arbeit wurde hinsichtlich der Organisation des Materials in eine WWW-Hypertext-Struktur eingebettet. Dies ist eine Form elektronisch unterstützter Text-Organisation, wie sie in ähnlicher Form in jüngster Zeit von Robert Darnton mit dem Prinzip des "pyramidal book"[6] formuliert wurde. Der Text umfaßt zwei große Teile, nämlich:

1) Einen zusammenfassenden Einführungs- und Übersichtsteil mit den wesentlichen Themen, Gedankengängen und Zusammenhängen, der auf Deutsch geschrieben ist, und

2) einen Anhang als detaillierten Darstellungs- und Material-Teil, auf Englisch.

"Materials Section: A Morphology of Cultural Patterns"

->:MATERIAL_SECTION, p. 100

Daß für den Material-Teil Englisch als Sprache gewählt wurde, hängt einerseits mit der Verfügbarkeit von Originaldokumenten und teilweise auch den Zitaten, mehr noch aber mit dem Ziel zusammen, eine möglichst breite Nutzung der Ergebnisse in der Verbreitung über das WWW (mit Englisch als Lingua franca) zu ermöglichen. Für spätere Erweiterungen der Arbeit sind in einer CD-ROM Version direkte Hypertext-Einbindungen von (meist englisch-sprachigen) Quellen aus dem WWW vorgesehen. Zur Information über den weiteren Fortgang dieser Arbeiten ist hier die Kontaktmöglichkeit mit dem Autor über URL und email Adressen angegeben:

http://www.uni-ulm.de/uni/intgruppen/memosys/

mailto:mm-diskurs@uni-ulm.de

Beide Teile können sowohl als Drucktext, als auch in Hypertext-Form dargestellt werden.[7] Die gemeinsame Basis ist ein (outline-) strukturierter WinWord®-Text, der mit einem vom Autor entwickelten speziellen Filterprogramm in HTML übersetzt wird. Die Outline-Funktion (auch Folding, oder Fish-Eye genannt) von WinWord ist besonders bei der Komposition von Texten ein wichtiges Hilfsmittel, das sich noch nicht durch (augenblicklich verfügbare) Hypertext-Editier-Methoden ersetzen läßt: Text-Volumina bis ca. 1 MByte[8] lassen sich mit einem Tastendruck auf ihre Überschriften kondensieren, und erlauben so eine extrem schnelle Möglichkeit der Strukturierung, Navigation und Re-Organisation von Texten. Das Informations-Design ist damit so angelegt, daß die Vorteile der gedruckten Text-Darstellung und des elektronischen Hypertexts nutzbar sind. Beide Teile sind über Hypertext-Links (oder Hypertext-Referenzen) miteinander verbunden, die im Drucktext durch Textmarker und Seitenverweise realisiert sind. Diese Art des Text-Design stellt zugleich einen direkten methodischen Beitrag zum Gegenstand der Arbeit dar, nämlich die Entwicklung von leistungsfähigen Formen der kulturellen Tradierung.

---

[6] ->:DARNTON_PYRA, p. 109

Vec (1999), Darnton (1999) http://www.nybooks.com/nyrev/WWWarchdisplay.cgi?19990318005F

[7] ->:TEXT_DESIGN, p. 107, ->:HYPERTEXT_DESIGN, p. 107

[8] Abhäigig von Speicherplatz und Prozessorgeschwindigkeit.

Konventionen der Hypertext-Links

Die Hyper-Links werden mit folgenden Konventionen dargestellt. (Weitere Erklärung der Begriffe in den folgenden Abschnitten).

@:   Hypertext Anker

->:   Hypertext Referenz

Beispiel eines Hypertext Ankers. Im Drucktext dient diese Form dazu, einen visuell leicht aufzufindenden Bezugspunkt (Anker) herzustellen, auf den mit einer Hypertext-Referenz verwiesen wird:

@:HYPERTEXT_ANKER

Beispiel einer Hypertext-Referenz auf den obigen Hypertext-Anker:

->:HYPERTEXT_ANKER, p. 16

Das pyramidale Buch

@:PYRAMIDAL_BUCH

Das pyramidale Buch ist eine bildliche Darstellung, mit der Robert Darnton eine neue Art der wissenschaftlichen Veröffentlichung bezeichnet hat.[9] Mit dieser Vorgehensweise ist es möglich, sowohl einen kontinuierlichen, und in einem Lesefluß leicht zu bewältigenden Text mit einer tief gestaffelten und mit wissenschaftlichen Material versehenen Ausarbeitung zu verbinden. In der konventionellen Herstellungsweise des wissenschaftlichen Buches wird Begleit- und Dokumentationsmaterial, das den Lesefluß unterbrechen würde, in Fuß- oder Endnoten verlegt, so daß der Leser diese entweder auslassen kann, oder bei Interesse und Bedarf hier spezifisch zugreifen kann. Dieses Verfahren hat seine Grenzen, wenn das Material der Fußnoten so groß ist, daß es an Umfang die Menge des Haupt-Textes überschreitet. Dann entsteht der unschöne Eindruck, daß eine Buchseite hauptsächlich von Fußnoten ausgefüllt wird, oder aber zusammenhängende Gedankengänge müssen auf verschiedene Kapitel aufgeteilt werden, was ihren ursprünglichen Zusammenhang zerreißt. Hypertext bietet hier die Möglichkeit, eine erweiterte Form der Fußnoten zu bilden, indem auf ganze, zusammenhängende, und in sich wiederum in ihrem Gedankenfluß geschlossene Kapitel mit einem einzigen Verweis (der Hypertext-Referenz) hingeführt werden kann. Weiterhin lassen sich damit "Fußnoten zu Fußnoten" bilden, die im Lineartext des Buches nicht unterzubringen sind.

Wie Robert Darnton feststellt, ist die Zeit des Buches noch lange nicht vorbei. Dazu bietet die in langer Evolution gereifte Form des Drucktextes zu viele Vorteile, die die elektronische Version nicht vorweisen kann: Der gedruckte Text vermittelt durch die physische Manipulation der Berührung durch die Hand (Handhabbarkeit) eine notwendige Verbindung zu den menschlichen Fähigkeiten, die nur über die physischen, somatischen Kanäle aktiviert werden können. Das physische Erleben der Berührung des Papiers, das Gefühl seiner

---

[9] ->:DARNTON_PYRA, p. 109

Geschmeidigkeit, sogar der Klang der Seiten beim Umblättern, sind Erlebnisfaktoren, deren Bedeutung sehr selten gewürdigt wird. Der Faktor der Memorisation ist entscheidend mit der Reichhaltigkeit der Dimensionen des Erlebens und der physischen Qualität der Berührung verbunden. Die rein optische Darstellung im Computer kann diese Qualitäten der Berührung nicht bieten. Ebenfalls bietet der gedruckte Text sowohl im Bild-Kontrast als auch in der Darstellungsfläche ein Vielfaches dessen, was uns die heutige Computertechnologie offerieren kann. Ein 17-Zoll Bildschirm bietet uns weniger als eine Textseite in der Darstellung, so daß es sehr schwer ist, über eine Bildschirmdarstellung eine Vorstellung von der Kohärenz eines Textes zu bekommen.

Der wesentliche Vorteil des Hypertexts ist seine Möglichkeit der schnellen Verbindung von Vernetzungen in Texten, die sich schwer in eine linear geordnete Darstellung anordnen lassen. Damit wird die "Navigation" immenser Texträume[10] möglich, wie sie auch bei der umfangreichen Materialsammlung der vorliegenden Arbeit anfielen. Weiterhin bietet die elektronische Darstellung einen entscheidenden Kostenvorteil, da in der Regel der umfangreiche wissenschaftliche Materialteil entsprechender Arbeiten, der den kommerziellen Gegebenheiten des Buchmarktes zuwiderläuft, auf eine kostengünstige CD oder Diskette, oder das WWW ausgelagert wird. Die hier vorgestellte Lösung ist gleichzeitig geeignet, das vielfältig monierte Problem des "Lost in Hyperspace" einer reinen Hypertext-Darstellung zu verhindern, indem jeder Einzeltext im numerischen Hierarchie-Schema des Gliederungsmodus eindeutig dem gesamten Textcorpus zugeordnet und darin eingeordnet ist, und damit in Ergänzung der Papierform die Text-Sprünge erleichtert, während das kontinuierliche Material weiterhin in Form eines gebundenen, sequentiellen Textes vorliegt.

Anmerkung zur Schreibweise griechischer Worte

Die Schreibweise für griechische Worte ist wegen Vereinfachung der Hypertext-WWW-Darstellung in latinisierter Transkription, mit *ae* für *aeta*, **o** für *omega*, o fuer *omikron*.[11]

---

[10] s.a. Veltman (1997, 1998)

[11] ->:SPELLING, p. 106

1. Einleitung

1.1. Das Ge-Schichte der Geschichte:
Muster-Transmission in replikativen dissipativen Systemen

@:GE_SCHICHTE

Der Aspekt der "Entropie und Transmission" unseres Titelthemas betrifft die Einbettung der kulturellen Erscheinungen in eine allgemeine Systematik von Muster-Transmissionen in replikativen thermodynamischen dissipativen Systemen - den lebenden Organismen der Biosphäre der Erde. Bazon Brock spricht in der Einleitung zur "Ästhetik gegen erzwungene Unmittelbarkeit"[12] von der unentrinnbaren Vorgeprägtheit aller unserer Erfahrungen. Diese ist durch das Zusammenwirken von zwei Faktoren bedingt: 1) der *evolutionär in phylogenetischer Transmission gewachsenen Struktur* unseres "Weltbildapparats",[13] unseres Sinnes- und Nervensystems, und 2) durch seine *kulturelle Programmierung in der ontogenetischen Transmission*. Wir können uns dies bildlich als` ein vielschichtiges System von Filtern[14] vorstellen, das sich wie eine russische Schachtelpuppe in den Äonen der biologischen und kulturellen Evolution gebildet hat, und das, in der jeweilig spezifischen ethnischen Ausprägung, das Weltbild-Repertoire eines jeden lebenden Menschen bildet.[15] Das deutsche Wort *Geschichte* bietet uns in seiner Doppelbedeutung eine geeignete Darstellung dieses Zusammenhangs: *das Ge-Schichte* als das im Nervensystem eines jeden lebenden Menschen vorhandene Konglomerat aller Filter,[16] und *die Geschichte* als die temporale Projektion und Kondensation der gesammelten Er-innerungen der Biosphäre und der Menschheit, im *Jetzt*.[17]

1.2. Design und Zeit

@:DESIGN_ZEIT

Der andere Teil des Titelthemas: "*Design und Zeit*" ist ein Wortspiel,[18] eine Anspielung auf das berühmte Werk Heideggers, "*Sein und Zeit*", in dem er die Temporalität der menschlichen Existenz aus der phänomenologischen Perspektive des Erlebens des Individuums behandelt.

---

[12] Im Folgenden mit AGEU abgekürzt.
http://www.uni-wuppertal.de/FB5-Hofaue/Brock/Schrifte/AGEU/
[13] http://www.uni-wuppertal.de/FB5-Hofaue/Brock/Projekte/NeuroAe1.html
[14] ->:RATIOMORPHIC, p. 122, ->:AUTOPOIETIC, p. 125, ->:SEMIOSPHERE, p. 116
Bazon Brock: http://www.uni-wuppertal.de/FB5-Hofaue/Brock/Projekte/NeuroAe3.html
[15] Zur Verschiedenheit der Weltbilder in den Sprachen, siehe W.v. Humboldt, bei Cassirer (1994: 62).
[16] Siehe dazu auch im Altgriechischen eine ähnliche Verbindung zwischen *histor-* (das Beschauen, das Gesehene, Gehörte, Forschen, Erkunden, Kenntnis, Wissenschaft, wissenschaftlich, Geschichte) und *histon-* , *histou-* (Weben, Webstuhl, Weber, Webkunst,) modern: *Histologie*. S.a. Bachofen (1925: 301-422). ->:WEAVING, p. 165
[17] http://www.uni-wuppertal.de/FB5-Hofaue/Brock/Schrifte/AGEU/Avantrad.html
[18] Die Wortspiele werden im vorliegenden Kontext konstruktiv als semantische Spannungsfelder eingesetzt und erzeugen durch ihre semantische Nicht-Absättigung eine Bedeutungs-Dynamik, analog zu dem als Beispiel angeführten Gestaltbild. Sie verdeutlichen damit auch die Wirkung von neuronalen Attraktoren.
->:DESIGN_NICHTSEIN, p. 19, ->:NATTRAKTOR, p. 23, ->:GESTALTBILD, p. 24, ->:MEPHAISTOS, p. 35
->:MEPHAISTOMORPHOSE, p. 37, ->:MORPHOLOGIE, p. 40, ->:SOCIODESIGN, p. 89

In der vorliegenden Arbeit soll aber eine andere Perspektive eingenommen werden: Statt der Sicht des erlebenden Menschen, soll hier die Perspektive dessen eingenommen werden, das *über* das menschliche Leben hinaus *währt* (das *Über-Menschliche* im Sinne Nietzsches). In Anlehnung an Heideggers Methode können wir fragen: Was ist das (Immer-) *Währende*,[19] das *Jen-Zeitige*, das über den Horizont der Temporalität des menschlichen Erlebens hinausreicht? Dies läßt sich unter folgenden Gesichtspunkten betrachten: Unter dem Aspekt der metaphysischen Bereiche, der unsterblichen Seele, dem ewigen Reich Gottes und der Engel, wie sie z.B. von Swedenborg beschrieben wurden, und von Goethe in seinem Faust-Stoff eingearbeitet wurden,[20] oder unter dem Aspekt des Physischen.[21] Dies läßt sich wieder untergliedern, in:

1) die unbelebte, materielle Natur der Physik, des Kosmos, der Sonne und der Planeten,[22]

2) die lebendige Natur der *Organismen in der Biosphäre*,[23] und

3) die "*Kulturelle Transmission*".

Die letztere ist das hauptsächliche Thema der vorliegenden Arbeit, und die Aufgabe ist es, das "*Sein in der Zeit*" dieser Transmission näher zu bestimmen. Ein wichtiger Aspekt dabei ist der Begriff des *Design*, oder der *Gestaltung*.

1.3. Design oder Nichtsein

@:DESIGN_NICHTSEIN

Wir können dies mit einem anderen Wortspiel deutlicher machen, diesmal mit Anleihe bei Hamlet: "*Design oder Nichtsein, das ist hier die Frage*".[24] Der berühmte Ausspruch Hamlets, "Sein oder Nichtsein" ist ein subtiler Projektionsmechanismus, der über den Ausschluß von Alternativen arbeitet. Hinter der im Theaterstück sichtbaren Agenda finden wir eine unausgesprochene, eine unsichtbare Agenda, die der ausgeschlossenen möglichen Alternativen: Das "Sein oder Nichtsein" fesselt den Protagonisten, sowie den Leser/ Zuschauer des Stücks an eine ausschließliche Alternative, zwischen "Sein" als *Leben* und "Nichtsein" als *Tod*. Was dabei aber ausgeschlossen und verborgen wird,[25] ist, daß es noch eine dritte Möglichkeit zwischen "Sein *und* Nichtsein" gibt, das *Werden* (und *Vergehen)*. Dies ist wiederum ein wesentlicher Fokus der vorliegenden Arbeit: *Kultur als Werden*.

---

[19] Nach Heidegger (1976a: 12)

[20] vor allem: "Prolog im Himmel" 243-353; 737-807; "Grablegung", "Bergschluchten": 11604-12111

[21] Heidegger (1976b: 239-301) "Vom Wesen und Begriff der *Physis*, Aristoteles, Physik B, 1". p. 242: "Die aristotelische Physik ist das verborgene und deshalb nie zureichend durchdachte Grundbuch der abendländischen Philosophie."

[22] Nach Bateson (1972: 456) Das *pleroma*.

[23] Nach Bateson (1972: 456) Die *creatura*.

[24] Karbe (1995: 296); dazu auch das umfangreiche Werk von H v. Dechend (1993), das eine Tiefenperspektive über 10,000 Jahre "Hintergründe zu Hamlet" gibt.

->:SOCIODESIGN, p. 89

[25] s.a. Paglia (1991: 194-202); und das *mae-phainon*, in der Behandlung des Faust-Stoffs weiter unten.

->:MEPHAISTOS, p. 35

"Kulturelle Transmission" steht in einem doppelten Spannungsfeld, dessen Pole man auch als die Hauptanforderungen an die "Kultur"[26] bezeichnen könnte.

Erstens: des *Bewahrens*, der *Tradition* des Erreichten, der *Fortpflanzung* der kulturellen Güter und Errungenschaften von der *Vergangenheit* in die *Zukunft*. Dies können wir auch als das *Gewordene* der Kultur bezeichnen.[27] Aber diese Tradition sollte nicht nur eine sture und starre Replikation, oder mechanische Transmission[28] sein, sondern sie sollte

Zweitens: auch die *Permanente Neugestaltung*, die *Selbst-Erneuerung* der Kultur sein. Dies können wir als das *permanent Werdende* der Kultur bezeichnen.[29] Es ist hier mit den Begriffen *Design*, oder *Gestaltung* verbunden.[30]

Zunächst soll eine kurze Vertiefung des Aspekts der *Transmission* folgen:

1.4. Kultur als Transmissionsdynamik

"Kultur ist eine Transmissionsdynamik. Merkmale werden innerhalb einer Generation und von einer Generation auf die nächste übertragen"[31].

Der Begriff "Kultur" hat in der Umgangssprache und in den Fachdiskursen eine Vielzahl von Bedeutungen, so daß es geboten erscheint, bei seiner Nennung eine Definition anzubieten, welcher Aspekt in dem betreffenden Kontext behandelt werden soll.[32] Die Definition der Kultur von Heiner Mühlmann als "Transmissionsdynamik" wird in unserem Kontext als offene Minimal-Bestimmung angesehen, in dem Sinn, daß wir hier einen (hoffentlich) konsensfähigen Kern haben, der aber noch weitere Bestimmungen nicht ausschließt. Mit der Bestimmung als "Transmissionsdynamik" ist es möglich, die naturwissenschaftlichen Erkenntnisse und Methoden aus Biologie, Thermodynamik und Informationstheorie auf das Phänomen der Kultur anzuwenden, und den Kulturbegriff im Sinne einer naturwissenschaftlichen Behandlung diskursfähig zu machen. Mühlmann führt dies in seinem

---

[26] Wegen der Vielzahl der Bedeutungen von "Kultur" wird der Begriff mit Anführungszeichen geschrieben. Weitere Erläuterung zu "Kultur" im nächsten Abschnitt.
[27] s.a. die Hegelsche Kulturauffassung: Mühlmann (1996: 128)
[28] Das Wort *Transmission* erinnert an die Mechanik der Kraftübertragung mit *Transmissionsriemen*.
[29] Mühlmann (1996: 128-9)
[30] s.a. Brock, AGEU, p. 344-349
[31] Mühlmann (1996: 112)
[32] Gamst (1976), Kluckhohn (1962: 19-73), (1980), Koch (1989), Lumsden (1981), Mühlmann (1996: 100), Posner (1989).
S.a. Bazon Brock AGEU, p. 200: "... daß unser Begriff "Kultur" sich aus der römischen "Agricultura" als der zivilisatorischen Nutzung der Natur durch Umgestaltung herleitet."
WWW-Pages: What Is Culture?, Quotations on Culture:
http://www.wsu.edu:8001/vcwsu/commons/topics/culture/culture-index.html
http://www.wsu.edu:8001/vcwsu/commons/topics/culture/quotations-on-culture/quotations-on-culture.html#top
Works Cited:
http://www.wsu.edu:8001/vcwsu/commons/topics/culture/works-cited/works-cited-full.html

Buch mit der im Untertitel erwähnten kulturgenetischen Methode aus. Im Rahmen der vorliegenden Untersuchung erscheint diese Herangehensweise auch deshalb als geeignete Grundlage, weil hier nicht die Frage nach dem "Was" (ontisch) der Kultur beantwortet wird, sondern nach dem "Wie" (prozessual). Eine ontische Fragestellung wäre insofern problematisch, da nach nominalistischer Sicht die Kultur kein dingliches "für sich sein" besitzt. Dies ist aber, wie oben schon erwähnt, eine reine Definitionsfrage. Mit der anfänglichen Fokussierung auf den Aspekt der "Transmissionsdynamik" sind Erweiterungen, wie Verfeinerung und Verbesserung, bzw. "Eu-Kultur",[33] möglich, die bei Mühlmann und Brock unter dem Stichwort "Hominisierung"[34] oder "Zivilisierung"[35] der Kultur angesprochen werden.

Behandelt wird somit das Phänomen Kultur unter dem Aspekt der Transmission. Eine wesentliche nähere Bestimmung im Kontext der kulturgenetischen Theorie ist: *"Kultur" ist der Bereich der Transmission ontogenetischer (in der Lebenserfahrung erworbener) Muster.*[36] *Phylogenetische* Muster sind alle die Merkmale, die genetisch codiert und transmittiert sind, also über Sperma, Eizelle, DNS und RNS, weitergegeben werden. Der hier verwendete Begriff von "Kultur" bezeichnet also eine spezielle *ontogenetische* Kategorie von Mustern, die von einer anderen Kategorie, den *phylogenetischen* Mustern, durch die Weismann-Barriere abgegrenzt ist. Die allgemeine Thematik von *Mustern und ihrer Transmission*, die *Morphologie*, wird in den späteren Abschnitten näher behandelt werden.

---

[33] Lock (1996: 193), Lumsden (1981: 3-4, 6-7, 325-341)
[34] Mühlmann (1996: 7-10)
[35] Referenz zu dem Begriff von Bazon Brock: Mühlmann (1996: 12)
[36] Mühlmann (1996: 10, 145)

2. Die primären Spannungsfelder

Zunächst soll hier aber der methodische Ansatz der Arbeit vertieft werden. Wie der Titel schon ankündigt, ist "Kultur" in einem Spannungsfeld zu behandeln. Das Thema wird nicht in einer festen "*Definition*" *fixiert* und *eingegrenzt*,[37] sondern die Spannung ist ein integrales Element der Bearbeitung des Themas.[38] Das ur-sprünglichste Spannungsfeld von *Werden* und *Vergehen* führt uns an den Beginn der abendländischen Philosophie, zu Anaximandros:

archaen ... eiraeke ton onton to apeiron / *Der Ursprung (oder: Anfang) der seienden Dinge ist das Unbegrenzte (apeiron)*
ex on de he genesis esti tois ousi / *Aus welchen (seienden Dingen) die seienden Dinge ihre Entstehung haben*
kai taen phthoran eis tauta ginesthai kata to chreon / *dorthin findet auch ihr Vergehen statt, wie es gemäß der Ordnung ist*
didonai gar auta dikaen kai tisin allaelois taes adikias kata taen tou chronou taxin / *denn sie leisten einander Recht und Strafe für das Unrecht (adikia) gemäß der zeitlichen Ordnung (chronos)*[39]

---

[37] Siehe das folgende Anaximandros-Fragment. *finis*: lat. die Grenze. Das primäre Spannungsfeld ist zwischen dem *Eingegrenzten*, *Definierten*, und dem *Un-Eingegrenzten* (*apeiron*), das *im Anfang* ist: *en archae*. Dies soll weiter unten mit Bezug auf Goethes Faust weiter behandelt werden. Ein kurzer Seitenblick noch auf die christliche Mythologie: Dort spielt der *peirazo* eine besondere Rolle: Der, der an (oder in) *die Grenzen führt*: Matth 4,3-11; Luc. 4,3-13. Er führt auch auf hohe Aussichtspunkte, wie Berge oder Turmspitzen, um weite Perspektiven aufzuzeigen. Gebser (1973), Brock, (AGEU: 198-214), Karbe (1995: 296) ->:PERSPECTIVE_VIEW, p. 110

[38] Karbe (1995: 309); Thom (1975: 323): "Our models attribute all morphogenesis to conflict, a struggle between two or more attractors. This ist the 2,500 year old idea of the first pre-Socratic philosophers, Anaximander and Heraclitus. They have been accused of primitive confusionism, because they used a vocabulary with human and social origins (conflict, injustice, etc.) to explain the appearance of the physical world, but I think that they were far from wrong because they had the following fundamentally valid intuition: *the dynamical situations governing the evolution of natural phenomena are basically the same as those governing the evolution of man and societies*, profoundly justifying the use of anthropomorphic words in physics."
Ein Beispiel des konstruktiven Einsatzes von Spannung in der Architektur: Buckminster Fuller (1975: 377 ff) nennt sein thermodynamisches Prinzip der Konstruktion die "Tensegrity" (Tensional Integrity). In Deutschland hat Frei Otto diese Arbeitsweise in seinem Institut für leichte Flächentragwerke ausgearbeitet. Das am besten bekannte Ergebnis dieser Arbeit ist das Zeltdach des Münchener Olympiastadions. Literatur dazu in der Schriftenreihe des Instituts, z.B.: Bach (1977), Otto (1985)
Cassirer (1994: 109): ... man muß einsehen..., daß sie [die Kultur] kein harmonisch sich entfaltendes Ganze, sondern von den stärksten inneren Gegensätzen erfüllt ist. Die Kultur ist "dialektisch", so wahr sie dramatisch ist. Sie ist kein einfaches Geschehen, kein ruhiger Ablauf, sondern sie ist ein Tun, das stets von neuem einsetzen muß, und das seines Ziels niemals sicher ist.

[39] (Diels 1954,I:12); (Pleger 1991: 61); Heidegger (1976b: 242):
Allerdings ist dieses erste denkerisch geschlossene Begreifen der *physis* auch bereits der letzte Nachklang des anfänglichen und daher höchsten denkerischen Entwurfs des *Wesens* der *physis*, wie er uns in den Sprüchen von Anaximander, Heraklit, und Parmenides noch aufbewahrt ist.
Das hier wiedergegebene Zitat von Anaximandros, und die im Folgenden gebrachten Zitate anderer Denker, werden nach diesem Satz von Heidegger: "Platons Lehre von der Wahrheit" (1976b: 203) verstanden:
Die Lehre eines Denkers ist das in seinem Sagen Ungesagte, dem der Mensch ausgesetzt wird, auf daß er dafür sich verschwende.

2.1. Paradigmata, neuronale Attraktoren und Perspektivenwechsel

@:NATTRAKTOR

Hier soll die Sichtweise von "Kultur" nicht als "*Gewordenes*", sondern als "*Werdendes*" entwickelt werden.[40] Es gibt verschiedene Metaphern, die zur Verdeutlichung von primären Spannungsfeldern zu verwenden sind. Im Sinne von Kuhn[41] können wir sie auch *Paradigmata* nennen, und aus der Physik ist das *gravitationale Feld* gut bekannt, und die Schwerkraft-Anziehung kann hier *cum grano salis* als Modellbild dienen. Mit einer Metapher aus der Chaos-[42] und Katastrophentheorie können sie *Attraktoren* genannt werden.[43] Der Begriff des Attraktors deutet eine Anziehung (oder ein wirkendes Feld, eine Spannung) an, daher soll er im folgenden Text als Terminus für einen *Anziehungspol eines erkennenden neuronalen Systems* gebraucht werden. (Die Arbeitsweise des neuronalen Systems wird in einem späteren Kapitel behandelt).[44] Im Normalfall der Alltagswahrnehmung erzeugen die Attraktoren unseres neuronalen Systems aus dem Eingabemuster der Sinneseindrücke ein eindeutiges, wohldefiniertes Bild unserer Umwelt. Eine besondere Konfiguration von Attraktoren ist die *bipolare*, die auch unter dem Namen *Dichotomien*[45] bekannt ist, in der unsere Erfahrung und das Erkennen in polare Bereiche aufgeteilt wird. Wie wir aber alle schon erfahren haben, kommt es oft vor, daß ein Sachverhalt sich auch bei gleichem Sinneseindruck oder Datenmaterial verändern kann, wenn er z.B. in einem anderen Kontext, oder aus einer anderen Perspektive gesehen, plötzlich ganz anders dasteht als vorher. Dieser Effekt ist besonders gut bei der Interpretation von Symbolen zu beobachten, wie in der Geschichts- oder Literaturwissenschaft.[46] Das Prinzip solcher Veränderungen der Wahrnehmung läßt sich gut mit einem bekannten Beispiel aus der Wahrnehmungspsychologie erläutern:

---

[40] s.a. Mühlmann (1996: 128):

Der kulturgenetische Standpunkt vertritt die Meinung: Kultur ist eine genetische, iterative Dynamik, die sich stets im Zustand der Kritizität, das heißt, der gefährdeten Stabilität befindet.
->:FUNDAMENTAL_IDEAS, p. 112

Dieser dynamische Ansatz wurde auch von Spengler und Frobenius in Anlehnung an Goethes Morphologie formuliert. z.B. Haberland (1973: 1-7), Spengler (1980): ix, 4, 7, 29, 31, 32, 35, 68, 69, 71, 73, 75, 533-549; zu Goethe, p. 35: "geprägte Form, die lebend sich entwickelt"; p. 205: "Orphische Urworte".

[41] Kuhn (1962)

[42] Briggs (1990: 41-73), Abraham (1992: 21 ff.)

[43] Thom (1975: 38-40, 98), (p. 323): "Our models attribute all morphogenesis to conflict, a struggle between two or more attractors."

[44] ->:WASMUSTER, p. 41

[45] s.a. Brock, AGEU: 12-18, "Distinktionismus"; Dazu auch die Darstellung bei Lippe (1997), zur Genese der exklusiv-polaren Gegensätzlichkeit von Licht und Dunkel, Gut und Böse, in der zoroastrischen Lehre, die über Judentum, Manichäismus und Christentum auf das westliche Denken eingewirkt hat: p. 76, 80, 104, 173-175. Dies ist wiederum eines der Kernthemen bei Goethes Faust (s.u.).

[46] Cassirer (1960: 217-261)

Die Boring Frauen: Gestalt-Bild zur Demonstration neuronaler Attraktoren

Dieses Bild beweist ohne großen theoretischen Ballast die grundsätzliche Wirkung neuronaler Attraktoren.[47] Wir können zwei verschiedene Motive in dem Punktmuster, aus dem das Bild ge*bildet* wird, erkennen: Eine alte Frau und eine junge Frau. Auf diese Motive hin wird das Erkennen des neuronalen Systems "angezogen". Wesentlich dabei ist, daß unser Wahrnehmungssystem autonom zwischen den beiden Möglichkeiten hin- und herschalten kann. Wie andere Bilder, z.B. der Necker-Würfel zeigen, ist es nicht direkt vom Willen zu beeinflussen, welches Bild gerade gesehen wird. **Diese inhärente Dynamik ist das Grundprinzip des *neuronalen Attraktors*.**

Gemäß der heutigen Sicht in der Gehirnforschung wird das Umschlagen von Gestaltmustern im Folgenden als grundsätzliche Funktionsmöglichkeit des Weltbildapparats[48] vorausgesetzt, in dem Sinne, daß Weltbilder, Referenzrahmen, Perspektiven, und Kuhnsche Paradigmata mehr oder weniger spontan umschlagen können.[49] Ähnliche Erscheinungen werden auch als *Metanoia*,[50] (*Kata-*) *Strophae*[51], *Tropae*,[52] oder *Satori*[53] bezeichnet.

---

[47] Calvin (1996a: ch. 5), Haken (1992: 198-224, 236-237), Roth (1996: 263).
->:GESTALT_SWITCH, p. 123, ->:RATIOMORPHIC, p. 122

[48] s.a. Brock, (AGEU: 12-18). Der Begriff *Weltbildapparat* wurde von Konrad Lorenz und seiner Schule, u.a. Rupert Riedl, eingeführt, bzw. bekannt gemacht. ->:RATIOMORPHIC, p. 122

[49] Das duale Bild von *Kollektiver Erinnerung* und des *Kulturellen Musters* ->:SYSTEMATIK_TRANSMISS, p. 64
Zu Umschlagerscheinungen und Anwendung in Raumerlebnis und Weltbildapparat: Karbe (1995: 331-355).

[50] ->:FAUST_META, p. 34 ->:FAUST_METANOIA, p. 237 ->:METANOIA, p. 136

[51] *Umkehrung, Wendung* in der Musik. Zu *kata-strophae*: René Thom (1975): Katastrophentheorie. *strophae*: Drehen, Wenden, Kreisen, Strophe. Platon: Politeia (617 B- 620 E) ->:MOIRAE, p. 166

[52] *tropae, trepo*: Umkehr, Rükkehr, Wendung, Veräderung, *tropos*: Wendung, Richtung, Art & Weise, Einrichtung, Verfassung, Manier, Sitte, Mode, Charakter, Wesen, -> *en-tropia*: Windungen oder Räke

[53] Zen Tradition.

2.2. Das Spannungsfeld von Statik und Dynamik, Sein und Werden

@:SEINWERDEN

Das Spannungsfeld von "*Sein*" und "*Werden*", bzw. "*Vergehen*"[54] ist das Hintergrundthema von Heideggers "Sein und Zeit". Die *Seins*-Thematik Heideggers steht in der europäischen philosophischen Tradition (dem Paradigma) des *Ontischen*, die mit Parmenides, Zeno, Platon, und Archimedes[55] verbunden wird. *Dasein* ist aber immer *in der Zeit*, und damit dem *Werden* und *Vergehen*, der *Dynamis*, der *Veränderung*, und dem *Prozess*, unterworfen. Davon handelt das Werk Heideggers aus der Perspektive des Erlebens des (menschlichen) Individuums. Wenn wir die dazu entgegengesetzt-polare Perspektive einnehmen, so orientieren wir uns grundsätzlich am *Werden*. In der Wissenschaft nimmt die *Thermodynamik* diesen Pol als Referenzpunkt ein. "*Das Sein zum Tode*" Heideggers ist in der Sprache der Thermodynamik die entropische Tendenz aller seienden Dinge zur Zersetzung und Auflösung im thermodynamischen Äquilibrium. Heideggers Zentralthema der "Sorge"[56] bezieht sich auf die bewußt erlebte Angst des Individuums (z.B. vor dem Tode). In der unpersönlichen Darstellung, auf die thermodynamische Sprache der dissipativen Strukturen übertragen, finden wir hier das Hauptmerkmal des Lebens: **Leben ist die Aktivität von dissipativen Strukturen, ihre Muster gegen den entropischen Strom der Auflösung zu bewahren, fortzupflanzen, und fortzuentwickeln**.[57]

2.3. Das Paradigma des "Werdens": Dissipative Systeme

@:THERMODYNAMIK

Die Sichtweise des "Werdens" wurde im Westen von einer philosophischen Tradition vertreten, die mit den Namen Heraklit,[58] Aristoteles, Nietzsche und Whitehead verbunden ist, und die im Osten in der *Paticca Samuppada*-Lehre des Buddha ausformuliert worden ist.[59] In der heutigen Naturwissenschaft ist die *Thermodynamik* der Hauptvertreter einer essentiell prozessualen Sicht des Kosmos, die vor allem durch Prigogine und Jantsch, und von einigen

---

[54] Siehe das o.g. Anaximandros-Fragment. ->:SPANNUNGSF, p. 22

[55] Archimedes wird hier als Wegbereiter der Natur- und Technikwissenschaften genannt.

[56] z.B. Heidegger (1977a): §41, p. 191; §45, p. 231, die Beziehung zu "Faust" in §42, p. 198

[57] Frei Otto: "Naturverständnis" (1985), p. 30: "Jede lebende Ordnung ist der Tendenz zur Destruktion abgewonnen."; Schrödinger (1946: 68-75) ch. VI: "Order, disorder and entropy"; Lorenz (1992: 140-145), "Fulguration"; eine populäre Darstellung ist in Rifkin (1980); In einer früheren Formulierung schon bei Spinoza (Hoffmeyer 1996: 138); Stan Salthe, unter ->:ERT_TRIAD, p. 135

Heraklit, B 64: ta de panta oiakizei Keraunos: Das Steuer des Alls führt der Keraunos.

Gumilev (1990: 198): ... lightning is energy, in my language anti-entropic impulses that with their rise disrupt the processes of death, the entropy of the Universe. Force, the cause provoking acceleration, saves Cosmos from conversion into Chaos, and the name of this force is Life. But in the eternal war of the protogenic elements, the servants of Kronos, the hundred-handed giants or asura (Sanskrit), lose nothing because they have nothing to lose. Kronos changed their appearance every second, and so deprived them of personal qualities and properties.

Gumilev (1990: 259-262): "The Nature of Drive", Bezug auf Vernadski. Gumilev nennt den anti-entropischen Drang "Drive". Man beachte, daß der antike Begriff "energeia" sehr genau dem Konzept des "Drive" entspricht.

[58] Cassirer (1959: 177)

[59] ->:PATICCA_SAMUPPADA, p. 120

Kybernetikern, Systemtheoretikern, und Ökologen, mit der Erforschung der (Selbst-) Organisationsprozesse des Lebens verbunden wurde.[60] In der thermodynamischen Sicht sprechen wir von *irreversibler Zeit*, und von *offenen Systemen*.[61] Die essentielle Dynamik des Lebens wurde von Nietzsche sehr deutlich in einem Aphorismus formuliert.

Ja! Ich weiss, woher ich stamme! / Ungesättigt gleich der Flamme / Glühe und verzehr' ich mich. Licht wird Alles, was ich fasse, / Kohle Alles, was ich lasse: / Flamme bin ich sicherlich.[62]

So wie es ein philosophisches Spannungsverhältnis von "Sein" und "Werden" gibt, so gibt es in der Physik eine der Thermodynamik gegenüberstehende Position der vorherrschenden mechanistischen, Newton- / Laplace- / Cartesischen Orientierung,[63] mit *reversibler Zeit*, und energetisch *geschlossenen Systemen*, die sich im *energetischen Gleichgewicht* befinden.

In der vorliegenden Untersuchung soll das Paradigma des "Werdens" auf die Transmission und Gestaltung in der Kultur übertragen werden. Die Sicht- und Vorgehensweisen, die mit der fundamentalen Orientierung an den Polen von "Sein" und "Werden" verbunden sind, unterscheiden sich prinzipiell. Der Pol des "Werdens" ist mit Offenheit und Unbestimmtheit verbunden. Eine solche grundsätzliche Unbestimmtheit wird in den naturwissenschaftlichen Diskursen durch Chaostheorie und Quantenphysik z.B. mit dem "Butterfly-Effekt" oder der

---

[60] Frei Otto (1985), p. 15-38; Ulanowicz (1996);
Straub (1990, p. 8): Irreversibilität als Grundlagenproblem wird bis heute nicht akzeptiert; der erhebliche Aufwand, der vor etwa 100 Jahren für einige Jahrzehnte dafür getrieben wurde, diente lediglich seiner endgültigen Verdrängung. Die Spitzenprodukte heutiger Physik, Quanten- und Relativitätstheorie, sind Musterbeispiele für den Erfolg dieser erstaunlichen Entwicklung... Irreversibilität [ist] ... nach Einstein eine Illusion.
Straub (1990, p. 9): Theoretische Physik als abendländische Ideologie... Die Mittel dazu... extreme Formalisierung und der Konsens... rücksichtslose Zurückdrängung der **Irreversibilität** in der theoretischen Physik.

[61] 1. Thermodynamischer Hauptsatz: Die Gesamtenergie eines geschlossenen Systems bleibt immer konstant. 2. Thermodynamischer Hauptsatz: Die Entropie eines Systems nimmt immer zu. (Die freie Energie nimmt ab). S.a. Müllmann (1996: 16, 83), p. 47: "Das mächtige Energiewesen der Kultur existiert. Man kann es nicht durch Philosophie beschwichtigen."
energy: ->:PRELIMINARY_DEF, p. 103

[62] Die fröhliche Wissenschaft, Nr.62; 3,367. Heraklit B 30, 31, 64a, 65, 66, 76, 84a, 90

[63] *energy*: ->:PRELIMINARY_DEF, p. 103
Ohne hier auf die kulturgeschichtliche {Relevanz / Genese} physikalischer Grund-Vorstellungen einzugehen (siehe dazu Straub und Ulanowicz, a.a.o): Die heutige physikalische Bedeutung von *Energie* beinhaltet einen doppelten Übersetzungsfehler: *En-ergeia* hieß ursprünglich (en archae): Wirksamkeit, Tatkraft, Potential um *Werke*, oder *Taten* (*ergon*) zu vollbringen. (S.a. die Behandlung von *ergon* im Faust-Stoff weiter unten). Die erste Fehlübersetzung von *Energie*, als "Potential, um *Arbeit* zu leisten" beruht darauf, daß der heute allgemein verwendete Begriff *Arbeit* in der Antike mit dem Wort *Ponos* bezeichnet wurde, das war aber keine Sache, mit der sich ein Philosoph oder ein freier Bürger beschäftigte, denn *Ponos* war den Sklaven überlassen. Der Aspekt des *Potentials*, oder *Poiaesis*, ist Gegenstand des zweiten Übersetzungsfehlers, denn das "Potential, um Arbeit zu verrichten", wird "*Freie Energie*" genannt. Die wird aber in einem geschlossenen System nach dem 2. Hauptsatz immer degradiert und verschwindet, wenn sich das System im thermischen Gleichgewicht (maximaler Entropie) befindet.

Heisenbergschen Unsicherheitsrelation ausgedrückt.[64] Nietzsche drückte das als grundsätzliche Wissenschaftskritik mehr poetisch und etwas pointierter mit seinem Aphorismus zur Zahl aus:

Die Erfindung der Gesetze der Zahlen ist auf Grund des ursprünglich schon herrschenden Irrthums gemacht, dass es mehrere gleiche Dinge gebe (aber thatsächlich giebt es nichts Gleiches), mindestens dass es Dinge gebe (aber es giebt kein "Ding"). Die Annahme der Vielheit setzt immer voraus, dass es *Etwas* gebe, das vielfach vorkommt: aber gerade hier schon waltet der Irrthum, schon da fingieren wir Wesen, Einheiten, die es nicht giebt.[65]

2.4. Spannungsfeld von Theoretik und Pragmatik, Kausalität und Gestaltungsfreiheit

@:THEOPRAGMA

In Nietzsches Paragraph "*Von der Unbefleckten Erkenntnis*"[66] finden wir ein weiteres Spannungsfeld: *Theoretik* gegen *Pragmatik*, sowie: Notwendigkeit (*Anankae*), (Natur-) Gesetz, und *Kausalität*, gegen Entscheidungs- und Gestaltungs-Freiheit (*Poiaesis*).[67] Das Spannungsfeld von Theoretik und Pragmatik soll hier zur Verdeutlichung der Spannung zwischen den Tätigkeitsfeldern des *Gestaltens* (*Design, Pragmatik*) und der *Philosophie* als Unternehmen der *Theoretik*, des *Erkennens* und *Beschreibens*, dienen. Ohne Nietzsches Wertung explizit zu übernehmen, dient seine Beschreibung "*Von der Unbefleckten Erkenntnis*" zur Veranschaulichung: *Theoretik* als kognitiver Attraktor[68] nimmt an, daß es so etwas wie ein berührungsloses Betrachten der Dinge geben könnte, was aber (s.o.) thermodynamisch und informationstheoretisch unmöglich ist.[69] *Pragmatik* wird hier im Sinne Nietzsches als formender Eingriff in den Gang der Dinge "als Schaffende, Zeugende, Werdelustige" begriffen. *Pragmatik* beinhaltet, daß wir nicht nur in den selben Fluß nicht zweimal steigen können (Heraklit)[70], sondern daß wir durch unseren Eingriff den Fluß des Flusses selbst beein"*fluss*"en (Butterfly-Effekt). Wir können der Notwendigkeit der Folgen eines jeden Eingriffs nicht entkommen, und wenn wir schon "die Kreise stören"

---

[64] Thermodynamische Unbestimmbarkeit ist z.B. dadurch gegeben, daß jeder Messungsprozess einen Energieaustausch mit dem gemessenen System bedingt, der damit das zu messende System u.u. entscheidend beeinfluß (perturbiert). Dies ist zwar im Makrobereich meist zu vernachläsigen, aber es wird bei fortschreitender Miniaturisierung z.B. für die moderne Informationstechnologie ein wichtiger Faktor. Das Prinzip wurde von Brillouin in der "Austreibung des Maxwellschen Dämons" dargestellt.

[65] Nietzsche: Menschliches, Allzumenschliches I, Nr. 19; 2,40

[66] Zarathustra, II. Teil: "Von der Unbefleckten Erkenntnis"

[67] Zum Unterschied der aristotelischen Begriffe *Poiaesis* und *Praxis* bei Picht (1987: 38-40). *Poiaesis* ist das Hervorbringen eines dinglichen Werkes (*ergon*), während *Praxis* das Ziel (*telos*) in der Handlung selbst findet.

[68] Was natürlich im wirklichen Leben so nie vorkommt. Auch der idealistischste aller Philosophen muß sich auch um die pragmatischen Dinge des Lebens kümmern. Hegel konnte als Lebenszeit-Beamter des Preußchen Staats sein bekanntes idealistisches System entwickeln, ohne es der Probe der täglichen Anwendbarkeit auszusetzen. Die sog. *Philosophie* des *Pragmatismus* wurde vor allem in Amerika, von Peirce und W. James, entwickelt.

[69] s.a. Illich (1998)

[70] Heraklit B 12, 49a, "panta rhei" 65 A3.

(Archimedes)[71], dann wollen wir es eben *mit Lust* tun (Nietzsche), als *Designer.*[72] Goethes Faust-Thema gibt ein Beispiel dramaturgischer Behandlung essentieller Motive des kreativen Handelns, welches damit auch Zerstörung beinhaltet.[73]

Mit einem Rückgriff auf die alte Mythologie können wir auch das Design in den Kontext der philosophischen Grundthemen bringen. Dies sind die Begriffe der *Poiaesis,*[74] der *Dynamis,* und der *En-ergeia,* den Urthemen der *Zeugung* und der *gestalterischen Freiheit,* der in den alten Mythologien mit den *Archae*-Typen des *Daemiourgos,*[75] des *Prometheus,* des *Daidalos,*[76] und des *Hephaistos*[77] verbunden ist, und die gleichzeitig mit der altgriechischen Philosophie in der Kunst und Architektur die Grundlagen der europäischen Kultur gelegt haben. Die mythischen Bilder der griechischen Ur-Designer (*Archae-poiaeten*) zeigen uns aber noch einen essentiellen Aspekt, der im jüdischen Schöpfungsmythos der Genesis heraus-dividiert worden ist. Während Jahweh durch sein allmächtiges Schöpferwort einfach den Befehl geben kann: "Es werde Licht", hat der griechische Archae-poiaetaes immer mit den Umständen zu ringen, mit der Notwendigkeit (*Anankae*), der widerständigen Materie, die nicht einfach so herumzukommandieren ist. Dies drückt sich in den mythischen Bildern immer in allerlei Ungemach aus, das der Designer erdulden muß: Entweder ist er selber, in

---

[71] "Noli turbate circulos meos". Dieses berühmte Zitat läßt sich auch im tieferen kosmologischen Sinne interpretieren: Dahinter verbirgt sich die geometrische, ptolemäische Anschauung, daß die Bahnen der Planeten aufgrund göttlicher Symmetriegesetze kreisförmig sein müssen (der Kreis als die vollkommenste geometrische Figur, s.a. Platon, Timaios). Die beobachteten Planetenbahnen sind aber "gestörte Kreise", nämlich Ellipsen, die nach der ptolemäischen Sicht durch Epizyklen zustandekommen. (Spektrum d. Wissenschaft, Jan. 1993, p. 84, 86-87). Noch Kopernikus hat sich, trotz seiner "Revolution" des heliozentrischen Weltbildes (die so revolutionär nicht war, da es schon in der Antike bekannt war), noch zu diesem geometrischen Symmetrieprinzip bekannt. Erst Kepler hat es gewagt, diese göttliche Harmonie des Kosmos nachhaltig zu stören, bzw. durch seine eigene "Harmonice Mundi" zu ersetzen. S.a. (Haase 1998); Kepler (1982).
S.a. Brock (AGEU, p. 134): Der Bildsturz, sicherlich auch Entsprechung zu den damals durchgesetzten Auffassungen vom Heliozentrismus und der Kugelgestalt der Erde, löste den Betrachter aus dem Standpunkt, der ihm vor dem zentralperspektivisch organisierten Bildraum aufgezwungen wurde. um ihm eine gottähnliche Perspektive auf Geschehnisse zu ermöglichen: die Erfahrung der Gleichzeitigkeit und der Gleichörtlichkeit. Dem Betrachter wird so die gleichzeitige Durchdringung der organisierten Bildraumsysteme von den verschiedensten Standpunkten ermöglicht.

[72] Dieses Thema wird weiter unten, im Kapitel "Kultur im Spannungsfeld von Tradition und Innovation" näher behandelt. S.a. Bazon Brock: "Anschauen ist aber nichts Passives. Die Anschauung realisiert sich im Gehirn." http://www.uni-wuppertal.de/FB5-Hofaue/Brock/Projekte/NeuroAe2.html
Spengler (1980: 715): "Wachsein ist Tätigkeit im Ausgedehnten und zwar willkürliche Tätigkeit."... "Das Sehen eines hochentwickelten Auges... Hier besteht ein deutlicher Wille zum Empfangen von Eindrücken; wir nennen das Orientierung."

[73] ->:GOETHEFAUST, p. 34

[74] *poiaesis*: Hervorbringen, Erzeugen, Schaffen, Bilden, Bauen, Verfertigen (Handwerker, Küstler), Dichten, Dichtkunst, Poesie, Darstellung; *poiaetaes*: Verfertiger, Erfinder, Schöpfer, Gesetzgeber, Dichter, Schöpfer eines geistigen Werkes. Analog dazu, im Bereich der *Natura* (*naturans*), die *physis,* verbunden mit den Worten: *phyein, phyllo-,* und *phyto-.*

[75] Platon, Timaios

[76] *daidallo*: kunstvoll arbeiten, küstlich verzieren , schmüken, *daidalma*: Kunstwerk

[77] S.als Kontrast dazu, in Faust: *Mae-Phaistos*

seiner eigenen körperlichen Form, mißgestaltet (Hephaistos),[78] oder er wird von den Göttern schrecklich bestraft (Prometheus),[79] oder es sind seine Kunstwerke selber, die ihn in immer weitere Probleme bringen (Daidalos). *Poiaesis* steht in einem existentiellen Spannungsfeld zwischen "Design oder Nicht-Sein".

2.5. Das Spannungsfeld von Form und Substanz

@:FORMSUBST

Eine wesentliche weitere methodische Grundlage der vorliegenden Arbeit entwickelt sich in dem Spannungsfeld von *Form* und *Substanz*. Dies betrifft eine philosophische Grundfragestellung nach dem Wesen der Dinge: Entweder wir fragen danach, *was es ist*,[80] seiner *Substanz*, oder wir fragen: *was ist seine Form*, bzw. sein *Muster*? [81] In der europäischen Philosophie-Tradition ist die Frage nach dem Muster mit Pythagoras und seiner Schule verbunden, in seiner Nachfolge mit den Gnostikern, und den Alchemisten, wir finden sie in der *Morphologie* Goethes, im 19. Jh. bei Lamarck, und im 20. Jh. u.a. bei Gregory Bateson. Die vorliegende Arbeit basiert auf dem Prinzip der *Form*, und der *Formveränderung*, der *Meta-Morphose* Goethes, deren numinoses Sinnbild *Proteus* war, der altgriechische Meeresgott der Verwandlung, der die ewig fließenden und formenden Kräften des Wassers personifizierte[82]. Die "Systematik der Formen kultureller Transmission" wird in einer *Meta-Morphologie der Transmission kultureller Muster* entwickelt.

---

[78] Schmiede-Mythen portraitieren oft mißgestaltete Menschen, s. a. "Wieland der Schmied", und die Schmiede-Zwerge in der 'klassischen Walpurgisnacht' in Goethes Faust.

[79] Zum Mythos des Prometheus, dem "vorbedacht Handelnden", s.a. Bazon Brock, AGEU, p. 136-137. Im menschlichen sozialen Kontext sorgen die *Autoritäten des Establishment* dafür, daß Charaktere, die mit allzu kreativen Einfällen Unruhe stiften, ihre gebührende Strafe finden. S.a.: "Kultur im Spannungsfeld von Tradition und Innovation": "*Innovation wird als gefährlich oft empfunden, weil stets sie mit Veränderung verbunden*". ->:INNOVATION_GEFAHR, p. 83

[80] also sein statisches *Sein*, Ontik

[81] Der folgende Absatz nach Bateson (1972: 449). S.a. Whitehead (1969: 34), ->:WHITEHEAD, p. 114
S.a. Schrödinger (1951: 27-31), p. 31: "Die Substanz hat ihre Rolle ausgespielt".

[82] Die morphologische(n) Schule(n) nach Goethe werden weiter unten behandelt. Goethe gibt den alles formenden und erzeugenden Kräften dieses Elements ein grandioses Denkmal in Faust (8033-8487) "Felsbuchten des ägäischen Meeres", in einem der szenischen Höhepunkte des gesamten Werkes, dessen phantastischer Bilderreichtum ein einziger Hymnos an die zeugende Kraft des *Kosmogonischen Eros* des Wassers ist. (S.a.: Goethe (1972: 571-582); Klages (1981,III: 353-498)). In diesem Zusammenhang ist das Spannungsfeld der geomorphologischen Erkenntnispositionen der *Neptunisten* und *Plutonisten* erwähnenswert. (Kriz 1998). Goethe war *Neptunist*, nahm also das Element Wasser als bestimmendes in der Erdgeschichte an. Zwar ist diese Position heute überholt, aber das dahinter stehende Spannungsfeld der Erkenntnispositionen der Fokussierung auf das *Flüssige* oder das *Feste* ist weiter aktuell. So ist Leben aus diesem Spannungsfeld entweder durch substantielle Faktoren bestimmt (Kohlenwasserstoff-Verbindungen wie RNS, DNS, Proteine, Kohlehydrate), oder aber von flüssig-dynamischen: Hydrodynamik und -Mechanik, und Ionenprozessen. Im politischen Bereich spricht Karbe (1995: 20, 34) die grundsätzlich unterschiedlichen politischen Ausrichtungen des wasserbasierten Systems von Venedig (in der Nachfolge der griechischen und phönizischen Seefahrerstaaten) gegen die sonst vorherrschenden land- und territorial-basierten Staatsformen an.
->:SOCIODESIGN, p. 89 ->:MEPHAISTOMORPHOSE, p. 37

2.6. Tri- und mehrpolare Attraktoren

@:TRIPOLAR

Wie oben schon gesagt, sind *bipolare Attraktoren* weit bekannt, weniger vielleicht *mehrpolare*. Die genauere Klärung ihrer Existenz und ihrer Gesetze liegt jenseits der Themenstellung der vorliegenden Arbeit. Im vorliegenden Kontext wird das Thema pragmatisch in einem solchen Spannungsfeld behandelt. Es sollen hier lediglich einige Seitenblicke angerissen werden: In der Metapher des gravitationalen Feldes finden wir das *Dreikörperproblem*, also die gegenseitige Anziehung von drei Massen, dessen Verhalten (i.e. die Berechnung ihrer Bahnen) mathematisch unlösbar ist, und es stellt einen der Grundtypen eines chaotischen Systems dar. Die geistesgeschichtlichen Hintergründe und Bezüge des *tripolaren Attraktors* wurden von Cyrill v. Korvin-Krasinski (1986) in "Trina Mundi Machina" bearbeitet. Peirce hat eine ähnliche grundlegende Klassifikation mit seinem Kategorien-System von *Firstness*, *Secondness* und *Thirdness*, entworfen. Eine skizzierte Darstellung der "Trina Mundi Machina" als "Entity-Relation-Transaction" Triade befindet sich im Materialteil.[83]

@:TRISPANNUNG

Das tripolare Spannungsfeld der Zerstörungsfaktoren der kulturellen Transmission wird gebildet von den zu vermeidenden Polen[84]:

1) Zerfall: Die Tendenzen der entropischen Zersetzung, und Auflösung.[85]

2) Erstarrung: Die Tendenzen von mechanischer, rigider Transmission, Gerontokratie.[86]

3) Hypertrophie: Die Tendenzen des chaotischen, und blinden Wildwuchses, Jugendwahn.[87]

Die anzustrebenden, gegeneinander auszubalancierenden, Maximen des guten kulturellen Design wurden oben schon genannt:

1) Das *Bewahren*, die *Tradition* des Erreichten, die *Fortpflanzung* der kulturellen Güter und Errungenschaften von der Vergangenheit in die Zukunft.

2) Die *Kreativität*, die *Permanente Neugestaltung*, die *Selbst-Erneuerung* der "Kultur".

2.7. Das Spannungsfeld der Sprachen: Griechisch, Deutsch, Englisch

Die vorliegende Arbeit bewegt sich in dem Spannungsfeld von drei Sprachen: *Altgriechisch*, *Deutsch*, und *Englisch*. Auch hier ist es ein Designthema der Arbeit, diese Spannung nicht zugunsten einer einzigen Sprache aufzulösen, sondern sie als ein wesentliches Element des

---

[83] ->:ERT_TRIAD, p. 135

[84] In Anlehnung an die Odyssee eine tripolare "*Skylla* und *Charybdis* "-Situation.
Spengler sah in seinem Hauptwerk "Der Untergang des Abendlandes", die kulturelle Situation einseitig unter dem (eukaryotischen) organischen Paradigma. "Kultur" ist aber, wie die prokaryotische Transmission, *potentiell unsterblich*.

[85] Als Beispiel für metaphorische Anwendung der Entropie auf soziale Verhältnisse: Woehlcke (1996).

[86] Siehe z.B. die katholische Kirche, die Tradition der zentralaustralischen Aborigines.

[87] Auch als "Kreativität um jeden Preis" bekannt. Z.B. in der chinesischen Kulturrevolution.

Arbeitsprozesses, als Dynamis, und als "Difference that makes a Difference" (Bateson),[88] als Werdendes, nicht Gewordenes, mitzuführen, und, als angewandtes Sozio-Design, den Leser in diese Dynamik mit einzubeziehen.

Zu Altgriechisch: Das Kernthema der Arbeit, die kulturelle Transmission, zeigt sich in einem Negativbild anhand des kulturellen Bruchs, der zwischen der altgriechischen Wurzel des europäischen Denkens,[89] und den modernen europäischen Sprachen besteht. Ein Symptom dieses Bruchs ist die heute praktisch verlorengegangene klassische Sprachkenntnis. Zwar bestehen die wissenschaftlichen Vokabularien zu einem großen Teil aus griechischen und lateinischen Termini, aber ihre Verwendung entspricht oft nicht mehr den ursprünglichen Bedeutungen der Worte (z.B. der Begriff der "Energie", s.o.). Im Unterschied zu den chinesischen Klassikern, wie Konfuzius und Lao Tse, die die heutigen chinesischen Gelehrten noch im Original lesen können,[90] müssen wir bei Homer und Hesiodos, Heraklit, Parmenides, Platon, und Aristoteles, meist auf Übersetzungen zurückgreifen. Diese sind aber leider nur Notbehelfe, und beinhalten oft eine subtile Verfälschung.[91] Im vorliegenden Kontext soll anhand einiger ausgewählter Beispiele die "Difference that makes a Difference" zwischen dem altgriechischen Denken und der Welt der modernen europäischen Sprachen demonstriert werden. Dazu dient auch der Exkurs in Goethes Faust im folgenden Abschnitt. Dort soll u.a. der subtile und in modernen Sprachen nicht wiederzugebende Bezug zwischen dem antiken Konzept des *phainomenon*, und den Worten *phaino*, *phos*, und *phonae*, näher betrachtet werden.

Zur "Difference that makes a Difference" zwischen Deutsch und Englisch: Hier ergeben sich vor dem Hintergrund der gemeinsamen Zugehörigkeit zu den modernen indo-europäischen Sprachen, die mit dem (lateinischen) Alphabet geschrieben werden, viele bedeutsame Unterschiede, die im vorliegenden Kontext ihre Relevanz für das angewandte Sozio-Design haben. Sprache umhüllt und formt alle unsere Gedanken auf direkte und subtile Weise.[92] Ob die Sprache unsere Gedanken auch determiniert, wie es z.B. in der Sapir-Whorf-Hypothese[93] angenommen wird, oder wo man die Grenzen der Sprache ansetzen muß (sind Musik und

---

[88] ->:MORPHOLOGY, p. 128

[89] Snell: "Naturwiss. Begriffsbildung im Griechischen", in Gadamer (1989: 21-42).
Heidegger (1977b: 8): Die Übersetzung der griechischen Namen in die lateinische Sprache ist keineswegs der folgenlose Vorgang, für den er noch heutigentags gehalten wird... Das römische Denken übernimmt die griechischen Wörter ohne die entsprechende gleichursprüngliche Erfahrung dessen, was sie sagen, ohne das griechische Wort. Die Bodenlosigkeit des abendländischen Denkens beginnt mit diesem Übersetzen.

[90] ->:CHINESE_WRT, p. 178, ->:CHINESE_ALTERN, p. 186

[91] S. Ortega Y Gasset (1996, IV: 126-151), "Glanz und Elend der Übersetzung", das Traduttore - Traditore-Wortspiel im Italienischen p. 127; Heidegger (1976b: 245).

[92] Whitehead (1969: vii, 17)

[93] Whorf (1956), Sapir (1972). Pinker (1995: 60 ff) polemisiert ausgiebig gegen Whorf:
Pinker (1995: 61): ... Whorf did not actually study any Apaches; it is not clear that he ever met one. His assertions about Apache psychology are based entirely on Apache grammar - making his argument circular.

Mathematik als Sprache anzusehen oder nicht?), sind Detailfragen, die hier nicht wesentlich sind. Der Werdegang der Sprachen Englisch und Deutsch korrespondiert auch mit den Schicksalen ihrer Völker.[94]

Würde man Englisch und Deutsch als Ergebnisse eines geplanten Sozio-Design-Unternehmens der letzten ca. 1000 Jahre untersuchen, so wäre der enorme Erfolg von Englisch sicher einer der wichtigsten zu vermerkenden Faktoren. Englisch ist die heute am weitesten verbreitete Sprache der Welt,[95] und praktisch die "lingua franca" der Geschäftswelt, der modernen (Natur-) Wissenschaften und vor allem des Internet. Wer heute an den extrem schnellen Publikations-Zyklen des Internet und damit dem Fortschritt der Wissenschaften, teilnehmen will, muß sich dem Gesetz der allgemeinen breiten Verfügbarkeit, dem "Publish or Perish" beugen, und auf Englisch schreiben. Im Fall der vorliegenden Arbeit empfiehlt die Integration mit anderen WWW-Publikationen und die geplante Veröffentlichung als WWW-Hypertext zumindest die Abfassung des Materialteils in Englisch.

Beide Sprachen gehören der germanischen Subgruppe an, und ein wesentlicher Unterschied liegt in der Komplexität ihrer grammatikalischen Strukturen, vor allem der Flexionen.[96] Englisch hat seine Grammatik zugunsten einer leichten Lernbarkeit und Verbreitbarkeit extrem vereinfacht, so daß es in mehrerer Hinsicht dem Chinesischen ähnlicher geworden ist, als den indo-europäischen Sprachen, wie dem Griechischen oder Deutschen. Die Ähnlichkeit mit dem Chinesischen ist auch darin gegeben, daß das Schrift-Englisch praktisch ideographisch geworden ist, da zwischen der Aussprache und der Schreibweise nur noch historisch nachvollziehbare Bezüge bestehen. Anders als im Deutschen, kann man durch Ablesen der Buchstaben eines Wortes kaum eine Vorstellung von der Aussprache bekommen. Eine weitere Eigenschaft, die Englisch als lingua franca prädestiniert, ist die Tatsache, daß sie einen extrem hohen Anteil von lateinisch-stämmigen Lehnwörtern enthält, was besonders wissenschaftliche Publikationen unterstützt: der einfache Satzbau, in Kombination mit dem sowieso für das jeweilige Fachgebiet speziellen (lateinisch-stämmigen) Fachvokabularium erleichtert die Ad-Hoc Konstruktion von speziell adaptierten Wissenschafts-Pidgins. Heute ist dieser Prozess weltweit zu beobachten, daß bei gleichzeitiger Standardisation auf Englisch als

---

[94] S.a. Spengler (1980: 741-742).

[95] was nicht bedeuten muß daß sie von der großen Zahl der Menschen gesprochen wird. Da liegt Chinesisch vorn.

[96] Paglia (1991: 195-196)

Pinker (1995: 61), zitiert die köstliche Parodie von Mark Twain, die hintersinnig mit der barocken deutschen Sprachstruktur auch gleich die dunkleren Seiten des deutschen Nationalcharakters diagnostiziert.

Bodmer (1985: 257-307), (p. 257): German is the most conservative... It has not gone far beyond the level of English in the time of Alfred the Great. Consequently it is the most difficult to learn... A brief account... will help to bring the dead bones of German grammar to life.

globale lingua franca eine große Proliferation von verschiedenen Fachgruppen-spezifischen Pidgin-Sprachen auf Basis Englisch mit speziellen Fachvokabularien entsteht.[97]

Deutsch hat sich im Kontrast hierzu, eine fast barocke grammatische Komplexität erhalten, die von den indo-europäischen Sprachen wohl dem Alt-Griechischen am meisten nahekommt, bzw. nur von Alt-Griechisch noch übertroffen wird.[98] Diese Komplexität, die zwar den Interessen einer fein abgehobenen, distinguierten Bildungselite entgegenkommt, (wie sie bis ca. 1914 als Gesellschaftsform in Deutschland auch die Herrschaft innehatte),[99] erschwert damit den Einstieg von Nicht-Muttersprachlern extrem, und vermindert damit die Popularität der Sprache.

---

[97] (Galinski 1996), Publikationen der TKE-Konferenzen, persöl. Kommunikation, Dr. Christian Galinski (Infoterm, Wien). S.a. Spengler (1980: 734-735).

[98] Wobei sich die Frage erhebt, welche Vorteile die Komplexität bietet. Z.B. ob sich hier die größren Möglichkeiten der feinen Nuancierung und Differenzierung auch subtilere Aussagen machen lassen. Es gibt viele Argumente für das Lernen von Altgriechisch und Deutsch.
S.a. Bodmer (1985)

[99] Inzwischen sind wir aber 85 Jahre, und zwei deutsche Totalzusammenbrühe weiter.

3. Goethes Faust: der Archae-Typ des Designs in Spannungsfeldern

@:GOETHEFAUST

Goethes Werk "Faust" bietet für die vorliegende Arbeit den *Archae-Typos* des *Designs in Spannungsfeldern*, die nach Goethe die Esszenz des Lebendigen ausmachen.[100] Das Zentralthema der *Metamorphose*, der beständige Wandel der Formen, das Goethes Lebenswerk wie ein roter Faden durchzieht, bietet hier in einer extrem kondensierten Ver-Dichtung[101] einen *uchronisch* wirkenden Kristallisations- und Ur-Sprungs-Punkt der oben genannten Spannungsfelder zwischen *Sein* und *Werden*, *Kreation* und *Zerstörung*, *Theoretik* und *Pragmatik*, *Freiheit* und *Notwendigkeit*.[102] Die persönliche Darstellung des Ringens von Faust als handelnden Aktor erlaubt nicht nur eine theoretische Betrachtung, sondern auch eine empathische, persönliche, Teilnahme an dem Drama, was auch die starke Wirkung und die zeitlose Aktualität des Stoffes in mehr als vier Jahrhunderten seit dem Faust-Buch von Spieß von 1587 erklärt.[103] Der "Faust" von Goethe ist auf mehreren Ebenen ein gutes Beispiel für die erfolgreiche kulturelle *Transmission* und *Gestaltung*.[104] Es ist eine lebendige Transmission und Wieder-Erneuerung des altgriechischen mythologischen und vorsokratischen Gedanken-guts. Der "Faust" stellt den Weg der abendländischen Kultur von den Ursprüngen in der altgriechischen und orientalischen Mythologie, über die mittelalterliche Alchemie, bis in die Moderne dar, wie schon Spengler gezeigt hat. Es ist leider im Rahmen dieser Arbeit nicht möglich, im einzelnen nachzuverfolgen, wie Goethes Denken auf die Gedanken von Schopenhauer und Nietzsche eingewirkt hat, und welche Verbindungen zu der heutigen thermodynamischen Sicht der offenen Systeme und der Kybernetik bestehen. Es sollen lediglich einige punktuelle Hinweise gemacht werden, über die Verbindungen zwischen dem Begriff der "Faustischen Kultur" bei Spengler, der Kulturmorphologie von Frobenius, und den "Patterns of culture" bei Ruth Benedict, und Gregory Batesons Zentralbegriff des "Pattern of Pattern" (Metapattern).[105]

3.1. Fausts Metanoia

@:FAUST_META

Am Anfang, der Szene in Fausts Studierstube (354-460), finden wir den Protagonisten, als typischen *Theoretiker* und Büchergelehrten, in einem Zustand, den man heute als *Midlife Crisis* bezeichnen würde. Er erkennt, daß er zwar vieles weiß, aber daß all sein Wissen nur tot

---

[100] ->:GOETHE_FAUST, p. 236 ->:FAUST_BRITT, p. 245
Safranski (1999): "Die Gegensätze bewirken eine Spannung, die das Lebendige zur Steigerung anreizt und nicht in einem Dualismus erstarren läßt. Licht und Finsternis sind solche Polaritäten, die zusammen die farbige Welt hervorbringen. Auch mit Gut und Böse verhält es sich so."

[101] (Strecker 1988: 217-219)

[102] Metamorphose: Cassirer (1959: 175), Paglia (1991: 255); s.a. Goethes Methode des Dilettantismus, Stratmann (1995: 87); Einwirkungen von Heraklit auf Goethe: Heraklit 1976: 53-54.

[103] Der Faust-Stoff vor Goethe: Erste Erwähnung in einem Brief des Johannes Trithemius, 20.8.1507, Spieß 1587, Marlowes Faust (1604), und die Faust-Legende als Puppenspiel-Aufführung, das Goethe in seiner Kindheit sah. U.a. Referate: Dornach (1999); Campbell (1996, IV: 683-716), Spez. Faust: (1996, IV: 711-714). Weitere heutige Aktivitäten: Weimar 1999.

[104] Cassirer (1994: 123)

[105] Verbindung zu Ruth Benedict: Bateson (1979: 211-212); Metapattern: Volk (1995)

und steril ist, und weiter denn je von der Quelle der Schöpfung, der *Poiaesis* und der *Physis*, entfernt ist. In der Szene der Übersetzung der Stelle aus Joh. 1.1. (1224-1237) läßt Goethe seinen Protagonisten einen *Paradigmenwechsel* (oder *Metanoia*)[106] durchmachen. Faust wandelt sich vom *Theoretiker* zum *Praktiker*, indem er das "*en archae en ho logos* (Im Anfang war das Wort)" neu übersetzt.[107] Faust ändert die Übersetzung in: "*Im Anfang war die Tat*" (1237). Da das Ganze aber ein alchymischer Prozess ist, verändert er auch damit sich selbst, seine eigene psychische Grundstruktur (*Metanoia*), und eröffnet damit in seiner Seele den Raum für das Erscheinen des *Mephistopheles*.

3.2. Mephistopheles und Mae-phaistos

@:MEPHAISTOS

Die Tiefgründigkeit und Tiefsinnigkeit der Anspielungen an die antike Mythologie, Hesiodos und die Vorsokratiker, und die Alchemie, läßt sich nicht direkt aus dem Faust-Text entnehmen, sondern muß aus dem erschlossen werden, was Goethe *im Verborgenen* läßt.[108] Dazu ein kurzer Exkurs zu dem Wort "Mephistopheles" und seine Verbindung zu dem Goetheschen Zentralthema der *Metamorphose*. In (1331-1332) sagt Faust wohl nicht ohne Grund: "Bei euch, ihr Herrn, kann man das Wesen gewöhnlich aus dem Namen lesen", das ist ein genügender Anlaß, sich einige tiefergehende Gedanken zu dem "Wesen des Namens *Mephistopheles*" (nomen est omen) zu machen. Es ist wahrscheinlich hebräischen Ursprungs (*Mephiz*, Zerstörer and *Tophel*, Lügner) aber es läßt sich sehr gut für griechische Wortspiele (*Metamorphosen*) verwenden,[109] die alle im Faust-Kontext einen Sinn ergeben. Melanchthon hat es als *mae-photo-philaes* (Nicht-Licht-Freund) interpretiert. *Mephisto* läßt sich aber auch als Anklang auf *pistis*, den *Pakt* ausdeuten, den er mit Faust schließt. Oder es kann ein Anklang auf *hephaistos* sein, den olympischen Schmiedegott (der hinkte, und immer an rauchigen Feuern stand), der auch als *ho phainon* bekannt war.[110] Das Verb *phaino* ist mit dem modernen Wort *Phänomen*[111] verwandt, und bedeutet: Zum Licht (Leuchten) oder zum Klang (Klingen) bringen, und verbindet damit die Worte *phos* (Licht) und *phonae* (Klang).[112] Nebenbei ist *ho phainon* auch der Name für den Planeten (und die alchymische Kraft) *Saturn*.

---

[106] (Matth. 4, 17), s.a. die Verbindung mit *tropae -> en-tropie*; *tropae* (*trepo*): das Umwenden, Umkehr, Rükkehr, Wendung, Veräderung.

[107] ->:FAUST_METANOIA, p. 237, ->:LOGOS, p. 197

[108] Heidegger (1976b: 203): Die "Lehre" eines Denkers ist das in seinem Sagen Ungesagte, dem der Mensch ausgesetzt wird, auf daß er dafür sich verschwende.

[109] Zur Verwendung von Wortspielen als konstruktives Prinzip: ->:DESIGN_ZEIT, p. 18

[110] Der Schmiedegott, *ho phainon*, ist der Meister der hellglühenden und glänzenden Metalle, und die Schläge seines Hammers auf dem Amboß bringen sie zum hell-erklingen. (Hier auch die Deutsche Verbindung von *hell* in Licht und Ton, das Hallen, sowie die Laut-Ähnlichkeit von *kling-*, *klang-*, und *glanz-*).

[111] S.a.: das *phainomenon*, Heidegger (1977a: 38-42), Peirces Begriff des "*phaneron*" Peirce (1931-1958): CP 1.284

[112] Eine weitere naheliegende Verbindung läßt sich zwischen *phaino-* und *nous*, *noein*, dem Erkennen im Lichte des Logos, ausmachen. Siehe dazu auch den berühmten Satz des Parmenides (B1, 1,21): "to gar auto noein estin te kai einai" (wahrlich, dasselbe ist Erkennen und Sein).
->:LOGOCENTRISM, p. 197

Das *Mae-phaistos* kann also als Verneinung von *phainon* gedeutet werden, was auf das *Verborgene* hinweist, das Goethe hier mit allen seinen Untertönen in das Faust-Drama einbringt.[113]

3.3. ex archaes - en archae

@:EX_ARCHAE

Der Stelle Joh. 1.1. christlicher (hellenistischer) Version, entspricht (im Verborgenen) die altgriechische Version der Theogonie von Hesiodos[114]: "*ex archaes... hoti proton genet auton* (vom Ursprung an... was von ihnen zuerst entstand)", und weiter: "*aetoi men protista Chaos genet, autar epeita Gai' eurysternos*" (wahrlich, im Ursprung entstand das *Chaos*, aber dann die breitbrüstige *Gaia*...) (Theog., zl. 116-117, siehe auch Faust 455-459). Kontrastieren wir nun beide Stellen: "*en archae ... logos*" (Joh.) gegen "*ex archaes ... -> Chaos -> (Chaea)[115] Gaia (Gaea) -> Rhea -> Hera*" (Hesiodos). Wenn wir Fausts Formulierung zurückübersetzen: "*Im Anfang war die Tat*" (*en archae ... ergon*), und die Wort-Klänge ineinanderfließen lassen,[116] so erhalten wir ungefähr: "*en ar...chae... chaos... gaea -> en-er-geia -> ergon*".[117] Diese Wort-Klänge weisen uns auf ein Ur-Spannungsfeld hin, zwischen *en-ergeia* (die Kraft, die zum Werden bringt) und *ergon*, (das Gewordene, das Werk, die Tat) (W.v.Humboldt),[118] oder Lateinisch: *Principium non est principiatum*. Daß *en-er-geia* "zufällig" so klingt wie eine Klang-Überleitung zwischen "en archae" und "chaos" und "gea" kann in diesem Kontext nicht weiter verfolgt werden. Goethe läßt in der kurzen Szene "Finstere Galerie" (6173-6306) seinen Protagonisten Faust den Gang ins *Ungeformte*, in das *A-Peiron* des Anaximandros, antreten.[119] Dies ist das Reich "*der Mütter*", der *materia*,[120] der Be-reich jenseits alles

---

[113] S.a. Heraklit B 54

[114] S.a. Höscher (1989), Kaiser (1980), Heidegger (1976b: 240): Hölderlin, Hymne "Wie wenn am Feiertage..." (III. Strophe); Gebser (1973: 15-16).

[115] Gaia hat sichtbare, fruchtbringende Aspekte, die in den späteren Götinengenerationen als *Demeter*, *Hestia*, etc. bezeichnet werden, und unterirdische, unsichtbare, verborgene, verderbliche, zerstörende Aspekte, die meist als *chthonisch* bezeichnet werden, bzw. *Persephone*, oder *Kali* im Indischen. Walker (1993): *Altes Weib*, *Demeter*, *Dreieck*, *Hestia*, *Kali Ma*, *Persephone*.

[116] In der alchymischen Sprache des Dr. Faustus: *solve et coagula / diaballo, metaballo, symballo*.

[117] Bei der obigen Wortverbindung kommt nicht so sehr darauf an, ob sie etymologisch begrüdet ist, sondern welche Verbindung der *Aoide* (altgriechischer Ependichter / Säger) in der Assoziation seiner Zuhörer projizieren kann. Es dreht sich hier um die Anwendung der gestalterischen Freiheit oder des Design in der *Gestaltung von Verbindungen*. Die *Gestaltung* und *Formung von Worten* war eine Hauptaufgabe der Sprachschöpfer der Antike, in dem Sinne, wie Platon in Kratylos (390e) Homer den *daemiourgon onomaton* nannte. Und das ist nicht nur auf die graue Vorzeit beschräkt. Heidegger hat in seinen Werken viele solcher Kunstgriffe angewendet, und wir könten dieses Verfahren ihm zu Ehren den *Heidegger-Operator* nennen. Mit einem kurzen Seitenblick in die Biologie: Wenn dort ausschließch nur Regeln wie die der Etymologie angewandt werden könten, wäre es unmöglich, einen Vergleich zwischen der Flosse des Haies und des Delphins zu machen, oder dem Auge des Wirbeltiers und des Polypen. Letztere entstammen von stammesgeschichtlich nicht verwandten Evolutionslinien. S.a. Portmann (1974: 52), Spengler (1980: 734-735, 743-744), Cassirer (1994: 114-115) zu der Rolle von Goethe in der Neuschöpfung in der deutschen Sprache.

[118] Humboldt (1963: 41)

[119] ->:SPANNUNGSF, p. 22

Reichenden, Greifenden, Tastenden, Fassenden, das Grenzenlose: "In deinem Nichts hoff' ich das All zu finden" (6256). Der Besuch Faustens in diesem Reich findet, verständlicherweise, ohne Teilnahme der Zuschauer, im *mae phainon*, im Verborgenen, statt, ebenso wie sein späterer Gang zu Persephone, um Helena an die Oberwelt zu holen.

Mit der Einführung des Mephistopheles bringt Goethe auch die archaische Göttergeneration zur Wieder-Auferstehung, die in der Hesiodschen Theogonie[121] (119-132) als erste aus dem Chaos entstanden ist.

Ich bin ein Teil des Teils, der anfangs alles war, / Ein Teil der Finsternis, die sich das Licht gebar, / Das stolze Licht, das nun der Mutter Nacht / Den alten Rang, den Raum ihr streitig macht (1348-1352) / Des Chaos wunderlicher Sohn (1384)

In der Szene der "Klassischen Walpurgisnacht" verwandelt (Metamorphose) sich Mephistopheles in eine der Ur-Meergöttinnen der Phorkyaden (7984-8033).

(Meph.) Da steh' ich schon, / Des Chaos vielgeliebter Sohn! / (Phorkyaden) Des Chaos Töchter sind wir unbestritten / (Meph.) Man schilt mich nun, o Schmach, Hermaphroditen. (8027-8029)

3.4. Mephistopheles als Agent der Metamorphose

@:MEPHAISTOMORPHOSE

Diese Stelle, der *herm-aphroditaes* als "Des Chaos vielgeliebter Sohn" ist ein weiterer Schlüssel zu seiner Identität, denn in den Orphischen Hymen ist er auch als der *Protogonos*,[122] der *Erikepaios*, der *Phanes (phaino)*, and der *Priapus*[123] bekannt, (Orpheus 1992: 29). Der Wort-Teil *-pheles*, kann sowohl in *-philaes* (Freund) anklingen, als auch *phaeraes*, (Träger -> *phos-phaeraes = Lucifer*)[124], als auch *phalaes ~ phallos*, also das männliche Zeugungsorgan, verweisend auf den *Priapos*.[125] Nach Graves (1988: 30) ist er auch der *Eros*,[126] der aus einem silbernen Ei geschlüpft ist, das von Nyx (der Nacht) in den Schoß der Dunkelheit gelegt worden war, und er setzte das Universum in Bewegung. Eros war doppel-geschlechtlich[127] und hatte goldene Flügel, er hatte vier Köpfe, mit denen er manchmal wie ein Bulle oder ein Löwe brüllte, manchmal wie eine Schlange zischte, und manchmal wie ein Widder blökte. Wir finden hier also einige wesentliche Facetten dieser enigmatischen Gestalt, die uns in der christlichen Sichtweise als der *Teufel* (von *Diabolos*[128]) bekannt ist, und die "im Anfang alles

---

[120] Anspielung auf das *hylae-morphae-* (*materia-forma-*) Prinzip des Aristoteles. *Mater =Mutter*. Materie ist weiblich, Form ist männlich. S.a. die modernen Vorstellungen von *In-Formation*. (Capurro 1978); (Hoffmeyer 1996: 62-67).

[121] s.a. Raible (1991: 172 ff.)

[122] *Protogonos*, der *Erstgeborene*. Eine Ähnlichkeit besteht ebenfalls mit *Proteus*, dem Gott der immer wechselnden Formen (Meta-morphosis). s.a. Hesiodos, ln. 115: *hoti proton genet auton*.

[123] (Encarta: Priapus): Priapus, in Greek mythology, god of fertility, protector of gardens and herds. He was the son of Aphrodite, goddess of love, and of Dionysus, god of wine, or, according to some accounts, of Hermes, messenger of the gods. He was usually represented as a grotesque individual with a huge phallus.

[124] Faust (1377): "Hätt' ich mir nicht die Flamme vorbehalten"

[125] Heraklit B 14, 15

[126] S.a. Klages (1981, III, 353-498): "Vom kosmogonischen Eros"; (Hesiodos 1978: 29, 30)

[127] zur Mythologie und Ethnologie der Doppel- (Mehrfach-) Geschlechtlichkeit: Baumann (1955)

[128] *diaballo*, durcheinanderwerfen, verwirren.

s.a.: Stanford (1996), p. xv: "Christianity created the monster that became the devil."

war" (1348). Die folgende Darstellung ist, wenn man daraus die christlichen moralin-sauren Anteile neutralisiert, eine Re-formulierung des Anaximandros-Fragments:[129]

Und das mit Recht; denn alles, was entsteht, / Ist wert, daß es zugrunde geht; / Drum besser wär's, daß nichts entstünde. / So ist denn alles, was ihr Sünde, / Zerstörung, kurz das Böse nennt, / Mein eigentliches Element. (1335-1344)

Die fehlende Integration der essentiellen Kräfte des Vergehens, des Abbaus, oder in heutiger Sprechweise, der *Entsorgung*, im abrahamitischen Schöpfermythos ist, wie Bazon Brock darstellt, ein entscheidender Defekt der westlichen Zivilisationen, deren kulturelle Leitthemata noch immer auf diesem Schöpfermythos beruhen:

Brock (AGEU, 185): Der **Mythos des schöpferischen Hervorbringens** ergibt aber ohne sein Pendant, die Fähigkeit etwas aus der Welt zu bringen, die Konsequenz, daß die Welt langsam vollgestellt wird mit all dem, was in ihr vorher nicht existent war. Das heißt, daß der Schöpfer oder das Kollektiv der schöpferischen Menschen die Welt gerade dadurch zerstören, daß sie ununterbrochen und immer schneller die Welt mit den Produkten ihrer Schöpfungsfähigkeit verstellen.

Also weit davon entfernt, in der Gestalt des Mephistopheles das Ur-Böse zu sehen, könnte man ihn sinnvoller als den *Schutzpatron der Ökologen* ansehen.[130]

In (1353-1377) stellt sich Mephistopheles als die archaische Kraft des Chaos dar, des Werdens und Vergehens, der Dynamis, der Veränderung, und der Bewegung: "Mit Wellen, Stürmen, Schütteln, Brand", die in der heutigen Wissenschaft das Thema der Thermodynamik und Chaostheorie ist. Mephistopheles wird von Goethe im Faust als Agent der *Metamorphose* dargestellt. Die Wandlung der Formen ist ein Prozess, der selten harmonisch und ohne Störungen verläuft, meist aber mit Brüchen und Kämpfen, und Zerstörung alter Formen verbunden ist. Dies verbindet den Faust-Stoff mit heutigen wissenschaftlichen Fassungen wie der Katastrophentheorie von R. Thom.[131] Es sei daran erinnert, daß das griechische Wort *tropae* ursprüglich "Umkehr, Rückkehr, Wendung, Veränderung" bedeutete, und der Begriff *en-tropia* bedeutete also "Kraft, Potential zur Veränderung".[132] Der aktuelle physikalische

---

[129] ->:SPANNUNGSF, p. 22

[130] S.a. Gumilev (1990: 346-353, 355). Bei Bachofen (1925: 301-422) ist das Thema des *Oknos* eine Darstellung, wie die Antike die notwendige Komplementarität von *Physis* (Natur-Schöpfung) und *Lysis* (Auflösung) deutlich machte. Daher wurde *Eros* auch der *lysimelaes* (gliederlösende) genannt (Hesiodos 1978: 16, 29, 30, 53: ln. 121). ->:WEAVING, p. 165

[131] Safranski (1999): "Natur als schöpferischer Prozess, das bedeutet Polarität und Steigerung. Das war Goethes dialektische Formel" ... "Zwischen Faust und Mephisto gibt es genau jene polare Spannung, die zur Steigerung führt." ... "Goethes Weltspiel zeigt, wie über längere oder kürzere Kausalreihen das gelingende Leben hier die Zerstörung von Leben dort zur Folge hat."
Thom (1975: 323): "Our models attribute all morphogenesis to conflict, a struggle between two or more attractors. ->:SPANNUNGSF, p. 22
Paglia (1991: 248-259): "All of Faust is a Walpurgisnacht, ... the great mix, of classical with Christian culture, tragedy and comedy, epic with lyric"... "sex change of Mephisto, as Phorkyas"

[132] Die Verbindung von *tropae* zur *strophae* im musikalischen Bereich wurde schon erwähnt. Die griechische Bedeutung von *melos* erzeugt eine eher ungewöhnliche Assoziation, als: *Glied*, *Lied*, *Singweise*, *Melodie*, *Harmonie*. So ist der oben erwähnte *Eros lysimelaes* derjenige, der nicht nur die *Glieder* löst, sondern auch die *Lieder*, bzw. sie in ihre Wendungen bringt: *{s}trop{h}ae -> en-strophia*. Bemerkenswert ist hier die Ähnlichkeit, mit der der deutsche Begriff dem griechischen folgt.

Gebrauch ist aber eher das Gegenteil davon, da *Entropie* die Tendenz zum thermodynamischen Gleichgewicht, also dem Wärmetod, damit den unvermeidlichen *Verlust* des *"Potentials zur Veränderung"* bezeichnet. Eine ähnliche "Umwertung der Worte" wurde auch schon bei der Differenz der Begriffe der *energie* und *energeia* festgestellt.[133] Der Pakt mit Faust, und das folgende Drama entfaltet die Entfesselung dieser archaischen Kräfte, und ihr letztliches Sich-Selbst-Brechen im Tode. Das Wort *Mephistopheles* wirkt aus seiner Klang-Multivalenz heraus als ein unaufgelöstes semantisches Spannungsfeld, ein ursprünglicher (primordialer, *archae*) Attraktor, wie bei Thom beschrieben.[134]

3.5. Klang und Licht - Apollinisch und Dionysisch

Die *Klang / Licht* -Thematik des Mephistopheles wird ebenfalls in der hebräischen Genesis ausgedrückt: Gott sprach (*phaemae*, *phonae*) es werde Licht (*phos*). Nietzsche griff diese Polarität wieder auf, als er die Differenzierung von *Apollinisch* und *Dionysisch* aufstellte.[135] Auch wenn diese Götter nach Hesiodos einer späteren Generation angehören, wiederholen sie in ihrer Polarität den Dualismus von *Phos* und *Phonae*, von *Licht* und *Klang*, und von *Licht* und *Dunkelheit*, die in dem Wort *Mephistopheles* schon angeklungen sind. Die Verbindung zu Apollon geht über die *phos*- Wurzel, zu Dionysos über die *phonae*- Wurzel. Der Beiname von Apollon ist *phoibos*, der klare, strahlende, helle.[136] Er ist der Lichtgott, und übertragen, der Gott der klaren Rationalität, des *Logos*, wie er in Joh. 1.1. beschrieben wird.[137] Sein Gegenspieler ist Dionysos, der Gott des tosenden Lärms und der Dunkelheit, sowie des Rausches und der Ekstase (Orphischer Hymnus), der von der christlichen Religion zum *Diabolos* stilisiert worden ist.[138] Sein dionysisch- / mephistophelisches "Glaubensbekenntnis" drückte Nietzsche hier aus:

Die Bejahung des Vergehens *und Vernichtens*, das Entscheidende in der dionysischen Philosophie, das Jasagen zu Gegensatz und Krieg, das *Werden*, mit radikaler Ablehnung auch selbst des Begriffs "Sein" - darin muss ich unter allen Umständen das mir Verwandteste anerkennen, was bisher gedacht worden ist. Die Lehre von der "ewigen Wiederkunft", das heisst vom unbedingten und unendlich wiederholten Kreislauf aller Dinge - diese Lehre Zarathustra's *könnte* zuletzt auch schon von Heraklit gelehrt worden sein. Zum Mindesten hat die Stoa, die fast alle ihre grundsätzlichen Vorstellungen von Heraklit geerbt hat, Spuren davon. - (Ecce homo, Geburt der Tragödie, 3) [139]

---

[133] ->:THERMODYNAMIK, p. 25

[134] S.a. ->:DESIGN_ZEIT, p. 18

[135] S.a. Benedict (1934); Paglia (1991: 1-100); Lippe (1997: 76, 80, 104, 173-175).

[136] Apoll, der *phoibos* ist der Gott des Lichts: Ähnlich die Worte für Seh-Phänomene: *phos*, *photo-*, *phoos* und *phaos*. ->:PHAOS, p. 242

[137] ->:LOGOS, p. 197

[138] Stanford (1996)

[139] Siehe auch: Götzen-Dämmerung, Die "Vernunft in der Philosophie", 2. und: Faust (1377): "Hätt' ich mir nicht die Flamme vorbehalten"

4. Meta-Morphologie: Eine Systematik der Muster, ihrer Transmission, und ihren Veränderungen

@:MORPHOLOGIE

Morphologie von griech. *Morphae* (Form, Gestalt, Geste, Muster), engl: *pattern*[140], bedeutet im vorliegenden Kontext: *Eine allgemeine Systematik der Betrachtung von Patterns, Formen, Mustern,* oder *Gestalten.*[141] Im Sinne der Lehre der *Metamorphosen* nach Goethe bezeichnet damit *Meta-Morphologie* die Lehre der *Transmission*, und der Systematik der *Veränderungen* von Patterns. Der Fokus auf die Dynamik unterscheidet die Meta-Morphologie wesentlich von der klassifizierenden und eher statischen Morphologie der Biologie.[142] Der Faktor der Dynamik, "Kultur als Werden", findet sich auch in der deutschen Kulturmorphologie von Frobenius und Spengler, die sich auf Goethes Arbeiten zur Morphologie gründet. Der vorliegende Ansatz versucht in den folgenden Darstellungen, eine neue theoretische Basis im Sinne heutiger wissenschaftlicher Erkenntnis zu finden.[143] Der Begriff der "kulturellen Muster" (patterns of culture) wurde von Ruth Benedict (1934) in ihrem berühmten Werk geprägt. Sie formulierte dort auch ihre Grundunterscheidung von Kulturen in "Apollinisch" und "Dionysisch", und die Herleitung der Begriffe von Nietzsche. Sie war eine Schülerin von Franz Boas, welcher als Immigrant nach Amerika gekommen war, und in Deutschland u.a. bei Adolf Bastian, dem Gründervater der deutschen Ethnologie, am Berliner Völkerkunde-Museum gearbeitet hatte.[144] Adolf Bastian war als Universalgelehrter bestens mit den Klassikern vertraut, und kannte wie viele der gelehrten Deutschen seiner Zeit, den Faust wohl auswendig, sowie alle Details der alten Mythologien, die Goethe im Faust nur andeutet. Der bekannteste (und kontroverseste) kulturmorphologische Autor ist Spengler (1980). Ruth Benedict nimmt in ihrer Arbeit auf die Gestalt-Psychologie und die Kulturmorphologie Spenglers Bezug. Wohl noch bekannter als Ruth Benedict war eine weitere Schülerin von

---

[140] Das deutsche Wort "Muster" wird hier als Übersetzung des englischen Begriffs "*Pattern*" verwendet. *Pattern* weist in der genannten Literatur auf eine Gesetzmäßigkeit, und Regelmäßigkeit hin, die sich über alle Modalitäten der Wahrnehmung erstrecken kann.

[141] Frei Otto: Naturverständnis, (1985: 27). p. 32: "Morphologie greift die Konstruktionsebene lebender Energiewandler ab."
Eine dynamische Morphologie in der Biologie wird bei Darcy Thompson (1966) entwickelt: "On growth and form". Portmann (1974) bezieht sich zentral auf die Goethesche Morphologie. Zu Wölfflins Gestaltbegriff in der Kunst: p. 151. Bezug zu J.v. Uexküll, p. 153.
Mit Bezug auf Bazon Brocks Konzept des *Generalismus* (Stratmann 1995: 85-89) können wir Morphologie auch die "*Systematik des Allgemeinsten*" nennen. Ein *Morphologe* ist demnach ein *Spezialist für das Allgemeinste.*

[142] Weiteres Material zur biologischen Morphologie: R. Riedl (1990), Kauffman (1993: p. xxx)

[143] z.B. die von dieser Schule angefertigten globalen Verbreitungskarten kultureller Muster. Haberland (1973: 1-13). Da *Morphologie "die Lehre der Formen"* ist, sind inhaltliche Unterschiede nicht so gravierend. ->:MORPHOLOGY, p. 128, ->:GOETHE_MORPHOLOGY, p. 129, ->:KULTURMORPHOLOGIE, p. 131

[144] Fiedermutz (1990: 114), weitere Literatur: Bastian (1881), Bastian (1866-71), Bastian (1903), Jahoda (1992: 104-110), Schwarz (1909).
->:ADOLF_BASTIAN, p. 246

Boas, Margret Mead,[145] deren (zeitweiliger) Ehemann Gregory Bateson eine kybernetische Lehre von den "Mustern der Muster" (Patterns of patterns: *Metapatterns*) aufgestellt hat.[146] Batesons Begriff der *Information* (nicht mit der nachrichtentechnischen, von Shannon, zu verwechseln) ist: *Information is the difference that makes a difference*.[147]

4.1. Was *ist* ein Muster? Die neuronale Basis

@:WASMUSTER

Wie oben schon dargestellt, wird im vorliegenden Kontext keine starke Unterscheidung zwischen den verschiedenen möglichen Bedeutungen von *Morphae* gemacht: *Muster* (*pattern*) ist die allgemeine (generische) Bezeichnung für die unterscheidbaren Inhalte des Wahrnehmungsfeldes eines allgemeinen neuronalen Systems.[148] Die Verbindung mit Batesons Begriff der "*difference that makes a difference*" ergibt sich aus der Eigenschaft des Patterns als Differenzen-Feld im Wahrnehmungssystem.[149] Mit *Form* oder *Gestalt* kann ein spezieller Bereich des gesamten Feldes bezeichnet werden, der mit einer Auswahlfunktion (z.B. Bewußtsein) gerade fokussiert wird.[150] Ein Muster ist ein Berkeleysches Gebilde (*esse est percipi*)[151]. Seine "Existenz" (sein *Sein*) ist nicht, wie von Berkeley postuliert, von Gott abhängig, sondern davon, ob es von einem allgemeinen neuronalen System (biologisch oder technisch) prinzipiell erkennbar ist.

Von den Sinneszellen werden die Wahrnehmungsleistungen in Pulscodierungen der neuronalen Aktionspotentiale umgewandelt, und über verschiedene Zwischenstufen (Ganglienknoten / Rückenmark) ins Zentralnervensystem (Gehirn) geleitet. Von dort werden wiederum neuronale Pulscodierungen an die ausführenden (motorischen, endokrinen, exkretorischen) Körpersysteme geleitet. Das Gehirn befindet sich in ständiger neuronaler

---

[145] Margret Mead und Gregory Bateson hatten in der Zusammenarbeit in ihrer Ehezeit auf ethnographischem Gebiet bahnbrechende Arbeit bei der Einführung des neuen Mediums der Photographie für die Dokumentation visueller Phänomene in der Kultur geleistet. (Bateson 1972: 107-127).

[146] Wie er beschreibt, unter dem Einfluß von Benedicts Buch. Bateson (1979: 211-212).
->:MORPHOLOGY, p. 128, ->:CULTURE_PATTERN, p. 132

[147] Bateson (1972: 450-454)
(451): What is it in the territory that gets onto the map? ... in fact, [it] is *difference*, be it a difference in altitude, a difference in surface, or whatever. Differences are the things that get onto a map.
But what is a difference? A difference is a very peculiar
(452): and obscure concept. It is certainly not a thing or an event... if we start to ask about the localization of those differences, we get into trouble... Difference which occurs across time is what we call "change"... A difference, then, is an abstract matter.
(453): In fact, what we mean by information - the elementay unit of information - is a difference which makes a difference...

[148] S.a. Thom (1975: 10), ->:NEURONAL_PATTERN, p. 124
http://www.neurop.ruhr-uni-bochum.de/~porr/luhmann3/node4.html

[149] Brock (AGEU: 147): Bedeutungen entstehen für alle Menschen bei jeder Art von Tätigkeit nur dadurch, daß Menschen in der Lage sind, Dinge voneinander zu unterscheiden.

[150] S.a. Roth (1996: 213-247)

[151] Popkin (1956: 200-208). In Kontradistinktion zu Parmenides: "to gar auto noein estin te kai einai" (wahrlich, dasselbe ist Erkennen und Sein). (1974: B1, 1,21)

Aktivität, und seine Struktur, die synaptischen Verbindungen seiner Neuronen untereinander, ist in ständiger Veränderung. Die Neuronen des Gehirn selber vermehren sich aber nicht mehr. Während die Welt des Erlebens ihre charakteristischen sinnlichen Qualitäten (Qualia) aufweist, ist die Arbeitsweise des neuronalen Systems digital, sie beruht auf den Pulsfrequenzen der Aktionspotentiale. Das neuronale System bildet im Erkennen von Mustern wiederum selbst auf seinen Neuronen charakteristische Aktivationsmuster aus, bestehend aus Oszillationsfeldern und logischen Relations-Strukturen von *Neuronalen Assemblies*, die formal als gekoppelte dynamische Systeme und *Neuronale Attraktoren* behandelt werden, und deren Funktion durch ihre *Raum-Zeit-Dynamik* bestimmt ist.[152] Damit ist das *Pattern* auch die "Infrastruktur" der neuronalen Prozesse in unseren Gehirnen, *unterhalb*, und einige Millisekunden *bevor* sie in unserem Normalbewußtsein als *Phänomene* und *Noumena* (Denk-Dinge) erscheinen. Die Grundlage der *Erkennung* ist die *Differenzbildung* oder *Distinktion* (G. Bateson, s.o., und Bazon Brock: Neuronale Aesthetik).[153]

4.1.1. Muster-Transmission als "Sein in der Zeit"

Muster-Erkennung ist eine *aktive Handlung*[154]. Unter dem Paradigma der Prozess-Orientierung ist die *Transmission eines Musters* eine äquivalente Bezeichnung für "*Sein in der Zeit*" (im folgenden mit *Persistenz* abgekürzt). Wenn ein Muster[155] über eine feststellbare Zeit-Distanz transmittiert wird (oder sich selber transmittiert) dann "*ist*" es im ontischen Sinne.

Die damit verbundenen Grundprobleme, welcher "Natur" dieses (sich selbst) erhaltende Muster ist, sind seit der vorsokratischen Philosophie über Aristoteles (*physis*, *hylae-morphae*)[156] bis heute ebenso aktuelle wie ungeklärte Fragen.[157] Es ist hier nicht der Platz, diese hintergründigen Fragen näher zu behandeln, sondern es wird in pragmatischer

---

[152] ->:NEURONAL_PATTERN, p. 124

Breidbach (1993-1997), Brock (NeuroAe), Brock (1994), Calvin (1989), (1991) (1996a), Edelman (1992), Gazzaniga (1989), Haken (1992), Maturana (1982-1994a), Pöppel (1978-1995), Riegas (1990), Roth (1996), Schmidt (1987, 1991), Spitzer (1996), Mühlmann (1996: 30);

Brock: http://www.uni-wuppertal.de/FB5-Hofaue/Brock/Projekte/NeuroAe2.html,

Howard Bloom: Tools of Perception - The Construction of Reality: History of the Global Brain, Part VII, http://www.heise.de/tp/deutsch/special/glob/default.html

[153] Anthropologische Konstanten, Distinktionismus, Brock, AGEU, p. 12-13, Neuronale Ästhetik: http://www.uni-wuppertal.de/FB5-Hofaue/Brock/Projekte/NeuroAe1.html , .../NeuroAe2.html , .../NeuroAe3.html

[154] Brock, Neuronale Ästhetik:

http://www.uni-wuppertal.de/FB5-Hofaue/Brock/Projekte/NeuroAe2.html

Der Beweis wird durch die sog. *Gestaltbilder* erbracht: Hier läßt das erkennende neuronale System im aktiven Auswahlverfahren entweder die eine oder die andere Variante als *phainomenon* erscheinen. ->:GESTALT_SWITCH, p. 123

[155] Gegenstäde sind eine spezielle Klasse von Mustern, deren Zusammenhalt auf den atomar-/chemischen Bindungskräften beruht.

[156] Heidegger (1976b: 239-301) "Vom Wesen und Begriff der *Physis*, Aristoteles, Physik B, 1".

[157] Die Physik ist nicht an den metaphysischen Hintergrüden dieser Muster interessiert, sondern beschäftigt sich mit mathematischen Darstellungen ihrer Eigenschaften. S.a. (Straub 1990: 17)

Herangehensweise versucht, aus der offensichtlichen Existenz und Stabilität von Mustern in unserer Welt (besonders der Biologie) allgemeine Regeln abzuleiten und sie auf den Themenbereich, die Transmission von Kulturmustern anzuwenden.

4.1.2. Temporale Morphologie: Rekurrenz und Musik

@:REKURRENZ_MUSIK

Eine Morphologie von *Mustern in der Zeit* steht in engster Beziehung zur *Musik*. Die morphologische Definition von *Rhythmus* ist die "*Erkennung / Erzeugung eines Musters der Rekurrenz*".[158] Rekurrenz basiert auf neuronalen Muster-Erkennungsfunktionen, die *Ähnlichkeit* feststellen. Absolut *Gleiches* gibt es, wie Nietzsche richtig bemerkte, in der Natur nicht, sondern nur in der platonischen Welt der Logik und der Zahlen. Ein *Ton* ist ebenfalls ein Muster der Rekurrenz, aber auf einer tieferliegenden neuronalen Ebene. Das Erkennen eines *Verhältnisses von Tönen* (*Intervall*) ist demnach Ergebnis eines *Mustervergleichs höherer Ordnung* (*Metapattern* nach G. Bateson, *Meta-Muster*).[159] Musik basiert auf Erzeugung und Wahrnehmung von temporalen Mustern und Meta-Mustern. Das Pythagoräische System beruht auf dem Paradigma der Betrachtung und Interpretation aller Abläufe des Kosmos und der Menschenwelt auf der Basis solcher temporaler Muster.[160] Von besonderer Bedeutung sind hierbei die *Wendungen* bzw. *Kehren*: musikalische: *strophae*, (*kata-strophae*)[161], und kosmische: *Tropae* (*en-tropia*). Die Einbettung der Musik in die kosmischen Muster wird noch heute von der indischen Raga-Tradition praktiziert.[162]

4.1.3. Die Grenzen der Beobachtung temporaler Muster

Die Grenzen der Wahrnehmung / Beobachtung temporaler Muster werden auf der einen Seite durch die temporale Auflösung des menschlichen neuronalen Systems bestimmt, und auf der anderen Seite durch das Erinnerungsvermögen und die menschliche Lebensdauer.[163] Kurz-periodische Muster bis ca. 10-20 KHz können als *Töne* akustisch wahrgenommen werden, während die untere Auflösungsgrenze des optischen Systems bei ca. 1/10 Sec. liegt. Erst mit elektronischen Hilfsmitteln wie Oszilloskopen und Spektrums-Analysatoren läßt sich die Musterwelt der höheren Frequenzen sichtbar machen. Bei sehr lang-periodischen Mustern, wie etwa Veränderungen des Sternenhimmels (z.B. die Präzession der Equinoktien) muß die Musterwahrnehmung über viele Generationen der Beobachtung und der kulturellen Transmission gehen. Dies wurde schon von vor-schriftlichen Kulturen beherrscht.[164] Es ist ein wesentliches Grundproblem der Geschichtsforschung, daß ihre Mustererkennung selbst ein

---

[158] S.a. Klages (1981, III, 499-551): "Vom Wesen des Rhythmus".

[159] Seashore (1967), Simon (1968)

[160] Godwin (1989), Haase (1998), Iamblichus: "Das Leben des Pythagoras", James (1993), Kayser (1930-1950), Kepler (1982), McClain (1978), Schneider (1951-1990)

[161] Thom (1975)

[162] Rudhyar (1988: 119, 132, 230-236)

[163] Er-innerung ist essentiell fü das Erkennen der Musterhaftigkeit von temporal auseinanderliegen Ereignissen, also ihre Gruppierung unter einem Merk-*mal*.
->:CULTURE_PATTERN, p. 132, ->:HUMAN_LIFETIME, p. 134

[164] Hertha v. Dechend (1993).

Produkt der kulturellen Transmission ist, die damit auch der aktuellen Filterfunktion im Weltbild des Geschichtsforschers unterliegt.[165]

4.1.4. Metapattern, Hierarchie, spatio-temporale Perspektiv-Muster

Metapatterns oder *Metamuster* sind nach Bateson *Muster von Mustern*. Hierarchische *Metapatterns* sind eine spezielle Klasse, die rekursiv in einer Ordnungsrelation von 1:n stehen. Wissenschaft beruht auf Systemen von hierarchischen Metapatterns.[166] In Verallgemeinerung des optischen Begriffs werden sie hier auch *Perspektiv-Muster* oder kurz *Perspektiven* genannt. Das Ziel der Morphologie ist die Erlangung von möglichst weit- und tiefgreifender Perspektiv-Muster-Erkennung *über Raum und Zeit* (spatio-temporale *Perspektiven*).[167] Der emotionale Erlebniswert der plötzlichen Eröffnung solcher Perspektiven, nach langen, mühseligen Anstrengungen, ist deutlich aus den Berichten Petrarcas,[168] Spenglers,[169] und Gumilevs[170] zu erkennen. Hier ist natürlich der Rahmen der menschlichen Begrenzungen zu beachten (siehe Bazon Brock)[171].

4.1.5. Mathematische Modelle der Muster-Transmission

Verschiedene Verfahren zur mathematischen Modellierung der Muster-Transmission werden vor allem mit genetischen Algorithmen (Mühlmann 1996: 53-54, 78-81, 87, 100-109), und Simulationssystemen im Bereich der Memetik implementiert. Da Memetik auf dem WWW auf vielen Sites mit Textmengen, die nur in Multi-Megabytes zu messen sind, verteten ist,

---

[165] S. a. das Zitat von Bazon Brock "Theorie der Avantgarde", unter "Kultur im Spannungsfeld von Tradition und Innovation". ->:TRADITION_INNOV, p. 82

[166] ->:MORPHOLOGY, p. 128

S.a. Gumilev (1990: 186): "grouping on the principle of similarity and causal succession"; die Anmerkungen von Spengler zur Morphologie der Wissenschaften (1980: 548-553); Schunk (1996); Riedl (1990); Barrow (1998: 5-6, 57-58, 89, 190-193).

Barrow (1998: 192): The inevitability of pattern in any cognizable Universe means that there can exist descriptions of all these patterns. There can even be patterns in the collections of patterns, and so on. In order to describe these patterns, we need a catalogue of all possible patterns. And that catalogue we call *mathematics*. Its existence is not therefore a mystery: it is inevitable. In any universe in which order of any sort exists, and hence in any life-supporting universe, there must be pattern, and so there must be mathematics.

Robin Allott: "A contemporary definition is that mathematics is the science of pattern and deductive structure (replacing an older definition of mathematics as the science of quantity and space)."

Robin Allott: http://www.percep.demon.co.uk/biomath.htm

Heidegger (1976b: 244): *Epagogae* meint nicht das Durchlaufen einzelner Tatsachen und Tatsachenreihen, aus deren ähnlichen Eigenschaften dann auf ein Gemeinsames und "Allgemeines" geschlossen wird. *Epagogae* bedeutet Hinführung auf Jenes, was in den Blick kommt, indem wir zuvor über das einzelne Seiende weg blicken...

[167] s.a. Karbe (1995: 296-355). In einer mehr informationstechnischen Sprechweise finden wir ein ähnliches Konzept unter dem Begriff "Conceptual Navigation". S.a. Veltman (1986, 1997, 1998) ->:PERSPECTIVE_VIEW, p. 110

[168] siehe: Gebser (1973), Brock, (AGEU: 198-214), Karbe (1995: 296)

[169] Spengler (1980: 65-70, 611-612)

[170] Gumilev (1987), (1990)

[171] Brock (AGEU: 194) ->:VERGH_KLUFT, p. 60

wird hier von einer genaueren Darstellung des Themenbereichs abgesehen.[172] Folgende
WWW-Sites enthalten weiterführendes Material:

The Journal of Memetics
> http://www.cpm.mmu.ac.uk/jom-emit/
> http://www.cpm.mmu.ac.uk/jom-emit/online.html

Memetics bibliography:
> http://www.cpm.mmu.ac.uk/jom-emit/biblio

The Lycaeum: http://www.lycaeum.org/
> http://www.lycaeum.org/~sputnik/Memetics/index.html

Principia Cybernetica: http://pespmc1.vub.ac.be/

Memetics index: http://143.236.107.53/authors/kkitow/memetics/

Ein zentraler WWW-Knotenpunkt für alle Arten von Memetik-Algorithmen mit umfassender
Bibliographie ist zu finden unter: "Memetic Algorithms' Home Page:
> http://www.ing.unlp.edu.ar/cetad/mos/memetic_home.html

4.2. Die Epochen von Muster-Transmissionsklassen

@:MUSTEREPOCHEN

Es ist möglich, Epochen von Muster-Transmissionsklassen in unserer Welt aufstellen, die sich
in einer zeit-perspektivischen Darstellung normiert in Zehnerpotenzen von Fünf anordnen
lassen. Selbstverständlich ist die Genauigkeit der Zeitschätzung, vor allem der älteren
Musterklassen, "cum grano salis" zu handhaben.[173]

1) Die atomar- physikalisch- chemischen Muster, deren Persistenz über ca. 15 Mrd Jahre
Geschichte des Universums reicht,

2) die molekular-biologisch-genetischen Muster-Transmission der Prokaryoten über ca. 4-5
Mrd Jahre Geschichte der Biosphäre,[174]

3) die Evolution der vielzelligen Organismen (Metazoen) auf der eukaryotischen (Zellkern-)
Basis seit ca. 500 Mio Jahren,[175]

4) die neuronal-Verhaltens-Muster der Säugetiere und Vögel seit dem Ende der Dinosaurier
vor ca. 50.000.000 Jahren,[176]

---

[172] ->:MEMETICS, p. 248

[173] ->:EXTRA_OBSERVER, p. 113

[174] Alter des Planeten Erde ca. 5 Mrd. Jahre, ab dann Einsetzen der molekular- chemischen Evolution,
die zu den selbstreproductionsfähigen, DNS/RNS gestützten Prokaryoten (Bakterien) führt, wie sie heute
noch existieren. Älteste Bakterienfossilien ca. 3,5 Mrd. J.

[175] Umwandlung der Erdatmosphäre von Methan- Kohlensäure zu heutiger Sauerstoffkonzentration vor
ca. 1 Mrd. J. durch Aktivität photosynthetischer Organismen (Cyanobakterien etc.) (Jantsch). Älteste
Eukaryoten ca. 1 Mrd. Jahre. Älteste Großfossilien von Metazoen seit ca. 570 Mio J. (Spektrum d.
Wissenschaft, Jun 1998, p. 27).

5) die Gestik- / Laut- / Werkzeug-Gebrauchs- Muster der Anthropoiden, seit ca. 5.000.000 Jahren,[177]

6) die Werkzeug- / Feuer- / Ritual- / Sprach- / Symbolik- Muster des Homo Sapiens,[178] seit ca. 500.000 Jahren,[179]

7) die Bild-Artefakt-Muster des Homo Sapiens Sapiens (oder Cro Magnon) seit ca. 50.000 Jahren, die etwa in den Ausdrucksformen von Altamira, Lascaux, und Chauvet zu finden sind,[180]

8) die Sprach-Zeichen-Codierungs-Muster der Schrift, seit ca. 5.000 Jahren, wovon das Alphabet, die dominante abendländische Form der Schrift, etwa die Hälfte dieser Zeit, ca. 2500 Jahre existiert,[181]

9) Buchdruck, mechanische Schrift-Muster-Verarbeitung, seit ca. 500 Jahren,

10) elektronische, automatische, programmgesteuerte Signalverarbeitung, Computer: 50 Jahre.

Die Modi der Transmission der atomar- physikalisch- chemischen Muster aus Klasse 1) stehen nicht im Fokus unserer Betrachtung, sondern werden als gegeben angenommen. Es ist aber keinesfalls selbstverständlich, daß (oder warum) Atome die Konstanz aufweisen, die sie für uns haben, im Rahmen der vorliegenden Untersuchung ist der (nach Ansicht der heutigen Physik) atomare Aufbau der Welt die Grundlage der Konstanz des Universums, und für unsere Betrachtung ist es unerheblich, ob die zeitliche Persistenz eines Wasserstoff-Atoms auf seiner *Dinglichkeit* (oder *Substanz*) beruht, oder darauf, daß es eine bestimmte Form von *dynamischen* Phänomen ist, etwa eine *stehende Welle*, oder ein *Soliton* (nach der Chaos-Theorie), im Raum-Zeit-Kontinuum.[182]

---

[176] Aussterben der Dinosaurier vor ca. 65 Mio J., vermutete (umstrittene) Verbindung mit Asteroiden-Einschlag, Chicxulub-Krater in Yukatan. Nach anderer Hypothese Massensterben durch Ausbruch der Dekkan-Vulkane. FAZ 25.9.96, N6.

[177] Lock (1996). Evolutionär ist die Trennung von den Schimpansen auf etwa -8 Mio Jahre anzusetzen (Waal 1995). Die ältesten Australopithecus-Funde und bearbeitete Steine sind ca. 2.8 Mio Jahre alt. Man muß noch die Zufälligkeit archäologischer Erhaltung von Funden einbeziehen, denn Reste von Fasermaterialien tauchen normalerweise nicht in den fossilen Strata auf. So spricht sehr viel dafür, daß das älteste "Werkzeug" nicht der Stein, sondern die Baby-Trageschlinge war, aber das wird nie zu beweisen sein. (Taylor 1997: 39).

[178] meistbekannte Unterrassen: Neandertaler und H. sapiens sapiens.
Lock (1996), http://history.evansville.net/prehist.html

[179] Lock (1996: 478): Homo erectus of -400.000 had the capacity for speech.

[180] http://history.evansville.net/prehist.html
http://www.insticeagestudies.com/readings/reptech/repmain.html

[181] Die Übernahme des Alphabets vor etwa 2500 Jahren durch die Griechen koinzidiert zeitlich mit einem Muster, das Jaspers (1955) die *Achsenzeit* genannt hat. Ob ein Zusammenhang zwischen dem geistigen Aufbruch in Griechenland, und den etwa gleichzeitig stattfindenden Entwicklungen und Indien (Buddha, Mahavira), Persien (Zoroaster) und China (Lao Tse) hergestellt werden kann, ist natürlich fraglich. Tatsache ist aber, dass seit der Etablierung des Perserreiches die Landverbindung zwischen Indien und Griechenland passierbar war. Und daß Seide als begehrtestes Exportprodukt Chinas auch einen entsprechenden Handelsverkehr nach sich zieht, ist selbstverständlich. Die Mönche der buddhistischen Mission wanderten mit den Kaufleuten über die Seidenstraße. ->:WRITING, p. 175

[182] Thom (1975: 322): "The fundamental reasons for the stability of matter are unknown".

4.3. Die geosphärische System-Einbettung der Musterklassen

@:GEOSPHAER

Die oben genannten Musterklassen stehen in einer hierarchisch geschichteten System-Einbettung, bei der die jeweils älteren Musterklassen die Basis für die jüngeren bieten. Ihre energetisch-materielle Einbettung läßt sich nach Vernadskys (und seiner Nachfolger) thermodynamischer Kosmologie[183] in verschiedenen Sphären anordnen, die an der Kugelgestalt der Erde ausgerichtet sind. Im Folgenden wird das über Klammersymbole ausgedrückt, die wie geschachtelte Kugelschalen[184] zu lesen sind:

(Kosmo- (Iono- (Strato- (Atmo- (Hydro- (Litho- (Geo-Sphäre)))))))
(Bio-Sphäre)

Das Erdsystem wird energetisch von der Strahlungsenergie der Sonne angetrieben, der hier die *Kosmosphäre* zugeordnet ist. Sie stellt also die energetische Quelle dar, sowie die Senke für abgestrahlte thermische Energie. Sie ist auch die Quelle von anderen kosmischen Einflüssen, wie Sonnenflecken-Aktivität,[185] Kosmische Strahlung,[186] Planetenbahn-/ Erdachsen-Instabilitäten,[187] Meteoriten, Super-Novae, sowie noch unbekannten Faktoren, die beim Durchgang des Sonnensystems durch verschiedene Bereiche der Galaxie auftreten können, und das Leben auf der Erde beeinflussen. Die nächsten Sphären sind die ionisierten äußeren (Iono-), die mittleren (Strato-), und die inneren Schichten (Tropo-) der Luft (Atmo-), des Wassers (Hydro-), der Gesteinsschichten (Litho-), und schließlich, des Erdmantels und des Erdkerns (Geo-Sphäre).

@:VERNADSKY

Vernadskys Arbeit handelt wesentlich von den Interaktionen des Lebens, der *Biosphäre*, mit der (Atmo- (Hydro- und (Litho- Sphäre, welches er als chemisch- energetisches Gesamtsystem betrachtet.[188] Lovelock formulierte unabhängig von Vernadsky in seiner Gaia-

---

Weiteres Material bei Straub (1990), z.B. p. 95, "Falks Ansicht metaphysischer Annahmen in der Physik"; oder: Die von der Physik fast vollständig aus der kulturellen Erinnerung gelöschte Theorie der Toroid-Atome von Lord Kelvin, und: Meyl 1990)

[183] Vernadsky (1997: 26), Vernadsky (1930)

[184] Dieses Bild entspricht in seiner Projektion auch der Ptolemäischen Darstellung der Kugelschalen-Gestalt des Kosmos. S.a. Spengler (1980: 621); Spektrum d. Wissenschaft, Jan. 1993, p. 84: Schädelsche Weltchronik von 1493.

[185] Gumilev (1987: 22)

[186] Gumilev (1990: 265) spricht von einem möglichen kosmischen Einfluß beim Entstehen von "Drive".

[187] Diese sind wesentliche klimatogene Faktoren, die auf Wüstenbildung und Eiszeiten Einfluß nehmen. Sowohl der Abstand der Erde von der Sonne, und die Exzentrizität der Erdumlaufbahn, sowie die Neigung der Erdachse, verändern sich periodisch mit Zyklen von mehreren 10.000 Jahren.

[188] Gumilev (1990: 215), Nach Vernadsky (1930) ist die Lithosphere zu einem wesentlichen Teil das Produkt der chemischen Umformungen, und mineralischen Absonderungen und Ausscheidungen der Lebewesen (z.B. Stromatolithen, Muschelschalen oder Korallengerüste). Geo, 4/96, p. 174-175 zur Theorie der Entstehung der Dolomiten in den Alpen bzw. des Dolomit-Gesteins durch Bakterien.

Hypothese eine ähnliche Sicht dieses Gesamtsystems, und entwickelte es in seiner Zusammenarbeit mit Lynn Margulis weiter.[189] Da der terrestrische Film des Lebens, die Biosphäre, hauptsächlich wasserbasiert ist, können wir es als Extension der Hydrosphäre ansehen.[190] Der wesentliche neu dazukommende Faktor der Biosphäre sind die o.g. Musterklassen des Lebens, die sich ebenfalls mit der Sphären-Metapher darstellen lassen:

(Bio- (Oeko- (Semio- (Anthropo- (Ethno- (Noo- Sphäre)))))

Diese Schachtelung stellt einen Ansatz dar, verschiedene Gliederungen, die z.T. der Nachfolge von Vernadsky entstammen, weiter zu systematisieren. Diese weiteren Sphären sind weitere logische Ordnungen, bzw. Entwicklungen der Biosphäre. Die *Oekosphäre* (A.G.) wird hier als Generalbegriff für alle inter-organischen Kommunikations- und Interaktions-Formen eingeführt, die in der heutigen *Ökologie* vor allem unter ihrem energetischen und materiellen Aspekt untersucht werden. Die *Semiosphäre* als Sammelbegriff der Zeichenkommunikation der Lebewesen stammt von Lotman,[191] *Anthroposphäre* als Gesamtheit der menschlichen Biomasse,[192] und *Ethnosphäre* der verschiedenen menschlichen Kulturmuster von Gumilev,[193] *Noosphäre* der höheren symbolischen Gebilde von Chardin, LeRoy und Vernadsky.[194] Ebenfalls bei Gumilev findet sich der Begriff *Technosphäre* für die dem Naturkreislauf (zeitweise) entzogenen Artefakte des Menschen,[195] und im Rahmen der vorliegenden Arbeit wurde der Begriff *Bibliosphäre* geprägt.[196]

4.4. Die Transmission phylogenetischer und ontogenetischer Muster

@:MUSTERTRANSMISSION

Beim Übergang von den prokaryotischen zu den eukaryotischen Organismen von Klasse 2) zu 3) liegt nach der obigen Differenzierung die Schranke zwischen *phylogenetischer* und

---

[189] Vernadsky (1997: 16, 31, 32)

[190] Gumilev (1987: 23): "All these form a single system in which the key link is water."
Frei Otto: "Naturverständnis" (1985), p. 29: *Hydraulik* als essentielle mechanische Grundlage der Organismen.

[191] Lotman (1990: 123, 125), Hoffmeyer (1997) ->:SEMIOSPHERE, p. 116
Was Spengler (1980: 712-720) in diesem Abschnitt "Das Wesen der Sprache" (712) nennt, läßt sich heute als eine intuitive Beschreibung der *Semiosphäre* bezeichnen. Z.B.: "Mit dem Menschen darf eine Untersuchung der Sprache sicherlich nicht beginnen." "... daß nicht einmal einzellige Wesen ohne alle Sinnesorgane sprachlos gedacht werden dürfen." (714) "Die Weltsprachen hoher Zivilisationen sind nichts als äußerst verfeinerte Möglichkeiten, welche sämtlich schon in der Tatsache des gewollten Eindrucks einzelliger Wesen aufeinander enthalten sind."

[192] Gumilev (1987: 360): In this perspective mankind is regarded as a certain covering of the planet Earth or as part of the biosphere... the anthroposphere... the biomass of all people together with the products of their activity... domestic animals, cultivated plants... the anthoposphere is ... a mosaic [consisting of] ... collections of persons.

[193] Gumilev (1990: 175), (1987)

[194] Vernadsky (1997: 155), Hofkirchner (1997)

[195] Gumilev (1990: 268)

[196] ->:BIBLIOSPHERE, p. 195

ontogenetischer Transmission, die für die vorliegende Untersuchung wesentlich ist. Dies soll jetzt genauer betrachtet werden.

Wir hatten am Anfang eine thermodynamische Definition von Leben aufgestellt: **Die Aktivität von dissipativen Strukturen, ihre Muster gegen den entropischen Strom der Auflösung zu a) bewahren, b) fortzupflanzen, und c) fortzuentwickeln**. Fall a) nennen wir *Autopoiaesis*, Fall b) *Vermehrung*, und c) *Evolution*.

Etwas spezifischer können wir sagen, daß das Leben in der Biosphäre der Erde[197] auf **dissipativen Strukturen** beruht, molekularen Reaktionen von Kohlenwasserstoff-Verbindungen in ionisierten wässrigen Lösungen. Dies sind im wesentlichen Tröpfchen von Wasser, genannt Zellen, die von bestimmten Strukturen eingeschlossen und stabilisiert werden,[198] den Zellmembranen, Cytoskelett, etc. Grundvoraussetzung ist immer ein Potential freier Energie, welches degradiert wird. (Dissipation, als Erhöhung der Gesamtentropie des Umgebungssystems der Zelle, im Normalsprachgebrauch auch das *Konsumieren von Nahrung*, und die *Erzeugung von Abfallstoffen*).

Zu a): Die Besonderheit dieser Strukturen ist, daß sie sich in einem hochgradigen thermodynamischen Un- oder Fließgleichgewicht befinden, sie also Herakliteische Paradebeispiele sind. Ihre Konfiguration ist höchst instabil, und sie müssen sich fortwährend immer selbst neu konstruieren (*Autopoiaesis*)[199]. Dies wird mit einer besonderen molekularen Struktur, dem DNS / RNS-Komplex erreicht. Dieser Komplex beinhaltet einen Bauplan, nach dem die Zelle permanent ihre eigenen Bestandteile erneuert (Fall a), und sich periodisch dupliziert, die "*Zellteilung*" oder "*Vermehrung*" (Fall b). Über viele Generationen von b) kommt es gelegentlich zu Veränderungen der DNS/RNS-Baupläne (*Mutationen*) und zu der heute allgemein akzeptierten Vorstellung von der *Evolution* (Fall c). Dieses Schema liegt allem Leben zugrunde.

4.4.1. Der "Erinnerungs"-Bruch zwischen Prokaryoten und Eukaryoten
@:ERINNERUNGSBRUCH

Es entstand aber vor ca. 0,75 bis 1,5 Mrd Jahren ein entscheidender Bruch mit dem Auftreten der Zellkern-Organismen, der *Eukaryoten*, die die "Konstruktions"-Basis der Vielzeller (Metazoen) bilden. Dies ist für unsere Betrachtung von höchster Wichtigkeit. Die ursprünglichen Träger des irdischen Lebens, die *Prokaryoten* (heute meist als Bakterien bekannt), hatten vermutlich den ganzen Planeten mit einem Film einzelligen Lebens bedeckt (Vernadsky, Margulis, Jantsch). Sie lebten so ca. 3 Mrd Jahre vor dem Erscheinen der ersten Eukaryoten "herrlich und in Freuden", und "wenn sie nicht gestorben sind, so leben sie noch heute". (Das ist in der Tat so, denn nach aller Erkenntnis sind heutige Bakterien nach den

---

[197] Die folgende Darstellung nach: Jantsch (1982)
[198] s.a. Frei Otto (1985), Mühlmann (1996: 56)
[199] Maturana, Varela (1987)

selben Mustern gebaut, wie die ersten ihrer Art, was allerdings nie mit Sicherheit zu beweisen sein wird). Denn Bakterien haben, im Gegensatz zu den bedauernswerten Metazoen (den Vielzellern), einen entscheidenden Lebensvorteil: Sie sind prinzipiell unsterblich (wenn sie nicht gerade in die Flamme eines Schweißbrenners o.ä. geraten). Ein Bakterium teilt sich einfach fortwährend in seine Abkömmlinge mit dem gleichen DNS-Bauplan, und stellt somit das beste nur denkbare Muster einer immerwährenden Transmission dar. Ein solcher "paradiesischer" Zustand in einer unerschöpflichen Nährlösung ist auch auf dem großen Planeten Erde irgendwann einmal aufgebraucht. Eine erfolgreiche Bakterienkolonie vermehrt sich so lange, bis ein vorhandenes Nahrungsreservoir aufgebraucht, oder die Umgebung mit Abfallstoffen vergiftet ist. Das geht bei den großen Vermehrungsraten von Bakterien sehr schnell. Oder eine Bakterienkolonie gerät in ein Milieu, das an sich schlechte Überlebensbedingungen bietet (z.B. stark säurehaltig). In seinem solchen Fall sterben die Bakterien entweder ab, oder entwickeln Mutationsfomen (Modifikationen ihres DNS-Bauplans), mit dem sie sich an die andersartigen Lebensbedingungen anpassen. Dieser Faktor der Varianz kann als ein Proto-Phänomen des "Lernens" und der "Erinnerung" von Bakterien bezeichnet werden.[200] Denn die DNS speichert "Rezepturen" des Stoffwechsels, mit dem sie sowohl in der alten wie in der neuen Umwelt überleben können. Man kann sagen, sie haben "gelernt". Das wesentliche hierbei ist, daß Bakterien hiermit nicht nur ihre *ontogenetischen* "Erfahrungen" an die kommenden Generationen weitergeben können, sondern sie auch durch Verschmelzung ihrer DNS *untereinander austauschen* können.[201] Wenn man das auf menschliche Verhältnisse übertragen würde, so würde das bedeuten, daß "Schule" äquivalent ist mit intensiv promiskuitiven Sexualverkehr. **Bei Bakterien gibt es keinen Unterschied zwischen der Transmission** *ontogenetischer* **und** *phylogenetischer* **Muster**.

4.5. Der Bereich des Inter-Organischen: Das Ökosystem als Kommunikationsstruktur

@:BIOSPHAERE

Bei allem evolutionären Fortschritt ist leider mit der Bildung von eukaryotischen vielzelligen Lebewesen, den Metazoen, ein großer "*Bruch in der Erinnerung*" verbunden: Da keinerlei Erfahrungsresultate aus dem Leben des Organismus in den DNS-Bauplan zurückwirken können (Weismann-Barriere), muß alles, was ein vielzelliger Organismus in seinem Leben gelernt hat, mit ihm zu {Staub /H_2O /CO_2 /H_2S ...} zerfallen (oder im Magen anderer Organismen landen: =*recycling*), wenn seine Lebenszeit am Ende ist.

---

[200] Sheets-Johnstone (1998, III)
[201] Margulis (1991: 185-191), http://www.temple.edu/departments/CFS/margulis.htm
Howard Bloom: Creative Nets in the Precambrian Age,
History of the Global Brain, Part II
From Social Synapses to Social Ganglions: Complex Adaptive Systems in the Jurassic Age
History of the Global Brain, Part V
http://www.heise.de/tp/deutsch/special/glob/default.html

Die weitere phylogenetische (stammesgeschichtliche) Entwicklung der Formen der Organismen, die Evolution, ist nach der (neo-) Darwinistischen Perspektive des Einzel-Organismus dann eine Sache der Anpassung (Fitness heißt An- oder Einpassung) des DNS-Bauplans an die Gegebenheiten der Umwelt.[202] Nur diejenigen Organismen transmittieren ihre genetischen Muster in die nächste Generation, die ins reproduktionsfähige Alter überleben, und sich dann auch reproduzieren. Die heute dominierende (neo-) Darwinistische Sicht der Biologie beruht auf einer uralten Tradition der Naturbeobachtung der individuellen Organismen und ihrer Kollektive, den Populationen. Sie ist schon aus dem Paläolithikum dokumentiert (ersichtlich z.B. aus den Felsbildern von Altamira u.a.), und die großen Erfolge der Tier- und Pflanzen-Domestikation des Neolithikums waren nur durch eine eingehende angewandte Kenntnis der genetischen Grundmechanismen möglich.[203] Die Wissenschaft hat in den letzten 2300 Jahren seit Aristoteles die Systematisation der Morphologie und der genetischen Abstammung der Individal-Organismen zu der heute bekannten biologischen Ausformulierung gebracht.[204]

Nun soll ein Perspektivenwechsel vollzogen werden: Anstatt mit dem Fokus auf *individuelle Organismen*, können wir den weiteren Fortgang der Evolution auch aus der Perspektive des *Inter-Organischen* betrachten, also aus der Sicht aller Verbindungen und Einwirkungen von Organismen untereinander und aufeinander, dem Bereich, der oben die *Ökosphäre* genannt wurde. Dies ist natürlich erheblich schwieriger und komplexer, als die Betrachtung der individuellen Organismen, die man ja fangen und sezieren und präparieren und im Museum ausstellen kann, und deren härtere Reste sich auch in den fossilen Strata erhalten, während ihre Bewegungen, Töne, und chemischen Spuren sich kaum jemals dauerhaft konservieren lassen.[205] So ist es nicht verwunderlich, daß diese Sichtweise erst wesentlich später

---

[202] Kritische Stimmen dazu: siehe Roth (1996: 346-347).

[203] Darwin selber war, strikt gesehen, Lamarckist, weil er die erbliche Weitergabe ontogenetischer Merkmale annahm. Hoffmeyer (1998: 471-472) erötert die zentralen Kritikpunkte der Biosemiotik am Neo-Darwinismus: Darwin entnahm seinen Begriff der "Natural Selection" von der "Züchter-Selektion" der englischen Gentleman- Pferde- und Hundezüchter des 19. Jh. Nach der Wörterbuch-Bedeutung impliziert "Selektion" aber immer die Intentionalität. So ist "Natural Selection" ein Kunstgriff, mit der die Intentionalität extrahiert wird, und der Begriff dadurch leer wird. "Survival of the fittest" ist somit eine Tautologie, die besagt, daß die, die überleben, eben "fit" sind, und das Kriterium für das Überleben ist exakt diese "Fitness".

[204] s. biologische Morphologie. Riedl (1990), ->:MORPHOLOGY, p. 128

[205] S.a. Hoffmeyer (1997) zur Einführung in die Thematik: "a complexity beyond our imaginative power". Hier ist auch der Einfluß der technischen Hilfsmittel wichtig. Das Mikroskop hat die Grundlage der Beobachtung der zellularen Bausteine der Organismen und der Mikroben entscheidend geprägt. Es ist deutlich, daß bedingt durch den beschränkten Einstellspielraum dieses Instruments (kein stufenloser Zoom, notwendige Präpariertechnik der Objekte), mit der erheblich zugenommenen Stärke der Fokussierung auf Einzel-Objekte ein entsprechender Verlust der Wahrnehmbarkeit ihrer Verbindungen und Interaktionen erkauft wird. Analog dazu auch der Blick durch das Fernrohr, welcher in dem Prozess des Galileo seine Rolle gespielt hat. Lippe (1997: 23, 193) erläutert, daß es genau dieser Verlust des Zusammenhangs war, der Kardinal Bellarmino an der Wahrheit dieser Weltsicht zweifeln ließ. In der Sprache Batesons ist hier von einem Verlust des "pattern that connects" zu sprechen.
->:WHITEHEAD_SOCIETY, p. 112, ->:PATICCA_SAMUPPADA, p. 120

aufgenommen wurde. Wesentliche Ansätze dazu kamen von J.v. Uexküll, Bateson, und aus einigen Bereichen der Ökologie,[206] wo man im Gegensatz zur (Neo-) Darwinistischen Sichtweise das Ökosystem, und nicht den individuellen Organismus als die Einheit der Selektion ansieht.[207] Weiterhin hat die *Biosemiotik* in den letzten Jahrzehnten angefangen, dieses gewaltige Gebiet zu erfassen, aber die Wissenschaft steht hier erst in einem sehr frühen Stadium. Alle Organismen eines Ökosystems stehen direkt oder indirekt fortwährend in Beziehung: im Austausch von visuellen, auditiven und chemischen Signalen und Spuren, oder über das Fressen und Gefressenwerden, dem direkten Austausch ihrer Körpersubstanz (frei nach McLuhan: *the medium is the message*). Die Biosemiotik erfaßt alle diese Austauschverhältnisse unter dem Aspekt von Zeichen. Die Gesamtheit aller Zeichenaustauschprozesse in der Biosphäre kann man auch die *Semiosphäre* nennen.[208]

4.5.1. Neuronale Resonanz und Kommunikation

@:NEURO_RESONANZ

Die Existenz von inter-spezies Kommunikationsprozessen ändert allerdings nichts wesentliches an dem grundlegenden Abbruch der ontischen Erinnerung mit dem Tode der Organismen, und damit der Unmöglichkeit der direkten Weitergabe von individuellen Lernerfahrungen an die folgenden Generationen.

Dies änderte sich erst, als mit Aufkommen hochentwickelter Nervensysteme, vor allem der Vögel und Säugetiere, *neuronale Koppelungen* zwischen der Eltern-Generation und den Jungen, wesentlich über die *Brutpflege*, oder über *Herdenverhalten*, aufgebaut werden konnten.[209] Das Kernprinzip der *neuronalen Koppelung* ist in der Biologie auch als *Prägung*[210] bekannt, mit der sich Jungtiere an die Verhaltensmuster ihrer Eltern oder älterer Herdenmitglieder anpassen. Wenn der Mensch in dieser Phase auftritt, findet eine Prägung an den Menschen statt. Dies war die Basis der Domestikation von Tieren.[211] Über diesen

---

[206] z.B. Ulanowicz (1996), LaChapelle (1988)

[207] Bateson (1972: 451) "The unit of survival is a flexible organism-in-its-environment".
->:SOCIETY_SYST, p. 114
Howard Bloom: Biology, Evolution and the Global Brain, History of the Global Brain, Part I:
http://www.heise.de/tp/deutsch/special/glob/default.html

[208] In Erweiterung der ursprüglichen Konzeption von Lotman, der sie nur für den sprachlichen Kommunikations-Bereich der menschlichen Kultur definiert hatte. ->:SEMIOSPHERE, p. 116

[209] S.a. Brock, Breidbach, Neuronale Ästhetik; Mühlmann (1996) p. 22: Allelopathie, p. 27: Brutpflege; Radermacher (1998: 146-159) Ebene 2; Gumilev (1990: 109, 179).
Howard Bloom: Mammals and the Further Rise of Mind: History of the Global Brain, Part VI
http://www.heise.de/tp/deutsch/special/glob/default.html
->:NEURONAL_PATTERN, p. 124, ->:AUTOPOIETIC, p. 125
Gumilev (1990: 178): "Animals and birds as well as men bring up and train their offspring."

[210] Z.B. Konrad Lorenz und seine Graugänse, Brock: Mimesis, Kleinkindlernen: AGEU 151, 152.

[211] S.a. Mühlmann (1996, 7). Eine ausführliche Darstellung der Bedingungen der Domestikation, besonders auch warum sich nur wenige Tierarten erfolgreich domestizieren ließen, in Diamond (1997).

Mechanismus ist somit die *Transmission ontogenetischer Muster* parallel zur genetischen Transmission[212] auch für Vielzeller möglich geworden.

Im folgenden soll das Grundprinzip dieser Transmission die *Neuronale Resonanz* genannt werden. Wie schon dargestellt, ist die Arbeitsweise des neuronalen Systems digital, sie beruht auf den Pulsfrequenzen der Aktionspotentiale. Wenn Organismen in Kommunikation stehen, stehen ihre Nervensysteme in einem wechselseitigen Stimulationsprozess. Wenn man die neuronalen Potentiale während eines solchen Prozesses mißt, so kann man eine Frequenz-Synchronisation feststellen. In Analogie zu klanglichen Phänomenen läßt sich daher *Kommunikation* als ein *neuronales Resonanz-Phänomen* auffassen. Es lassen sich somit Einschwing- und Ausschwing-Phasen und *Periodizitäten*, also *Rhythmen*, feststellen.[213]

Menschliche Kultur entstand auf der Basis der neuronalen Resonanz. Bazon Brock spricht in diesem Kontext von *Empathischer Übertragung*[214] und *Mimesis*.[215] Von allen Tieren unterschieden und spezifisch menschlich sind die Transmissionsformen, die mit *Symbolik* und *Sprache*,[216] (Radermacher (1998), Ebene 3), und *abstrakten Formalsystemen* (Radermacher (1998), Ebene 4), in Verbindung stehen. Radermachers Begriff des *Super-Organischen* basiert auf dem *Inter-Organischen*, mit der zusätzlichen Charakteristik, daß es die Lebensspanne der einzelnen Organismen in seiner Transmission überdauert / überbrückt.

4.5.2. Die ökologische Einbettung menschlicher Kulturen

Menschliche Kulturen sind entscheidend in die ökologischen Gefüge ihrer Regionen eingebunden.[217] Das beinflußt auch die kulturellen Transmissionen, sowohl in der Möglichkeit der Entstehung und Entfaltung, als auch in ihrem Ende.[218] Einerseits ist durch die gravierende Einwirkung des Menschen auf die Pflanzen und Tiere seiner Umwelt, der neolithischen Agrikultur- /Viehzucht-Revolution, erst die Zivilisation heutiger Art möglich geworden. Die Arbeitsteilung, die durch das Nahrungs-Surplus ermöglicht wurde, ist die Basis

---

[212] d.h. von der Elterngeneration zu dem Nachwuchs. Gumilev (1990: 179): "...'signal heredity' is simply another name for tradition."
Ebenfalls bei Cassirer (1994: 125-127), p. 125: [der] spezifische... Unterschied ... der zwischen dem Werden der "Natur" und dem der "Kultur" besteht. [Anführungszeichen im Original].
[Im weiteren Text:] "Bildung und Umbildung organischer Gestalten" ist das große Thema aller Morphologie der Natur... Beweglichkeit und Dauer...

[213] Uexküll, in Cassirer (1994: 23-25); Gumilev (1990) geht mit der physikalischen Metapher noch weiter, und spricht von Phänomenen der *Induktion*.

[214] Brock, AGEU 84, 110, 120,

[215] Brock, AGEU, p. 13-14, und Neuronale Ästhetik.

[216] Gumilev (1990: 106)

[217] Mit der Globalisierung ist diese Einbettung global geworden, hat sich aber prinzipiell nicht geändert. Die heute drohende Gefahr ist die globale, und nicht mehr die lokale (Zer-) Störung der Biosphäre.

[218] ->:EXAMPLE_CASES, p. 167, ->:TECHNO_FACTOR, p. 155
Behandelt in Gumilev (1990).
Gumilev (1987: 358): In this spectacle we see a fierce logic of events, a pattern in the birth and death of peoples and that link between the history of mankind and of the biosphere of planet Earth which has so far escaped researchers both in the humanities and in the natural sciences.

für alle stärker differenzierten Kulturmuster. Auf der anderen Seite ist der Untergang vieler Hochkulturen der Vergangenheit mit ökologischen Veränderungen / Imbalancen verbunden gewesen. Entweder durch Klimaveränderung, wie Versteppung und Verwüstung der Siedlungsräume, (heutiger Wüstengürtel zwischen Nordafrika, Mesopotamien, und Inner-Asien).[219] Oder, die vom Menschen verursachten starken Veränderungen des Ökosystems begünstigen die massenhafte Vermehrung von Nutznießer-Organismen (Parasiten, "Schädlinge") und bringen so Seuchen (Malaria, Pocken, Pest) und Nahrungsmittel-Versorgungskatastrophen, die aber erst durch die maximale Bevölkerungszahl an der Grenze der ökologischen Tragfähigkeit zu ihrem katastrophalen Ausmaß kommen können.[220] Diese Wechselwirkungen mit den Organismen des Ökosystems lasssen sich ebenfalls als kulturelle Transmissionsmuster verstehen. Bestes (oder schlechtestes) Beispiel dafür war die (Fast-) Ausrottung der Indianer Nord- und Südamerikas durch die Pocken und andere Seuchen bei der europäischen Eroberung des Kontinents.[221]

4.6. Das Faust-Thema: Virtuelle Unsterblichkeit und Kulturelle Transmission

@:FAUSTVIRT

Wie oben schon ausgeführt erscheint der evolutionäre "Fortschritt" der Eukaryoten wie ein gewaltiger Pferdefuß gegenüber der beneidenswerten virtuellen Unsterblichkeit der Bakterien, da er den unvermeidlichen Tod heraufbeschwört. Wir wollen deshalb noch einmal auf das Faust-Thema zurückkommen und die dort angeklungenen mythologischen Untertöne noch einmal vernehmen lassen.[222]

---

[219] Einige Theorien versuchen, die Entstehung des Wüstengürtels auf menschliche Einwirkung zurükzuführen (DeMeo: SaharAsia), andere auf globale Klimaschwankungen, die u.a. kosmische Ursachen haben (z.B. Sonnenflecken, Erdbahn-Schwankungen, etc.).
S.a. Gumilev (1990: 346-353, 355), Diamond (1997: 210-211)
Weiteres Material: William Calvin, die ökologische Literatur, sowie Beiträge im Geo-Journal.

[220] Massenvermehrungen und -Vernichtungen sind in der Erdgeschichte mehrfach vorgekommen. Die "Kambrische Explosion" vor ca. 500 Mio J. brachte nach den paläontologischen Funden (Burgess Shale) und Interpretationen (Gould) die Entstehung der multizellularen Lebensformen der heute bekannten Phyla. (Time, Dec. 4, 1995, p. 65-72).
Vor 286-248 Mio J.: Perm-Extinktion, 90-95 % aller Meereswesen ausgestorben, als die größte bekannte Massenvernichtung (Scientific American). Weitere Vernichtungen im Ordovicium und Devon. Vor 65 Mio J. Aussterben der Dinosaurier. Vor ca. 10.000 J. Aussterben der Säugetier-Großfauna wie Mammute, Wollnashörner, Riesenfaultiere, etc. auf verschiedenen Kontinenten. Nur in Afrika erhielt sich eine reichhaltige Großfauna.

[221] Bzw. *vor* der Eroberung. Denn die Pocken hatten im Inka-Reich ein Chaos verursacht, bevor die Spanier einmarschierten, und waren ein wesentlicher Grund für ihren leichten Sieg. Der Bruderkrieg zwischen Atahualpa und Huascar entstand als Folge des Pocken-Todes des vorherigen Inka. Ähnlich bei der Eroberung Nordamerikas, dessen am dichtesten bevölkerte Kulturen, des Mittelwestens schon vor Ankunft der Weißen durch die Pocken dezimiert worden waren.
Gumilev (1990: 320-321), Diamond (1997: 68-76, 210-212)

[222] ->:GOETHE_FAUST, p. 236

4.6.1. Nyx, die Nacht, Thanatos, der Tod, und Laetae, das Vergessen

In den Eingangsszenen (1328-1384), in denen sich Mephistopheles als der thermodynamische *Archae-Typos* der *Dynamis* und des *Chaos* vorstellt, nimmt er auch auf seine Mutter, die Urmutter *Nyx*, die Nacht, Bezug (1349-1352). Die *Nyx* war als Schwester von Gaia/Gea/Chaea ebenfalls direkt aus dem Chaos entstanden. Seine Geschwister sind nach Hesiodos (211 ff.) "das verhaßte Geschick" (*Moron*) und "das schwarze Verderben" (*Kaera*) und der Tod (*Thanatos*)" sowie der Schlaf (*Hypnos*), die Träume (*Oneiron*), die *Moiren*: *Klotho*, *Lachesis*, und *Athropos*, die *Nemesis*, und die *Laethae* (das Vergessen), sowie noch einige weitere Übel der Menschheit. Sie sind nur als Kollektivität zu verstehen: "Ich bin ein Teil des Teils, der anfangs alles war (*en archae ... ta panta*)[223]" (1348).

Nach der Mythologie war *Laethae* nicht nur eine Göttergestalt, sondern auch ein *Fluß*, von dessen Wasser die Seelen der Toten trinken mußten, wenn sie sich wieder auf die Welt in eine Wiederverkörperung gebären lassen wollten. Und die Mythologie zeigt sehr genau die Verfluchung des "Lebens zum Tode", die im Abriß und Auslöschen der Erinnerung liegt. Deshalb hat der alte philosophische Begriff der *a-laetheia* (das Unverborgene) noch eine andere mythische Bedeutung, der über die philosophische Version hinausreicht. *Alaetheia* bedeutet nämlich wörtlich "die Wieder-Er-Innerung (der Erfahrungen aus früheren Leben)".[224] Nach der Mythologie ist diese Form der *alaetheia* mit der Errungenschaft des Pythagoras verbunden, der von den Göttern ein Geschenk bekommen sollte. Zwar konnte er nicht unter die Unsterblichen aufgenommen werden, und so wünschte er sich die *alaetheia* seiner früheren Leben. Ihm blieb also das Schicksal aller anderen Sterblichen erspart, zwischen Tod und Wiedergeburt alle Erinnerungen an die früheren Leben zu verlieren.

Im Faust-Drama wird der Übergang vom 1. zum 2. Teil (4613-4678), nach den schrecklichen Erlebnissen um Gretchens Tod, mit einem Eintauchen in den Schlaf (*Hypnos*), die Träume (*Oneiron*), und dem Abwaschen der furchtbaren Erinnerungen und der Schuldgefühle in den Wassern der *Laethae* gestaltet (4629). Auf diese Weise kann Faust wieder als Mensch erscheinen, ohne von den bleiernen Schatten seiner Schuld, den Erinnyen, bis an sein Lebensende erbarmungslos gejagt zu werden.

4.6.2. Der Kampf gegen den Sog der Zeit

Die letzten Szenen des Faust-Dramas stellen eindringlich das verzweifelte Aufbäumen der Kreatur gegen den unerbittlichen Sog der Zeit[225] in seiner rasenden Aktivität dar. Der Kampf

---

[223] S.a. Heraklit, B 64

[224] Zu "das Unverborgene", siehe die Diskussion von *ho phainon*, oben. ->:MEPHAISTOS, p. 35
Alaetheia: Heidegger (1976b: 203-238), (1977b: 44-66); Wieder-Erinnerung, (*an-amnaesis*) z.b. Platon, Meno. ->:MNAEMOSYNAE, p. 240

[225] S.a. Gumilev (1990: 198), ->:IMMORTAL_SOUL, p. 243
Heidegger (1977a), § 42, p. 198: Worin das "ursprüngliche" Sein dieses Gebildes [homo] zu sehen sein, darüber steht die Entscheidung bei Saturnus, der "Zeit". Die... vorontologische

gegen die Zeit ist das Wettrennen, und mit genau dieser Formulierung wird auch der Pakt Faustens mit Mephistopheles geschlosssen:

Werd' ich zum Augenblicke sagen: / Verweile doch! du bist so schön! / Dann magst du mich in Fesseln schlagen, / Dann will ich gern zugrunde gehn! / Die Uhr mag stehn, der Zeiger fallen, / Es sei die Zeit für mich vorbei! (1699-1706)

Denn es kommt Faust auf Unsterblichkeit (in der kollektiven Erinnerung der Menschen) an:

Zum Augenblicke dürft' ich sagen: / Verweile doch! du bist so schön! / Es kann die Spur von meinen Erdentagen / Nicht in Äonen untergehn. - / Im Vorgefühl von solchem hohen Glück / Genieß' ich jetzt den höchsten Augenblick. (11581-11586)

Aber in genau diesem Moment, mit der Illusion des Sieges über die Zeit vor den Augen, hat Faust den Pakt verloren:

Den letzten, schlechten, leeren Augenblick, / Der Arme wünscht ihn festzuhalten. ... / Die Zeit wird Herr, der Greis hier liegt im Sand. / Die Uhr steht still - / Steht still! Sie schweigt wie Mitternacht. / Der Zeiger fällt. / Er fällt, es ist vollbracht. / Es ist vorbei. (11589-11594)

Brock (AGEU, 205): Ruhmsucht war das kräftigste Handlungsmotiv des antiken Menschen, weil Ruhm zu erwerben bedeutete, unsterblich zu werden.

Bazon Brock hat die entscheidende Bedeutung der kollektiven Erinnerung für die antiken Menschen dargestellt. In der Erinnerung der folgenden Generationen weitergetragen zu werden, in ihren Geschichten und Gesängen fortzuleben, war ihr höchster Wunsch, wie die griechischen Heroen, die von Homer besungen worden sind. Goethe setzt diese Tradition fort, und läßt sie in Faust II wieder auferstehen, und erfüllt sie wieder mit neuem Leben, indem er sie in die Handlung seines Stücks einbindet. Hier hört das Drama auf, eine Bühne zu sein, auf der das Stück "Faust" aufgeführt wird, und wird gelebtes Leben. Goethe bindet sich selbst, und den Leser, in den Prozeß der kollektiven Erinnerung mit ein.[226]

4.6.3. Kulturelle Transmission als virtuelle Unsterblichkeit

Kulturelle Transmission ist eine Form der virtuellen Unsterblichkeit.[227] Zwar überlebt nicht der Mensch in seiner fleischlichen Form, aber einige seiner tiefsten und wesentlichsten Gedanken und Empfindungen können so über die Jahrhunderte und Jahrtausende weitergetragen werden. Jeder Brahmane, der heute die Sanskrit-Verse des Mahabharata aus dem Gedächtnis rezitiert, er-innert und impersonifiziert nicht nur das *Gedächtnis* an Krishna und Arjuna, sondern Krishna und Arjuna leben in ihm auf eine Weise fort, die in einer Zivilisation der schriftlichen kulturellen Transmission nur schwer vorstellbar ist.[228] Ebenso lebt Mohammed in seinen Koran-Versen weiter fort, und die jüdischen Propheten in den Versen der Bibel. Umgekehrt hat der, der heute diese Gesänge er-innert, auf eine ebenso schwer vorstellbare Weise Teil an der Unsterblichkeit dieser Überlieferung.

Wesensbestimmung des Menschen hat sonach im vorhinein *die* Seinsart in den Blick genommen, die seinen *zeitlichen Wandel in der Welt* durchherrscht.

[226] Goethe (1972: 468-472)

[227] ->:IMMORTALITY_COMPLEX, p. 137

[228] Randaria (1992), Rangachari (1985)

Mit diesem Seitenblick auf die Mythologie und die Religion finden wir einige Hinweise und Gründe für die erstaunliche Tatsache, daß kulturelle Muster extrem langlebig sind. Die Überlieferung der Juden ist etwa 3500 Jahre alt,[229] die Vedische ist ungefähr gleich alt (wenn man nach den Brahmanen geht, aber wesentlich älter),[230] die Christliche immerhin 2000 Jahre, und die Islamische 1400 Jahre. Die australischen Aborigines behaupten von ihrer Überlieferung sogar, daß sie mehrere 10.000 Jahre alt ist, aber das ist kaum zu verifizieren. Die ältesten Staatsformen waren etwa 2000 bis 2500 Jahre alt, aber wiesen große (über hundert Jahre dauernde) Zivilisationseinbrüche auf: So das ägyptische und das chinesische Reich. China stellt heute den langlebigsten existierenden Zivilisationszusammenhang dar, vor allem aufgrund des Konstanzfaktors der Schrift, die über alle Sprach- und Staatsveränderungen hinweg eine Konformität des Denkens über ca. 2500 Jahre versichert hat.[231] Die ältesten europäischen Staaten waren Byzanz und Venedig, mit je etwa 1000 Jahren.

4.6.4. Die Morphologie der Zeit-Geister

Goethe erfand seinen Faust-Stoff nicht aus der Phantasie, sondern er führte damit einen schon lange laufenden Prozess weiter, der im deutschen Sprachgebrauch als ein Phänomen des *Zeit-Geistes* bezeichnet wird. Seine Leistung war es, diesen Stoff, der die Geister der Menschen offensichtlich so tief erregte, in eine neue Form zu überführen, und ihm damit eine neue Aktualität zu geben. Er formte damit ein neues mythologisches Selbstbild des abendländischen Menschen, wie Spengler ausführte,[232] und sein Weitblick erfasste genau die Dynamik der Entwicklung der techno-kapitalistischen Zivilisation, die sich in den letzten 200 Jahren entfaltete. (Binswanger 1985). Im Rahmen der hier aufgestellten *Morphologie der Cultural Patterns* handelt es sich um das *Weben und Wirken von Wesen der Semiosphäre*.[233] Diese ist die Welt der *Zeit-Geister*, in einem sehr wörtlichen Sinn. Denn es sind Geister, deren Wesen mehr *zeit-haftig* ist, als räumlich faßbar. Die *Semiosphäre* ist eine Welt der flüchtigen Phänomene, denn Kommunikationsprozesse sind, auch wenn sie immer auf Medien und Energien angewiesen sind, subtiler als rein materiell-energetische Formungs- und Austauschprozesse (wie etwa das Schmieden eines Eisenstücks). In den Arbeiten von Jung und Campbell (1972-1996) wird das Wirken dieser Wesen als *Mythologisches Drama* bezeichnet. Das Drama von Faust und Mephistopheles behandelt somit einen zentralen Nexus[234] von archetypischen Kräften in der Menschheitsentwicklung. Campbell (1996: 701-793).

---

[229] Wurde aber erst zwischen -586 bis -538 im Babylonischen Exil konsolidiert (das Pentateuch). Stanford (1996: p. 33).

[230] In der brahmanischen Zeitrechnung fällt der Beginn der gerade herrschenden Weltenepoche, des *Kali Yuga*, genau auf das astronomisch bestimmte Datum des 18. Februar 3102 v.u.Z. Dies ist auch der Todestag des Weltzeit-Avatars *Krishna* des vorhergehenden Weltenalters *Dvapara Yuga*. Das Mahabharata-Epos handelt von den Ereignissen unmittelbar vor diesem Datum. Thompson (1989: 19)

[231] ->:CHINESE_WRT, p. 178, ->:CHINESE_ALTERN, p. 186

[232] Spengler (1980); Campbell (1996: 724-778); Gebser (1973), ->:FAUST_BRITT, p. 245

[233] ->:SEMIOSPHERE, p. 116

[234] Im Sinne von Whitehead: ->:WHITEHEAD_SOCIETY, p. 112

4.7. Die Zeitstruktur des menschlichen Erlebens

@:MENSCHZEITSTRU

Alles, was im Leben eines Menschen stattfindet, all sein *Erleben*, *Handeln* und *Erinnern*, passiert im Moment des *Jetzt*, dem *Fokus des Augenblicks*.[235] Dieser Augenblick mit all seinen Geschehnissen und Erlebnissen, reißt den Menschen unwiderruflich den Strom des Lebens entlang. Von diesem unwiederbringlichen Augenblick handeln auch die schicksalsschweren Zeilen in Faust (11581-11594). In der Neurophysiologie spricht man von dem *Drei-Sekunden-Bewußtsein* des Menschen (Pöppel).[236]

Das *Handeln* und *Erleben* kann nur im Augenblick stattfinden. Alles andere ist *Erinnerung* und *Erwartung*, die ebenfalls nur im Augenblick stattfinden. *Erinnerung* ist mit der Vorstellung von der *Vergangenheit* verbunden, *Erwartung* mit der Vorstellung von der *Zukunft*. Die Zukunft ist uns im wesentlichen verborgen. Unsere *Erwartungen* bestehen im wesentlichen aus Extrapolationen unserer Erinnerung, und Schlußformen, die auf Mustervergleichen beruhen. Die bekanntesten davon nennt man *Induktion* und *Kausalität*, und sie lassen einige Aussagen über die Zukunft zu.[237] Heidegger hat in "Sein und Zeit" eine ausführliche phänomenologische Beschreibung des Seins in der Zeit und in der Welt gegeben.[238]

4.7.1. Die Pyramide als Symbol des menschlichen Zeiterlebens

@:PYRAMID_ZEIT

Ein altes Symbol, das wir auf jeder US-1-Dollar Note finden, das Auge auf der Pyramide, gibt eine passende Darstellungsmöglichkeit des menschlichen Zeiterlebens. Im folgenden ist dieses Bild etwas schematisiert dargestellt.

---

[235] s.a. Gumilev (1990: 98-100), Gebser (1973: 15-16).

[236] Pöppel (1978-1995).

[237] S.a.: Hume: zu Kausalität und Induktion (Straub 1990: 139-146), Nietzsche, Götzen-Dämmerung, Die Vier großen Irrtümer

[238] Heidegger: (373): "Die vergangenen und erst ankommenden Erlebnisse sind dagegen nicht mehr, bzw. noch nicht 'wirklich'...
Das Dasein durchmißt die ihm verliehene Zeitspanne ... dergestalt, daß es, je nur im Jetzt wirklich, die Jetztfolge seiner 'Zeit' gleichsam durchhüpft. Bei diesem ständigen Wechsel der Erlebnisse hält sich das Selbst in einer gewissen Selbigkeit durch."
(410) "An das Besorgte vielgeschäftig sich verlierend, verliert der Unentschlossene an es seine Zeit. Daher denn die für ihn charakteristische Rede: 'Ich habe keine Zeit'."
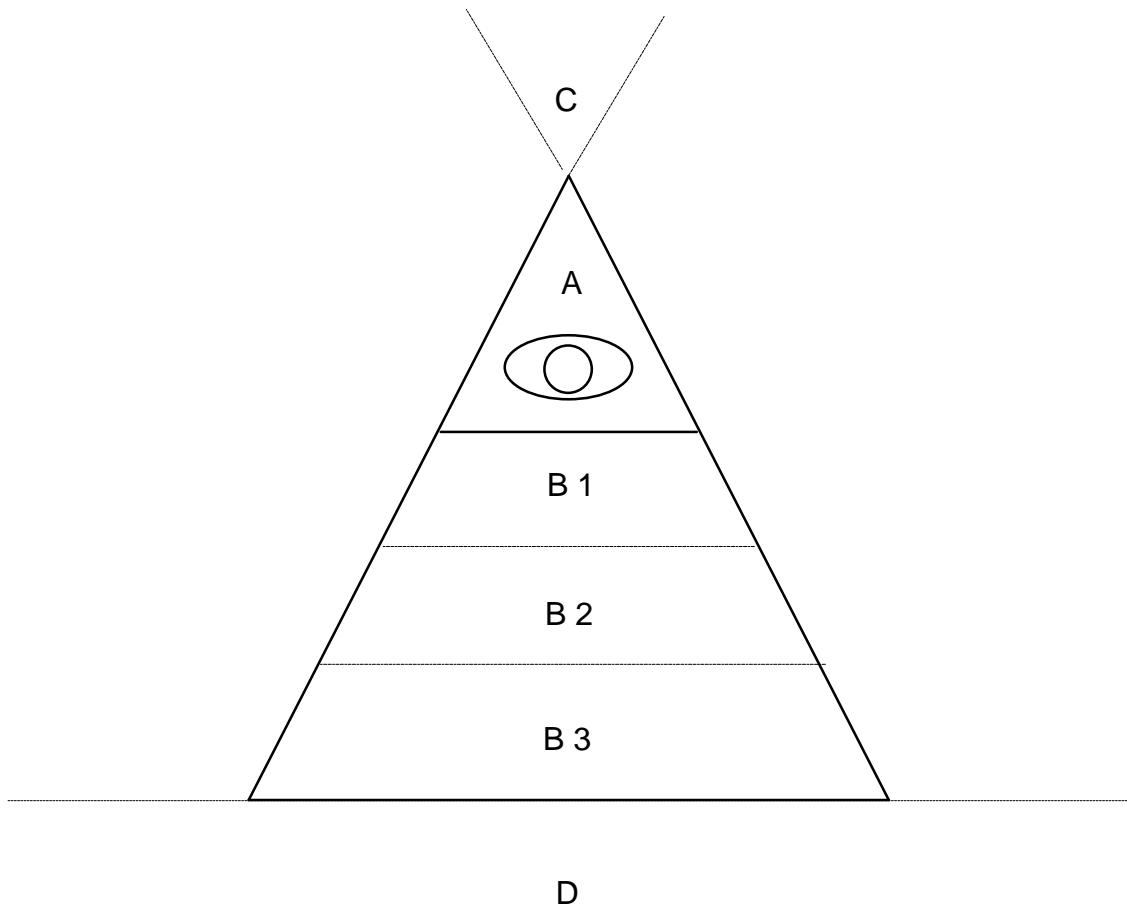
Das Auge auf der Pyramide

4.7.2. Gegenwart - Zukunft - Vergangenheit

In der Figur stellen die Bereiche A, B1, B2 und B3 eine Pyramide dar, wie auf der US-1-Dollar Note zu sehen. Der Bereich (A) auf der Spitze der Pyramide, der das Auge enthält, symbolisiert das *Jetzt* oder *Gegenwartsbewußtsein*, wie es so treffend in der deutschen Sprache heißt: *Der Augen-Blick*. Dies ist das 3-Sekunden Bewußtsein nach Pöppel, also der zusammenhängende Zeitraum, der als der *Moment* erfahren wird. "Vergangenheit ist uns nur präsent als *gegenwärtiger* Gedächtnisinhalt und Zukunft ist nur als *gegenwärtige* Erwartung des Kommenden gegeben."[239] Der Bereich (C) der *Zukunft* ist gestrichelt dargestellt, so daß er wie der Ansatz einer umgekehrten Pyramide über (A) aussieht. Da Zukunft nur in der Imagination und Projektion des Bewußtseins besteht (bevor sie faktisch, und damit erlebte Gegenwart und Vergangenheit geworden ist), ist die Strich-Punkt Linie eine geeignete Form der Darstellung.

---

[239] Pöppel (1995: 77)

Der solide Bau der Pyramide, die Welt des faktischen und gewesenen, aufgeteilt in die Bereiche (B1), (B2) und (B3), ist der Bereich der *Vergangenheit*,[240] in mehreren diskreten Stufen:

B1: die Kurzzeit-Erinnerung und die biographischen Erlebnisse, die Lebenserinnerungen des Individuums.[241]

B2: die kollektive, kulturelle Erinnerung, in Sprache und Erzählungen, Gebräuchen und Traditionen, Schrift, Institutionen und Gesetzen. Weiterhin die durch wissenschaftliche Methoden aus materiellen Spuren erschlossene Vergangenheit. Die Fein-Einteilung in weiteren Stufen ist dargestellt als die Muster-Transmissionen der Ethnosphäre nach den o.g. "Epochen von Muster-Transmissionsklassen".[242]

B3: die phylogenetische Erinnerung unseres genetischen Erbes, die Körperfunktionen, und die Instinkte, der *Weltbildapparat*. Dies beinhaltet die o.g. Muster-Transmissionen der Bio-und Semiosphäre.[243]

Darunter liegt (D), der Bereich, in dem die Pyramide in den Boden übergeht, er deutet die Grenze des Vergessens, des Todes, und des chthonischen, des "Reichs der Mütter"[244] an. Dies ist das Reich der Kinder der Urmutter Nyx, der Nacht, die Goethe im Faust in Nacherzählung der Theogonie des Hesiod und anderer griechischer Mythologien wieder auferstehen läßt, der Schlaf, der Tod, die Nemesis, die Moiren, und ihre Geschwister, die Träume.

4.7.3. Die Kluft, die unsere Vergangeheit und unsere Zukunft unüberbrückbar trennt

@:VERGH_KLUFT

Bazon Brock (1986: 194) stellt die Kluft von Vergangeheit und Zukunft so dar:

Was in der Gegenwart von der Geschichte verwirklicht werden kann - und uns Zukunft garantiert - ist gerade die historische Einmaligkeit und Unwiederholbarkeit alles Gewesenen. **Das in der Gegenwart präsent gehaltene Vergangene** erzeugt uns gegenüber eine schauernmachende Wirkung, weil es uns auf die Kluft verweist, die unsere Vergangeheit und unsere Zukunft unüberbrückbar trennt. Was wir wollen, ist eines, was daraus wird, ein anderes. Niemand - das sagen uns die Zeugnisse der Vergangeheit - kann durch irgendwelche noch so heroische Anstrengungen dafür garantieren, daß sich die Zukunft als Verwirklichung seiner Pläne bestimmen läßt. Sie hat einen eigenen Plan, den erst zu erkennen vermag, wer das Ende der Geschichte in der völligen Stillegung des zeitlichen Vergehens erlebt hat. Das wird der Fall sein, wenn alles bisher Vergangene simultan die lebendige Gegenwart ausmacht und daher nichts Neues mehr geschehen kann. Da dieser Zustand menschlichem Bewußtsein niemals zugänglich sein wird, bleibt es den Menschen verwehrt, von einem Plan der Geschichte Kenntnis zu nehmen.

4.7.4. Ereignislandschaft und Uchronie

@:UCHRONIE

Paul Virilio hat in einem treffenden Bild den Perspektivblick über die gesamte Geschichte des Universums dargestellt. Wenn auch nur in unserer Imagination, können wir von dieser Warte

---

[240] Genauer: der materiellen, faktischen Spuren der vergangenen Ereignisse, denn Vergangeheit ist eine Projektion unserer Vorstellungsmechanismen.

[241] ->:SELBST_ERINN, p. 62

[242] ->:MUSTEREPOCHEN, p. 45, ->:GEOSPHAER, p. 47

[243] ->:BIOSPHAERE, p. 50

[244] Kaiser (1980) ->:GOETHEFAUST, p. 34, ->:FAUSTVIRT, p. 54

eine Perspektive über die **Ge-Schichte** der **Geschichte** erlangen.[245] Wir erinnern uns an die oben genannten "Epochen von Muster-Transmissionsklassen".[246] Es ist ein Aussichtspunkt, der für uns so außergewöhnlich ist, wie für die mittelalterlichen Menschen der Blick Petrarcas 1335 von dem Gipfel des Mt. Ventoux. Der Anregung von Paul Virilio folgend, erblicken wir von dieser hohen Warte - **eine Ereignislandschaft**:

Virilio (1998: 9): Für Gott ist die Geschichte eine Ereignislandschaft. Für ihn gibt es keine Abfolge, weil alles gleichzeitig da ist... Diese nur schwer vorstellbare transhistorische Landschaft erstreckt sich über alle Zeitalter hinweg, von einer Ewigkeit bis zur anderen. Und dieser kaum denkbaren Zone entspringen seit Anbeginn der Zeit die Generationen, die sich durch ihren beständigen Wandel gegen den Horizont einer ewigen Gegenwart abzeichnen... Eine Zeitlandschaft, in der die Ereignisse unversehens an die Stelle der Oberflächengestalt... treten, in der Vergangenheit und Zukunft aus ein und derselben Bewegung hervorgehen und ihre Gleichzeitigkeit offensichtlich zutage tritt.

Der Begriff "**uchronisch**" von Bazon Brock charakterisiert "die Zeitform, in der die verschiedensten Vergangenheiten zugleich präsent sind" (Stratmann 1995: 136), und der Blick über die Ereignislandschaft, "die Erfahrung der Gleichzeitigkeit und der Gleichörtlichkeit" (Brock, AGEU: 134) ist der ultimate Gipfel der Uchronizität.

En archae, kairos: Der Ur-Sprung ist im "Jetzt"

Hier bietet sich der Ansatz für eine weitere Lösung für das wohl älteste *Koan* der Menschheit, zwischen Hesiodos, Anaximandros, Joh. 1.1., und Faust: was denn nun wirk-lich "*en archae*" ist, nach der *"Natur" des Ur-Sprungs*.[247] Der Ursprung liegt "*In der Tat*", wie Faust schon richtig bemerkte, denn das *Jetzt ist ewiges Weben, Werden und Wirken*[248] der thermodynamischen Fließgleichgewichte der Organismen. Aber die Antwort von Faust ist im Sinn von Radio Eriwan zu bewerten: Im Prinzip ja, aber die Fragestellung ist falsch. Man darf nicht danach fragen, was *im Anfang war* (Vergangenheit), sondern was *im Ur-Sprung ist* (Gegenwart). Desweiteren muß man die Fragestellung umkehren, es ist nicht zu fragen, was der *Inhalt des Ur-Sprungs* ist, sondern, *worin der Ur-Sprung* besteht. *Principium (en archae, en-ergeia) non est principiatum (ergon).* Die Römer hatten hierfür in ihrer pragmatischen Art noch einen anderen Satz geprägt: *Hic Rhodos*[249]*, hic salta!*[250]

4.7.5. Mnaemae, Gedächtnis, und Erinnerung

Erinnerung basiert auf *Rekurrenz* ähnlicher Muster im neuronalen System. Das Gedächtnis ist seit Aristoteles Gegenstand intensiver Forschung.[251] Da das Hören eine neuronale Rekurrenz-

---

[245] ->:GE_SCHICHTE, p. 18

[246] ->:MUSTEREPOCHEN, p. 45

[247] S.a. Gebser (1973: 15-16), ->:SPANNUNGSF, p. 22

[248] Faust (447-453), Bachofen (1925: 301-422)

[249] Dies weist möglicherweise auf die Anspielung hin, die Platon im Kratylos zu der Esszenz der Bewegung im "*Rho*" gemacht hat: das "*panta rhei*" von Heraklit...

[250] *saltare*: Springen, Tanzen -> Lucianus: "De Saltatione"; *saltus* bedeutet auch *Schlucht* -> (gr.) *chao-* , *chasm-* -> *ar-chae* -> Ur-Sprung / Ur-Tanz.

[251] Z.B. Assmann & Assmann (1983-1995), Bergson (1919), Connerton (1989), Halbwachs (1985), Harth (1991), Loftus (1980), Norman (1970-1982).

Funktion ist, ist Erinnerung wesensmäßig mit dem Hören verbunden,[252] was die ansonsten kryptische Passage von Aristoteles in seiner Einleitung zur Metaphysik (980 b 21) erhellt. In der heutigen Neurologie sind die Grundfunktionen der Erinnerung, die neuronalen synaptischen Verbindungen, zwar prinziell bekannt, aber wie (und wo) die neuronalen Prozesse für welche Erinnerung(en) genau stattfinden, ist noch weitgehend ungeklärt.[253] Im vorliegenden Zusammenhang sind die allgemeinen Phänomene der Muster-Transmission vorrangig vor differenzierenden Unterscheidungen. *Erinnerung* wird als generischer Begriff für alle in diesen Bereich fallenden Phänomene gebraucht, seine *deut*sche Be-*deut*ung als *Er-Innerung* wird mit Hegel[254] zur Akzentuierung ihres Prozesscharakters und der fortwährenden Neuschöpfung gewählt. Dies positioniert den Gebrauch vor allem gegen den *Speicher*-Aspekt, der in heutigen Diskursen vor allem mit Computer-Metaphern vorherrschend geworden ist. Der Begriff des *memory* bei Computer-Termini wie RAM (Random Access Memory) müßte korrekter *storage* heißen. Um irgendwie gespeichertes Datenmaterial für praktische Aktion nutzbar zu machen, muß es dynamisiert werden, und in menschliche Er-Innerung überführt werden.

4.7.6. Vergangenheit und Selbst-Erinnerung

@:SELBST_ERINN

Selbst-Erinnerung ist der Schlüsselfaktor zur Selbst-Identität des Menschen, und die absolute Schranke der Selbst-Erinnerung ist der Tod, wenn man die Mythologie und die Esoterik einmal außer acht läßt. Erinnerung zeichnet sich wesentlich dadurch aus, daß sie unvollkommen und unzuverlässig ist. Generell ist festzustellen, daß Erfahrungen umso schlechter erinnert werden, je länger sie zurückliegen. Wenn es sich um Ereignisse handelt, die häufig vorkommen, wird das Einzelereignis ebenfalls schlecht erinnert.[255] Heftige Emotionen wirken sich verstärkend auf die Erinnerungsfähigkeit aus. Starke Schmerzen vergißt man so schnell nicht wieder, und vor allem, man vergißt auch ihre Begleitumstände nicht. Daher wurde Schmerz in vielen Kulturen systematisch als Mnemo-Technik par excellence eingesetzt.[256]

Zwischen der absoluten Schranke des *Todes* und dem *Jetzt*, steht noch die *kleine Schranke des Schlafes*, in dem sich jede Nacht die Selbst-Erinnerung ausschaltet, und dem Traumbewußtsein weicht. Normalerweise wacht man am nächsten Morgen wieder mit einer erneuerten Selbst-Erinnerung auf. Aber die *Qualität* der Erinnerung an die Erlebnisse des heutigen Tages unterscheidet sich merklich von der des letzten Tages. Es ist zwar noch die "Ich"-Erinnerung vorhanden, aber wie mit einem Schleier überzogen. Und je weiter wir in unserer Erinnerung zurückzugehen versuchen, desto schleierhafter wird diese.

---

[252] ->:REKURRENZ_MUSIK, p. 43

[253] Roth (1996: 276), Schmidt (1991), Spitzer (1996)

[254] Harth (1991: 99)

[255] Wer erinnert sich noch an den speziellen Atemzug, den er vor 20 Jahren, am Sonntagmorgen, den x.x.xxxx, beim Aufstehen tat?

[256] S.a. "Nichtsprachliche performative Transmissionssysteme" und ->:CULTURAL_MNEMO, p. 230

4.7.7. Das Schnittfeld ontogenetischer und phylogenetischer Transmission im Körper

@:ONTO_PHYLO

Der Körper (das Soma) eines jeden Organismus ist das Produkt der ungebrochenen Reihe der phylogenetischen Transmission von der Entstehung des ersten Lebens bis zum Jetzt. Die Instinkte der Tiere sind phylogenetische "Erinnerungen" an bestandene Herausforderungen ihrer Vorfahren. Ebenfalls kann das Training von Körperfunktionen als ontische "Erinnerung des Körpers" angesehen werden. Wer sich z.B. noch an die Zeit des Laufen-Lernens er-innert, und sich die ungeheuren Anstrengungen und Frustrationen wieder vergegenwärtigt, die das anfangs bereitete, dem ist klar, daß das heutige, so scheinbar anstrengungslose Laufen, eine auf Millisekunden herunterkondensierte, immer weiter fortgeschaltete Erinnerungsfunktion, an die essentiellen Faktoren der Schwerkraft, der Beschleunigung, der Muskelkontraktion, und des Gleichgewichts, ist.[257] Dasselbe läßt sich von allen gewohnheitsmäßigen, erlernten, motorischen Aktivitäten unseres Leben sagen, wie Sprechen, Schreiben, mit-Messer-und-Gabel-essen, Fahrrad- und Autofahren.

---

[257] Sheets-Johnstone (1998, IV): "we have forgotten how we learned to move ourselves".

5. Die Systematik der Formen kultureller Transmission

@:SYSTEMATIK_TRANSMISS

Im folgenden soll ein System der kulturellen Transmission entworfen werden, das die somatischen Faktoren der neuronalen Resonanz mit den extrasomatischen Medien verbindet.

5.1. Das duale Bild von *Kollektiver Erinnerung* und *Transmission des Kulturellen Musters*

Im Sinne der in Kap. 2 dargestellten neuronalen Attraktoren und des Beispiels des Gestalt-Kippbildes läßt sich kulturelle Transmission in zwei dualen Betrachtungsweisen erfassen: Als *Kollektive Erinnerung* und als *Transmission der/des Kulturellen Muster(s)*. Beide sind aus verschiedener Perspektive Sichten desselben Phänomens, so wie *Welle* und *Teilchen* duale Beschreibungunsformen derselben physikalischen Erscheinung sind.[258]

5.1.1. Kollektive Erinnerung

Kollektive Erinnerung ist die Sichtweise aus der Erfahrung des Erinnerungsträgers, des Menschen, der an einer kulturellen Tradition teilnimmt, und sie in jedem gegebenen Augenblick neu inszeniert und belebt. Im ethnologischen Begriff: die *emische* Sicht. Aus philosophischer Sicht ist hier die *Intentionalität* des *Handelnden* bestimmend.

5.1.2. Kulturelles Muster

Das *Kulturelle Muster* (cultural pattern) ist die Beschreibung aus der objektiv(ierend)en Sicht des Anthropologen, der feststellt, daß die Menschen verschiedene, unterscheidbare, aber systematisch zusammenhängende, Lebens-, Glaubens-, und Verhaltensmuster aufweisen, die sich über die Zeit hinweg, *diachronisch* (oder *vertikal*),[259] erstrecken, und sehr oft mehr als die Lebensspanne der einzelnen Menschen. Im ethnologischen Begriff: die *etische* Sicht. Dies wurde zuerst von Ruth Benedict in ihrem berühmten Buch "patterns of culture" formuliert (s.o.). Gumilevs Ansatz des *Ethnos* als thermodynamisch- / biosphärisches Phänomen kultureller Muster wird im vorliegenden Kontext aufgegriffen.[260]

---

[258] ->:SPANNUNGSF, p. 22, ->:CMS_DEF, p. 139

Das Spannungsfeld dieser Sichtweisen wird in der ethnologischen Literatur anhand jeweiligen Positionen und Lehrmeinungen deutlich, die entweder den einen oder anderen Aspekt als bestimmend oder dominierend annehmen. Dazu auch den Beitrag von Ruth Benedict, oder die Diskussion in Strecker (1988: 21-22). ->:MEMORY_PATTERN, p. 134, ->:RITUAL_PATTERN, p. 224

[259] *horizontal* und *vertikal* sind Begriffe aus der Epidemiologie für *synchron* und *diachron*.

[260] Gumilev behandelte das Thema in seinem Werk "Ethnogenesis and the Biosphere" (1990) in Nachfolge von Vernadski u.a. auf thermodynamisch- / systemtheoretisch- / geographisch- / biospherischer Basis. Da die russische Ethnologie relativ isoliert von der europäisch-amerikanischen arbeitete, entstand seine Arbeit anscheinend ohne Kenntnis von Benedict und Bateson. Gumilev erwähnt lediglich die gemeinsamen Vorläufer: Ibn Khaldun, Vico, Spengler und Toynbee (p. 150, 196). Seine Rejektion der Position Toynbees, p. 150-153.

5.2. Somatische und extrasomatische Faktoren der kulturellen Transmission

@:FAKTOREN_TRANSMISS

Kulturelle Transmission findet immer zwischen Menschen statt, insofern steht der Mensch im Fokus der Betrachtung. Als *Überträger /Übermittler* (griech: *Angelos*) der kulturellen Transmission fungiert er/sie als der *Agent*, der/die *Kommunizierende* und *Handelnde*.[261] Kulturelle Transmission kann *direkt* oder *indirekt* stattfinden. Direkt, über *Kommunikation* oder *Manipulation*, und indirekt, über die Ergebnisse der Veränderung von Dingen und Lebewesen der Umwelt, durch die Menschen aufeinander Einfluß nehmen.[262] Die *direkten* Faktoren werden auch *somatische* (körperliche) genannt, die *indirekten* sind *extrasomatische* (mediate) Faktoren der kulturellen Transmission.

5.2.1. Somatische Faktoren: Der Menschliche Organismus in der kulturellen Transmission

@:MENSCHFAKTOR

Die wesentlichen Funktionen des menschlichen Organismus in seiner Rolle als Agent der kulturellen Transmission sind seine körperlichen und seelischen Vermögen: *Wahrnehmungsfähigkeit*, (*Aisthaesis*) *Ausdrucksfähigkeit* (*Poiaesis*) und *Erinnerung* (*Mnaemae,* s.o.). Diese Vermögen beruhen nach heutiger wissenschaftlicher Erkenntnis auf der neuronalen Basis, welche allen höheren multizellularen tierischen Organismen gemeinsam ist.[263]

5.2.2. Die somatischen Faktoren von Wahrnehmungsfähigkeit und Ausdrucksfähigkeit

5.2.2.1. Wahrnehmungsfähigkeit

Die allgemeinste phänomenologische Formulierung der *Wahrnehmungsfähigkeit*, oder *Aisthaesis*, wurde von Peirce das *Phaneron* genannt.[264] Ihre Funktionen werden im wesentlichen unterteilt in:

a) *exogene*, die klassischen *Sinne*: Hören, Sehen, Kinesthetisch,[265] Taktil, Geruch, Geschmack, und

b) *endogene*, Gefühle, und *unspezifische Körper-Wahrnehmungen*. Z.B. Schlafbedürfnis (bei Schlafentzug), Schmerz, Hunger, Durst, Jucken, Sodbrennen, etc. Diese werden im Griechischen auch mit dem Begriff *Pathe-* (Er-Leiden, Er-Dulden) klassifiziert, und sie

---

[261] Gumilev (1990: 204): In the words of Frederick Engels, 'no one can do anything without at the same time doing it for the sake of one or other of his needs and for the sake of the organ of this need'.

[262] Gumilev (1990: 244) definiert hierzu seinen Begriff *ethnocoenosis*: "... besides the total human stock, a certain number of elements of living nature and technically organized inert matter... includes, along with people, certain domestic animals, cultivated plants, and things as objects of use."
(p. 175): "Man... is a social being because his personality is moulded in ceaseless intercourse with other people and with objects created by the hands of his forefathers (technique)."

[263] ->:SOMATIC_FACTORS, p. 145

[264] ->:PHANERON, p. 146

[265] Sheets-Johnstone (1998, IV)

werden hauptsächlich von der Medizin als *Symptomatik* oder *Pathologie* systematisiert. *Krankheiten* sind in unserer Betrachtung ein sehr gewichtiges Element der kulturellen Transmission, sowohl in ihrer *Symptomatik* als auch ihrer *Diagnostik*, und ihrer *Behand -lung*.[266]

c) *mentale*: Gedanken, Vorstellungen, Erinnerungen.

5.2.2.2. Ausdrucksfähigkeit

Die Faktoren der *Ausdrucksfähigkeit,* der *Poiaesis*, sind zu unterteilen in:

1) willkürliche, hier vor allem die Fähigkeiten der *Bewegung* der

     a) Hand (*Manipulation*)

     b) der Körper-(Teile-) allgemein (*Lokomotion*, *Gestik*, *Mimik*, *Kinesik*)

     c) der *Stimme*

2) biologische, vom Willen beeinflussbare, wie

     a) *Atmen*, *Essen* und *Trinken*

     b) die Formen der *Exkretion* des Körpers

     c) die *sexuellen Funktionen*

sowie eine große Zahl von weniger spezifischen Körper-Erscheinungen, wie:

3) Erröten, Gänsehaut, Pupillen-Erweiterung oder -Verengung, Haaresträuben, Schwitzen, Blähungen, Peristaltik, Zähneklappern, Schluckauf, Niesen, die nicht oder nur wenig der willentlichen Kontrolle unterliegen, die aber alle ihre (evtl. unerkannte) Rolle in der kulturellen Transmission spielen. D.h. es sind zwar unwillkürliche Funktionen, die aber von kulturellen Gegebenheiten (mit) ausgelöst und moduliert werden.[267]

5.3. Extrasomatische Faktoren der kulturellen Transmission: performativ - speichernd

@:EXTRASOMATISCH

Außer bei direkter Berührung von Körper zu Körper (als Primär-Medium) ist immer mindestens noch ein anderes Medium in einer Handlung oder einer Kommunikation involviert.[268] Bei Sprechen / Gesang / Musik ist es die Luft, bei Gesten / Tanz ist es das Licht,

---

[266] S.a.: Schweizer (1993: 345-374), Zeitschrift Curare, Gottschalk (1998).
Siehe auch die Betrachtung von Krankheiten als kulturelle Muster der Koexistenz von Menschen und Endo-Organismen (Parasiten).

[267] Beispiel: So ist der völlig durchkulturalisierte Komplex der *Ernährung* natürlich "intimst" mit der *Systematologie der auftretenden Blähungen* verbunden, wie jeder feststellen kann, der in ein Land kommt, wo viele Bohnen gegessen werden. ->:PET, p. 151

[268] ->:CMM_TYPOLOGY, p. 140

beim Schreiben ist es das Papier, die Tinte, und das Licht. Man kann eine Grund-Unterscheidung zwischen (mehr oder weniger)

a) *ephemären (flüchtigen)*, *dynamischen* und[269]

b) *speichernden*, *statischen* Medien machen.[270]

Die entsprechenden Formen der kulturellen Transmission werden in

a) *performativ* mit *ephemären* Medien, und

b) *speichernd*, mit *statischen* Medien

untergliedert.

5.3.1. Informations- und materialtechnische Faktoren zur Klassifikation von Medien

@:INFORMATION_FAKTOR

Im folgenden ist eine Liste von informations- und materialtechnischen Faktoren zur Klassifikation von Medien, wie sie in kulturellen Transmissionen eingesetzt werden. Es werden stichwortartige Beispiele der Verwendung gegeben.

1) Klassifiziert nach Substrat-Material Eigenschaften, Persistenz bzw. Ephemeralität:

Hart/Schwer: Stein, Gebrannter Ton, Metall (Eisen, Bronze[271])

Weich/Schwer (wiederbeschreibbar): Weicher Ton, Gold, Kupfer

Weich/Leicht (wiederbeschreibbar): Wachs

Flexibel/Leicht: Haut (Pergament), Holz, Papier, Papyrus

Phasen-Wechsel (schmelzbar, wiederbeschreibbar): Metall, Wachs, Siegellack

Materie-Fluß, ephemär: Geruch, Feuer, Rauch, Luft- und Wasser-Strömungen

Energie-Fluß, ephemär: Klang, Licht, Elektrizität

2) Haltbarkeit / Speicherzeit / Speicher-Resistenz gegen Korrosion, Schädlinge, Wasser, Feuer:

Lange: (100 J.+): Stein, Metall (Gold, Bronze), Gebrannter Ton, Elfenbein, Pergament

Mittel: (10 J.+): Holz, Papier, Papyrus, Haut, Knochen, Horn

Kurz: (0-1 J.), wiederbeschreibbar: Schiefertafel, Sand-Zeichnungen,

Calculi (Rechensteine, Abacus), Wachs, Weicher Ton

Ephemär: Klang, Licht, Elektrizität

3) Instrument- / Material-Eigenschaften des Markiergeräts:

Härte / Flexibilität: Meißel (Stein), Gravurstichel (Metall), Bleistift, Feder, Pinsel, Airbrush,

Limitationen / Charakteristiken der damit erzeugten Markierungen:

Pinsel: Wellenformen, Feder: Linien, Airbrush: Farb-Wolken

---

[269] ->:DYNAMIC_CMM, p. 203

[270] ->:STATIC_CMM, p. 154

[271] Aere Perennius (Horaz)

4) Technische / materielle / soziale Kostenfaktoren, um Information zu speichern/abzurufen:

Energie * (Personen-Stunden) * (Trainingsaufwand), für Beschaffung des materiellen/ energetischen Substrats, und für die Markier-Geräte:

Prozess der Modulation (Informations-Schreib-Geschwindigkeit)

Prozess des Abrufens des Inhalts (Informations-Lese-Geschwindigkeit)

Haltbarkeit/Kopierbarkeit der Materialien vs. Informationsverlust wegen Kopierfehler

Transportabilitäts-Faktoren, Gewicht und materieller Stabilität

Ökonomische und organisatorische Kostenfaktoren für Kopieren und Sammeln

Kostenfaktoren für Vergleich, Reorganisation, Systematisation.

5) Diverse Informations-Faktoren:

Informations-Dichte absolut (z.B. Zeichen pro cm^2/cm^3),

Informations-Menge pro mittlerer Einheit des Speichermediums,

Informations-Menge pro Gewicht einer Einheit des Speichermediums,

Informations-Transmissions-Geschwindigkeit:

a) Transport des materiellen Substrats

b) Signal-Geschwindigkeit

6) Sensorische Modalität, die betroffen ist:

visuell (Farb-insensitiv / Farb-sensitiv), auditiv, taktil, kinesthetisch, olfaktorisch, geschmacklich

5.3.2. Die Bedeutung der informations- und materialtechnische Faktoren der Medien in den großen Zivilisationen der Geschichte

Die großen Zivilisationen der Menschheit wurden schon vor der heute als Welt-Standard herrschenden Kombination von Buchdruck und Papier auch von ihren unterschiedlichen Informations-Infrastrukturen geprägt, die sich nicht nur durch ihre verschiedenen Schriften, sondern auch aufgrund der unterschiedlichen Materialeigenschaften der verwendeten Medien ergaben. Innis, McLuhan, und die Forschungen in ihrer Nachfolge, haben wesentliche Auswirkungen beschrieben, die mit der Verwendung bestimmter Hauptmedien der kulturellen Transmission auf die Gesellschaften einwirken.[272] Dabei sind die Einflüsse der Medien auf Faktoren von *Raum* und *Zeit* von entscheidender Bedeutung, und zwar bezüglich *Haltbarkeit, Multiplikativität*, und *Mobilität*. *Verbreitbarkeit* ist das Produkt von *Multiplikativität* und *Mobilität*. Stein ist zwar haltbar, aber schwer, und aufwendig zu beschreiben, damit nicht sehr mobil, und nicht sehr verbreitbar. Papyrus/Papier ist leicht, einfach zu beschreiben, und damit sehr mobil und verbreitbar, aber nicht sehr haltbar. Stein wurde daher meist für Langzeit-

---

[272] ->:LIT_CULTMEDIA, p. 140, ->:TECHNO_FACTOR, p. 155, ->:EXAMPLE_CASES, p. 167

Transmissionen (Götterkult, Grab-Inschriften, Monumente des königlichen Ruhmes etc.) verwendet.

5.3.3. Vergleich der Informations-Infrastrukturen Alt-Ägyptens, Mesopotamiens und des mittelalterlichen Europa

Weitere mediale Faktoren lassen sich anhand von Beispielen aus Alt-Ägypten, Mesopotamien und dem mittelalterlichen Europa darstellen.[273] In Ägypten wurde Papyrus für alltägliche und Verwaltungszwecke verwendet. Das Basismaterial kam in den Nilsümpfen (und nur dort) reichlich vor und stellte die materielle Informations-Infrastruktur des Pharaonenreichs. Zwar sind uns aufgrund der geringen Haltbarkeit des Materials Papyrus-Aufzeichnungen hauptsächlich nur aus Gräbern erhalten, aber wir können uns durch Abschätzungen und Vergleiche mit den mittelalterlichen Klosterbetrieben Europas einen guten Überblick über die Informations-Strukturen Alt-Ägyptens machen. Als regionale Verwaltungszentren dienten die Tempel, deren Priesterschaft gleichzeitig die administrativen Aufgaben ausübte. Hier flossen auch die Tribute der Regionen zusammen, und wurden teils eingelagert, teils an die Zentren, wie den Pharaonenhof, weitergeleitet. Wesentliche Unterschiede zur europäischen Kloster-Buchhaltung ergaben sich aufgrund des Schreibmaterials (Pergament in Europa) und wegen der geringeren Informationsdichte der verwendeten Papyrusrollen im Vergleich zu den europäischen Folianten. Papyrusrollen, die häufig referenziert werden müssen, dürfen nicht zu lang sein (ca. 3-5 m, äquivalent 10-20 DIN A4 Seiten), da ansonsten das Aufsuchen einer bestimmten Textstelle zu aufwendig wäre und das Material zu starken Beanspruchungen jenseits seiner geringen mechanischen Belastbarkeit ausgesetzt wäre. Sehr lange Rollen über 10 m sind daher nur in den untypischen Grabbeigaben zu finden, die natürlich nicht für häufigen Gebrauch gedacht waren. Die geringere Informationsdichte schlägt sich zudem in einem höheren Platzbedarf für die Lagerung nieder. Wo man mit Büchern europäischen Typs einen einzigen Bücherschrank braucht, benötigt man mit Papyrusrollen einen ganzen Raum mit Rollenständern. Ein weiterer Informations-Engpaß der ägptischen Buchhaltung ist die Abnutzung der Rollen. Da häufiger Zugriff (wie auch bei heutigen Magnetbändern) Materialabnutzung verursacht, müssen die Rollen häufiger kopiert werden, als bei Folianten, deren weiche Seiten durch den stabilen Einband geschützt sind, und beim Umblättern nicht der Beanspruchung unterliegen, wie eine Papyrusrolle. So brachte die ägyptische Buchhaltung einen erheblichen, konstanten Aufwand des Umkopierens mit sich, der letztlich auch weltgeschichtlich seine Rolle spielte. Wie McLuhan feststellt, trug die Abhängigkeit von Papyrus als strategischem Informations-Medium der Staatsverwaltung mit zum Untergang des Römischen Reiches und letztlich dem Verlust des antiken Wissens bei.[274] Denn nicht nur war in der Antike Ägypten der einzige Lieferant für Papyrus, sondern wegen seines extrem trockenen Klimas ist Ägypten auch einer der wenigen Orte der Erde, wo sich Papyrus auch

---

[273] ->:ANCIENT_MESOPOT, p. 167, ->:PAPYRUS_CMM, p. 169, ->:PAPYRUS_LIB, p. 170, ->:CMM_CLIMATE, p. 172
Die Besonderheiten der Chinesischen Zivilisation in Abhägigkeit von ihrer Schrift werden unter den Schrift-Typen behandelt: ->:SCHRIFTEN, p. 73, ->:CHINESE_ALTERN, p. 186
[274] McLuhan (1972: 61) ->:TECHNO_FACTOR, p. 155

über längere Zeit ohne spezielle Konservierung erhält. Dieser Faktor machte ein noch häufigeres Umkopieren der Schriftrollen in den feuchteren Klimata der Römischen Reichsländer notwendig. Dies wurde zu Zeiten der Prosperität und Expansion von Sklaven besorgt, aber als letztlich alle zu erobernden Nachbarländer erobert waren (oder sich erfolgreich widersetzten, wie die Parther und Germanen), blieb der Sklavennachschub aus, und selbst wenn die Bibliotheken in den Stürmen der Zeitenwende nicht verbrannt wären, so wäre das Material von selbst zerfallen. Zudem war Papyrus durch den jahrhundertelangen Raubbau so selten geworden, daß der Nachschub versiegte. Erst die Umstellung auf das haltbarere, aber auch viel teurere Pergament, und die systematische Sammlung, Schulung, und Nutzbarmachung des intellektuellen Potentials der nachgeborenen, nicht erbberechtigten Söhne Europas in den Skriptorien der Mönchsorganisationen der katholischen Kirche, brachte dann den Umschwung zu einer neuen Informations-Infrastruktur des mittelalterlichen Europa.[275]

Eine völlig andere Informations-Situation lag im antiken Mesopotamien vor. Die Keilschrift ist nur für Inskription, also Eindrücken, oder Einritzen, nicht aber für Auf-Schreiben zu verwenden, und damit an das dort überall vorkommende Material Ton angepaßt und gebunden. Dieser war zwar leicht zu beschreiben, aber schwer, und ungebrannt nicht haltbar, somit nicht sehr mobil, und verbrauchte im Vergleich zu Papyrus noch einmal deutlich mehr Speicherplatz. Den Ton zur Erhöhung der Haltbarkeit zu brennen, war insofern ein Problem, als daß Feuerholz sehr knapp war, so daß man die Täfelchen gewöhnlich nur in der Sonne trocknete. Man stelle sich das Äquivalent eines europäischen Buches in Tontäfelchen vor, die jeweils nur etwa einen Absatz mit ca. 10-20 Zeilen Text enthalten, und man bekommt eine Vorstellung davon, daß Bücherlesen und -Schreiben im alten Mesopotamien eine Art von Jongleurskunst war, ganz abgesehen von der zusätzlichen Komplikation der Keilschrift, die ursprünglich (ca. -3000) für den speziellen Sprachtypus des Sumerischen entwickelt worden war, dann aber von den Akkadern für ihre völlig andere semitische Sprache mehr schlecht als recht angepaßt wurde, und letztlich im Perserreich noch einmal an ihren indo-europäischen Sprachtyp adaptiert wurde.[276] Einen besonderen Vorteil aber hatten die Tontäfelchen-Informationssysteme Mesopotamiens: da gebrannte Tontäfelchen auch als Seiteneffekt von Bränden auftraten, entstand die historische Kuriosität, daß uns die Geschichte Mesopotamiens so gut erhalten ist, gerade weil in der sehr wechselhaften Geschichte des Landes bei den dauernd hin- und herwogenden Zerstörungen und Verwüstungen die Paläste und Tempel immer wieder verbrannt sind. Damit ergab sich also zum Vorteil der Geschichtswissenschaften der umgekehrte Effekt zu der Bibliothek von Alexandria.

---

[275] Hier ließ sich die Geschichte weiter fortsetzen, mit der Einführung des Papiers, das in China erfunden wurde, und das aufgrund seiner Filz-Struktur materialtechnisch erheblich widerstandsfähiger war als Papyrus (Sandermann 1997).

[276] Die Assyrer und Perser verwendeten zunehmend auch Papyrus zum Schreiben, mit aramäischer Schrift und Schreibern.

5.4. Sprachliche / Nichtsprachliche Transmission

@:SPRACHLICH_NICHTSPR

Eine weitere Unterteilungsmöglichkeit der kulturellen Transmission ist diejenige in *sprachliche* und *nichtsprachliche* Bereiche. *Sprache* bedeutet hier: eine natürliche,[277] sprechbare Sprache, wie Deutsch, Englisch, Latein, Griechisch, oder eine künstliche, wie Esperanto. Nicht als *Sprache* bezeichnet werden im vorliegenden Kontext Systeme wie *Musik* und *Mathematik*, sowie die bekannten Computer-"Sprachen". Diese werden zwar oft auch Sprachen genannt, da man ihre Elemente auch verbal aussprechen kann (z.B.: Do-Re-Mi-Fa-So-La-Ti-Do) aber hier ist es eine Definitionsfrage. Es geht hier wesentlich um die Ausdrucksmöglichkeiten, ob man sich mit Hilfe dieser Systeme, z.B. über das Wetter unterhalten kann, oder die Befindlichkeit, oder den Weg von A nach B erfragen kann, was damit eben nicht möglich ist.

Der Grund für diese Unterscheidung ist die starke Dominanz sprachlicher Formen in menschlichen Kulturen, die besonders in der westlichen Zivilisation durch die Schrift noch verstärkt wird. Es ist ein Ziel dieser Studie, die Aufmerksamkeit auf solche Transmissionsformen zu lenken, die der verbal-sprachlichen Behandlung nicht, oder nur schwer zugänglich sind, und auf die Probleme aufmerksam zu machen, die auftreten können, wenn große Segmente nichtsprachlicher Transmission verloren gehen (z.B. Verlust von indigenen oder Handwerks-Traditionen).[278]

5.5. Bewußt / Unbewußt, Funktional / Ritual

Eine weitere Unterscheidung läßt sich zwischen *bewußten* und *unbewußten*, sowie *funktionalen* und *ritualen* Aspekten der Transmission machen.[279] Für die naive Vorstellung von kultureller Transmission sind natürlich die *bewußten* und *funktionalen* Aspekte am sichtbarsten, also z.B. die Inhalte, die die gesellschaftlichen Institutionen, wie etwa die Schule, oder die Universität, vermitteln. Hier werden die bekannten "Kulturgüter" weitergegeben, Fähigkeiten und Fertigkeiten, wie Lesen und Schreiben, oder die Kenntnisse der Wissenschaften. Über diese Transmissionen existiert natürlich schon eine umfangreiche Literatur, wie z.B. aus der Pädagogik. Dieser Bereich kann daher im vorliegenden Kontext als bekannt vorausgesetzt werden.

Die funktionalen Aspekte betreffen die (z.B. in einer anthropologischen Studie) bewußt wahrgenommenen Inhalte von *Nutzung* und *Bedeutung* von Gegenständen und Verhaltensweisen. So müssen z.B. die Formen von Werkzeugen und Geräten bestimmten praktischen Standards genügen, die vom Gebrauch bestimmt werden. Die Wirtschaftsormen von Gesellschaften werden meist unter funktionalen Gesichtspunkten interpretiert, also den

---

[277] "natürlich" ist im strikten Sinn inkorrekt, da Sprache ein Phänomen der Kultur ist.

[278] ->:IN_EXCARNATION, p. 199

[279] s. a. Bateson (1972: 134-144)

materiellen Überlebensbedingungen der Menschen und den Produktionsbedingungen der Güter.

Das *Ritual* als spezifische Form kultureller Transmission ist Gegenstand umfangreicher (und widersprüchlicher) ethnologischer Theorien. Ihn hier im Einzelnen zu erläutern, würde den Umfang dieser Arbeit sprengen. Rituale sind mit stereotypen Handlungssequenzen verbunden, die von der Ethnologie oftmals mangels anderer Erklärungsschemata so bezeichnet werden.[280] Die Definition, was ein Ritual ist, unterliegt demnach einer fast genauso großen Bandbreite, wie der Begriff der Kultur.[281] Auch in der Biologie werden stereotype Handlungssequenzen als Ritual bezeichnet, z.B. beim Balzverhalten von Vögeln (die aber phylogenetisch verankert sind). *Rituale Aspekte* kultureller Transmission sind solche, bei der der Aspekt der *Form* vorrangig vor dem Aspekt der *Nutzung* oder *Bedeutung* ist, so z.B. die Stilformen von Ornamenten auf Geräten und Gebäuden.[282] Im Begriff des Ritual erscheint das primäre Spannungsfeld von Form und Substanz wieder. Ritual muß nicht mit Feierlichkeit und außergewöhnlichen Anlässen verbunden sein, gerade profane und unauffällige Rituale prägen die unterschiedlichen Erscheinungsbilder der Ethnien.[283] Rituale Aspekte der Transmission werden von den betreffenden Handelnden meist mit mythologischen Begründungen, oder profaner, nach dem generellen Erklärungsmuster "das haben wir schon immer so getan", oder "das tut man eben so und nicht anders" rationalisiert. Im vorliegenden Kontext wird *Ritual* für Komposite multi-modaler, multi-medialer Transmissionsformen verwendet, die funktional schwer zu erklären sind, und die eine große diachronische Persistenz aufweisen.

Die *unbewußte Transmission* ist im vorliegenden Kontext besonders wesentlich, weil hier mit Wahrscheinlichkeit die größten "weißen Flecken" auf der wissenschaftlichen Landkarte vorhanden sind.[284] Die Primärbereiche der *unbewußten Transmission* liegen in der frühkindlichen Phase, der "primären Sozialisation", welche im Normalfall zwischen Mutter (oder der Amme) und Kind stattfindet, damit also fast ausschließlich eine Sache der Frauen ist. Deshalb kann man hier auch von einer genuinen Form des *Matriarchats* sprechen, also mit dem alten

---

[280] ->:RITUAL_PATTERN, p. 224, ->:STAAL_RITUAL, p. 225

[281] S.a.: Aquili (1979)

[282] solche Stilformen wurden z.B. von Frobenius und seiner Schule in Verbreitungskarten dokumentiert. S.a. die Werke von Frobenius, und Haberland (1973).

[283] Z.b. Verneinung als Kopfschütteln oder Aufwärtsnicken, Begrüßungsrituale, etc...; bei Luhmann: "Generalisierung von Verhaltens-Erwartungen".

[284] Erdheim (1984), bes. xi, xii, xiv, 327-8, 361. Die Funktionen der Unbewußtmachung der akademischen Wissenschaften werden auf p. xii dargestellt. Der besondere Wirkmechanismus der Unbewußtmachung wird auf p. 291 erläutert:
"Diese im Unbewußten verankerte Unterordnung erzielt eine ähnliche Wirkung, wie wenn sie genetisch gespeichert worden wäre. Dem Bewußtsein entzogen und von einem Schein von Natur umstrahlt, sind diese Normen gegen Verlust und Eingriffe besser abgesichert, als wenn sie, über Einsichten vermittelt, nur im System "Bewußt" eingeschrieben wären."
Ebenfalls Gumilev (1990: 126-127), (p. 186): "ethnoi arise and disappear independently of the existence of any notions of contemporaries." / (p. 175): "Man... his personality is moulded in ceaseless intercourse ... with objects created by the hands of his forefathers (technique)."

griechischen Begriff der *archae*, nicht als *Herrschaft*, sondern als *Ursprung*.[285] Weiterhin von Bedeutung in diesem Bereich ist Unbewußtheit als Faktor und Inhalt kultureller Transmission. Dies ist das Generalthema der Ethnopsychoanalyse (Erdheim 1984).

5.6. Eine Tabelle kultureller Transmissionsformen

@:TRANSMISS_TABLE

Die folgende Abbildung zeigt die o.g. Grundtypen kultureller Transmission als Tabelle. Der Bereich "Ritual" erscheint als wesentlicher Transmissionsfaktor über dem Gitter, und tangiert alle genannten Bereiche.

	I. Sprache	II. Nicht-Sprachl.
a. Speichernd	Schrift Alphabet Non-Alphabet	Operational Abstrakt Ornament etc. etc.
b. Performativ	"Orale" Tradition	Musik Tanz Gestik Gymnastik etc. etc.

Ritual

Nun eine kurze Übersicht über die verschiedenen Formen:

5.6.1. Speichernde sprachliche Transmission: Schriften

@:SCHRIFTEN

Aufgrund ihrer starken Dominanz soll zuerst die *speichernde sprachliche Transmission in Schriften* genannt werden.[286] In den westlichen Zivilisationen wird die *Alphabetschrift*

---

[285] Rancour-Laferriere (1985: 120): "... the 'myth of matriarchy' as a psychological construct built simply upon the universal experience of having had a mother".

[286] ->:WRITING, p. 175, ->:ENCARTA_WR, p. 181

verwendet.[287] Damit verwandte Schriften sind die Arabische und Hebräische, und die indischen Schriften, deren Haupttyp das Devanagari ist. Die chinesische Schrift unterscheidet sich von den Alphabet-ähnlichen Schriften grundsätzlich, weil sie nicht die Laute der Sprache codiert, sondern Konzept-Bilder (Worte und Begriffe). Es existieren ca. 15.000 bis 50.000 verschiedene Bilder (die aus ca. 230 Primitivzeichen zusammengesetzt sind). Um einfache Texte zu verstehen, muß man etwa 3000 Zeichen kennen. Die Komplexität dieses Schriftsystems erscheint oberflächlich als großer Nachteil, aber unter dem Aspekt der kulturellen Transmission hat sie einen entscheidenden Vorteil: Da sie unabhängig von der gesprochenen Sprache ist, können sich die Chinesen verschiedener Dialektgruppen, die sich wie Deutsch und Französisch unterscheiden, über die Schrift verständigen.[288] Ebenso können auch Angehörige völlig anderer Sprachgruppen mit der chinesischen Schrift kommunizieren, ohne chinesisch sprechen zu können, wie die Japaner. Allerdings ist das japanische Chinesisch (Kanji) nicht mehr mit dem chinesischen identisch.[289] Weiterhin wesentlich ist, daß Texte, die z.B. Konfuzius vor 2500 Jahren geschrieben hat, heute noch in der Originalschrift verständlich sind. Um einen entsprechenden Text aus Altgriechenland zu lesen, muß man auch Altgriechisch können, was vor allem in heutiger Zeit der für überflüssig erklärten klassischen Bildung kaum mehr vorkommt. Die Thematik des Faust ist in unserem Kontext ein gutes Beispiel für die Wiederherstellung einer kulturellen Kontinuität zwischen Altgriechenland und dem Heute.

5.6.2. Performative sprachliche Transmission

Performative sprachliche Transmission wird meist *Orale Tradition* genannt, also Märchen, Epen, Sprichwörter, Witze, Rätsel, Schimpfwörter, Flüche, etc. *Sprache* selber ist natürlich auch eine orale Tradition, weil man sie als Kind von der Mutter lernt. (Die Muttersprache).

Das Aoide-Denken: Eine Hypothese von Neuronalen Resonanzmustern in Poesie und Musischer Sprache

In den nichtschriftlichen Kulturen hatte die performative sprachliche Transmission einen wesentlich höheren Stellenwert als in den Schriftzivilisationen, und sie wurde einer speziellen Klasse von Personen anvertraut: Den *Aoidoi*.[290] Sie hatten die vitale Funktion, die Esszenz und die höheren spirituellen Werte ihrer Gemeinschaften über die Zeiten zu tragen, und sie vor Degradation zu bewahren. Nach der heutigen neuronalen Erkenntnis der Arbeitsweise des Gehirns, als *Neuronale Aktivationsmuster*, von *Neuronale Oszillationsfeldern* und logischen *Relations-Strukturen neuronaler Assemblies*, die als gekoppelte dynamische Systeme arbeiten,[291] lassen sich auch neue Hypothesen über die Gehirnfunktionen bilden, die in der epischen Poesie ausgebildet werden. Dies wird im vorliegenden Kontext als die *Aoide-Hypothese* formuliert. Ausgangsbasis dazu ist die *phememe* Hypothese von Mary LeCron

---

[287] ->:ENCARTA_ABC, p. 184

[288] ->:CHINESE_ALTERN, p. 186

[289] Coulmas (1981: 57-80)

[290] Aoidoi, CMB: ->:PRELIMINARY_DEF, p. 103, ->:AOIDE_HYPOTHESE, p. 207

[291] ->:WASMUSTER, p. 41, ->:NEURO_BRAIN, p. 207

Foster (1996).[292] Die Autorin nimmt an, daß in archaischen Sprachen Klänge stärker als Bedeutungseinheiten fungierten als in den modernen Sprachen, daß also die Saussure'sche Doktrin des *Signe Arbitraire* nicht universell gilt (oder galt). Worte müssen ausgesprochen und verstanden werden, sie bauen also auf extrem subtile neuro-muskuläre Konfigurationen auf. Es ist allseits bekannt, daß von allen möglichen Phonemkombinationen jede Sprache nur eine sehr kleine Untermenge verwendet, ein Indiz dafür, daß ein "Sprachzeichen", das Wort, einem sehr engen Selektionskriterium folgen muß, um im "Sprachschatz" seinen Platz zu finden.[293] Auf neuronaler Ebene kann dies begriffen werden als ein "Feld" von aktiven, dynamischen, aufeinander einwirkenden neuronalen Konfigurationen. Auch wenn diese neuronalen Konfigurationen in der Neurologie noch nicht genau bekannt sind, so erlaubt uns der heutige Wissensstand eine hypothetische Formulierung auf dieser Basis. Foster formuliert die Hypothese, daß in der archaischen Vergangenheit eine größere Einflußnahme der Kulturschöpfer auf Kultivation und Formung der Sprache in einer Art *phememe*-Design bestanden hat, als es in der herkömmlichen Sprachforschung angenommen wird. Diejenigen, die das *Sprach-Design* betrieben, waren in Altgriechenland die oben genannten *Aoidoi*. Die Rolle von Goethe in der Formung der neueren deutschen Sprache wurde schon oben angesprochen.[294] Weitere Hinweise finden wir in Platons Werken Kratylos und Timaios.[295] Nach dieser Hypothese lassen sich die Klänge der archaischen Aoide-Sprache auf Basis ihrer spatio-temporalen neuronalen Infrastruktur in einem technischen Modell ähnlich einer Molekular-Simulation darstellen.[296]

5.6.3. Nichtsprachliche speichernde Transmissionssysteme

Wegen der besonderen Dominanz des Druckverfahrens in unserer Zivilisation werden diese grob in solche unterteilt, die auf Papier zu drucken sind, und solche, die sich nicht (so gut) auf Papier drucken lassen.[297] Eine grundlegende Problematik wurde von Tufte dargestellt:

Tufte (1990: 9): The world is complex, dynamic, multidimensional; the paper is static, flat. How are we to represent the rich visual world experience and measurement on mere flatland?

Musik- und Mathematik-Notation, wissenschaftliche Formalsysteme, wie Chemiesymbole, Ornamentik, Graphik allgemein sind druckbare Systeme.

Nicht (so gut) druckbare Systeme gibt (oder gab) es vor allem im indigenen Bereich: wie die Inka-Quipus, die mit Knotensystemen in vielfarbigen Schnüren hergestellt werden, oder die Südsee-Navigatoren-Karten, die aus Stöckchen und Muscheln bestehen. Weiterhin sind sehr

---

[292] ->:PHEMEME_HYPOT, p. 209

[293] Cassirer (1960: 161)

[294] In dem Sinne, wie Platon in Kratylos (390e) Homer den *daemiourgon onomaton* nannte. s.a. Cassirer (1960: 198-201), Cassirer (1994: 113-118). Zu der Rolle von Goethe in der Neuschöpfung in der deutschen Sprache. ->:EX_ARCHAE, p. 36

[295] ->:KRATYLOS_HYPOT, p. 213

[296] ->:AOIDE_MODEL, p. 210

[297] ->:STATIC_CMM, p. 154, ->:IN_EXCARNATION, p. 199

verbreitete materielle Transmissionssysteme mit Webtechnik verbunden, sowie mit Flechtwerk (Körben, Wandschirmen, etc.). Diese Transmissionssysteme sind entweder meist schon verschwunden, oder im Zuge der Tourismus- Souvenir-Industrie in ihren Formen und Detailreichtum stark degeneriert. Ein wesentlicher, von der Schrift nicht nachzuahmender Aspekt dieser Systeme, die mit Knoten, Web- und Flechtarbeit zu tun haben, ist, daß es für den Produzenten eine wesentlich andere körperliche Beteiligung bedeutet, ein solches Werk herzustellen. Bei den Knotensystemen, wie den Quipus, gilt das ebenfalls für den Rezipienten. Die körperliche Präsenz und manuelle Performanz hat vor allem eine Auswirkung auf die Aufmerksamkeit und das Gedächtnis. Wie die in vielen Religionen verbreitete Benutzung des Rosenkranzes zeigt, hat das manuelle Bewegen von solchen Strukturen eine besondere neuronale Wirkung, die u.a. unter dem Begriff "Meditation" bekannt ist. Den Kontrast dazu, wie leicht es ist, etwas zu vergessen, das man nur mit den Augen wahrgenommen hat, kann man selber jeden Tag erleben. Die Schrift ist zwar sehr praktisch zum schnellen Schreiben und Lesen, aber nicht gerade optimal für das Behalten von Texten. Das hat Plato schon in seinem "Phaidros" bemängelt: "Denn sie [die Schrift] wird Vergessenheit in den Seelen derer schaffen, die sie lernen... Also nicht für das Gedächtnis, sondern für das Wieder-Erinnern hast du ein Elixier erfunden." (247c).[298]

Alle bildenden Kunst- und Handwerkstraditionen im weitesten Sinne gehören natürlich ebenso in diese Kategorie.

5.6.4. Nichtsprachliche performative Transmissionssysteme

Hier sind weit bekannt: der Tanz, das Ballett, der Sport (Gymnastik), Fechtkunst, asiatische Kampfsportarten, Yoga, Gaukelei, Massage, und Sexualkünste (z.B. Tantra, Kama Sutra).[299]

Besondere Bedeutung in diesem Bereich haben Transmissionssysteme, die mit Lust und / oder Schmerz verbunden sind. Der *sexuelle Akt* bietet die direkteste und intensivste Erfahrung lustbetonter neuronaler Resonanz.

Im Bereich schmerzbetonter neuronaler Resonanz finden sich die Phänomene der sadomasochistischen und punitiven Kultur[300]: Krieg, Prügel, Strafen, Folterungen, Körperverstümmelungen. Letztere gehören zum Standardrepertoire der meisten indigenen Initiationsrituale und sind damit sehr wesentliche kulturelle Transmissionssysteme. Besonders bemerkenswert erscheint unter diesem Aspekt die Tatsache, daß Dinge, die unter Schmerzen gelernt werden, besser in der Erinnerung behalten werden, als ohne. Schmerz war und ist in allen kulturellen Traditionen immer noch so etwas wie ein mnemotechnisches Wundermittel.

---

[298] ->:SIDE_EFFECTS, p. 200, ->:QUIPU_MNEMOTECH, p. 173

[299] ->:DYNAMIC_CMM, p. 203

[300] Z.b. Root (1996) "Cannibal culture"; Siu (1993): Panetics; Foucault (1969): "Überwachen und Strafen"; Clastres (1976); Lloyd de Mause (1974); Miller (1998): "Schrebers mörderische Kinder".
->:PANETICS, p. 233

In der europäischen Tradition sind in diesem Zusammenhang die bekannten Prügel-Schulen[301] zu nennen, aber auch Militär, Gefängnisse, und Konzentrationslager.

Dies zeigt uns eine sehr dunkle und pathologische Seite der kulturellen Tradition der Menschheit, die sich auch mit gutem Willen und moderner Gesetzgebung kaum auslöschen lassen wird. Denn nicht erst seit Freud wissen wir, daß der am wenigsten bewußte Schmerz, das am tiefsten verborgene Leiden, und die am tiefsten verdrängten Schrecken, auch die dauerhafteste mnemonische Beständigkeit haben. Dies erklärt auch die tiefsitzenden Feindschaften unter den Ethnien, die über Jahrhunderte gegeneinander Blutrache-Feldzüge führen, wie gerade in Ex-Jugoslawien geschehen. Das allgemeine Gesetz der Presse: "*Real News are Bad News*" gilt übertragen auch für die kulturelle Transmission: "*Bad oldies are the most persistent oldies*".

Nietzsche stellte dies in seiner "Genealogie der Moral"[302] so dar:

Vielleicht ist sogar nichts furchtbarer und unheimlicher an der Vorgeschichte des Menschen, als seine Mnemotechnik. "Man brennt etwas ein, damit es im Gedächtnis bleibt: nur was nicht aufhört weh zu tun, bleibt im Gedächtnis" - das ist ein Hauptsatz aus der allerältesten ... Psychologie auf Erden... Es ging niemals ohne Blut, Martern, Opfer ab, wenn der Mensch es nötig hielt, sich ein Gedächtnis zu machen; die schauerlichsten Opfer und Pfänder (wohin die Erstlingsopfer gehören), die widerlichsten Verstümmelungen (zum Beispiel die Kastration), die grausamsten Ritualformen aller religiösen Kulte (und alle Religionen sind auf dem untersten Grunde Systeme von Grausamkeiten) - alles das hat in jenem Instinkte seinen Ursprung, welcher im Schmerz das mächtigste Hilfsmittel der Mnemotechnik erriet... Je schlechter die Menschheit "bei Gedächtnis" war, um so furchtbarer ist immer der Aspekt ihrer Bräuche.

5.6.5. Faktoren der Dynamik in der kulturellen Transmission

@:FAKTOR_DYNAMIK

In den westlichen Zivilisationen herrscht ein Übergewicht der statischen, speichernden Formen der Transmission, also all dessen, was man in Bibliotheken und Museen einlagern und zur Schau stellen kann, die sogenannten "Kulturgüter".[303] Auch performative Kultur, wie Musik und Theater, wird zumeist über Speichermedien tradiert. Der Vorteil dieser Formen ist, daß keine fortwährenden Anstrengungen unternommen werden müssen, um die Transmission aufrechtzuerhalten, und die Permanenz des Materials eine gewisse Sicherung gegen Verluste bietet. Der Nachteil ist, daß das Gespeicherte den essentiellen Hauptfaktor des Lebens, die Dynamik, verliert. Ein weiterer Nachteil ist die Tendenz des ungehemmten Anwachsens der gespeicherten Aufzeichnungen, und der fehlende Anreiz, die Kondensation und Synthetisierung des Materials zu optimieren. Abgesehen von den Lagerungskosten ergibt sich die Gefahr von Transmissionsverlusten, die durch den "Nadel-im-Heuhaufen"-Effekt entstehen: Wichtiges Material gerät in Gefahr, unter Massen von mitgespeicherten Duplikationen und Paraphrasen verloren zu gehen, und gesuchte Information ist zwar

---

[301] Peter Gay (1993: 181-212), ->:CULTURAL_MNEMO, p. 230

[302] ->:NIETZSCHE, p. 77

[303] ->:DRAWBACKS, , p. 191, ->:BIBLIOSPHERE, p. 195, ->:OBSOLESCENCE, p. 200,

irgendwo in den Bibliotheken und Museen der Welt vorhanden, aber nicht mehr auffindbar. Dies betrifft besonders Themen, die sich schlecht auf Stichwort- und Klassifikationsverzeichnisse abbilden lassen.[304] In rein performativen Traditionen, wie bei den australischen Aborigines, muß die Kultur im permanenten dynamischen Fluß, in permanenter Er-innerung und Re-Inszenierung, und damit in immerwährender Präsenz in der Aktualität des gelebten Lebens gehalten werden.[305] Alles, was die Menschen solcher Kulturen an immateriellen Kulturgütern von Generation zu Generation übermitteln, erhält entweder die lebendige Seele dieser Kultur, oder die Kultur stirbt. Leider ist in den letzten 100 Jahren genau dies weltweit geschehen, nicht nur in Australien, sondern überall sterben die indigenen performativen Traditionen rapide aus.[306]

@:ANIMA_SANA

Ein weiteres Problemfeld speichernder Transmissionen sind die Gesundheitsprobleme, die in Verbindung mit überwiegend statischen Arbeitsweisen auftreten können, die körperliche Bewegung, und Atmung, der gesamte physische Tonus, ist beim sitzenden Arbeiten am Schreibtisch und am Computer auf ein Minimum eingeschränkt.[307] Im Gegensatz zu den Zeiten Goethes, Schillers und Humboldts, als nur eine extrem kleine Minderheit der Bevölkerung eine formale universitäre Ausbildung erhielt, und die überwiegende Mehrheit die informellen, dynamischen Transmissionen der Bauern und Handwerker übernahm, befindet sich heute die Mehrheit in Schreibtisch-Arbeitssituationen. Die Handwerkstraditionen sind fast ausgestorben, oder erhalten sich nur in kleinen Nischen. Die dynamische Transmission wird in den europäisierten Zivilisationen nur von einer sehr dünnen Minderheit gepflegt, wie Tänzer, Schauspieler, und Akrobaten. Für die überwiegende Mehrheit der Bevölkerung ist das nur als Freizeitaktivität und Hobby möglich. Es erscheint angebracht, der dynamischen Transmission mehr Gewicht beizumessen, wobei sich besonders die Pflege der Bereiche *Tanz*, (improvisierende) *Musik* und *Rhythmik*, *Akrobatik*, und *Gymnastik* im Sinne der antiken *paideia* anbietet, und eine neue Formulierung des alten Erziehungsideals als "*anima sana in corpore sano*" bewirken könnte.

5.6.5.1. Ein Programm zur Dynamisierung des Wissens: Die Wiedereröffnung der Peripatetischen Schule

@:PERIPATEISCH

Ein weiterer Vorschlag, um eine entscheidende Weichenstellung zur Dynamisierung der kulturellen Transmission einzuleiten, ist:

Die Wiedereröffnung der Peripatetischen Schule.

---

[304] ->:LOGOCENTRISM, p. 197

[305] Weidtmann (1998), ->:ABORIGINES, p. 222

[306] ->:BASTIAN_SAVE, p. 111

[307] ->:IN_EXCARNATION, p. 199

Damit ist nicht gemeint das System von Lehrmeinungen, das uns Aristoteles hinterlassen hat,[308] sondern viel einfacher, *die Methode seines Lehrens*, die, im Gegensatz zu seinen Lehr-*Inhalten*, zeitlos gültig und wertvoll ist.[309] Dies ist vielleicht das größte, und bedeutendste, bisher noch völlig unbeachtete Vermächtnis dieses großen Denkers. Das Programm ist sehr einfach zu formulieren: Von einem bestimmten Zeitpunkt X an, wird der Unterricht an den Schulen und Universitäten der Welt nur noch *peripatetisch* durchgeführt, d.h. im Umhergehen. Wobei es durchaus erwünscht ist, daß dabei auch stärkere Bewegungen stattfinden, wie z.B. Springen, Klettern, Tanzen, Hämmern, Sägen, Nageln, Feilen, und Musizieren. Sodann soll neben Sprechen auch Singen erlaubt sein. Strikt verboten ist aber das Hinsetzen während des Unterrichts, das nur während der Pausen erlaubt ist. Auf diese Weise wäre ein starker Anreiz gegeben, das Menschheitswissen in dynamischer Form darzustellen und zu übertragen, und es bestehen Chancen, dadurch eine wesentliche Blockade unserer Zivilisationen aufzulösen. Da wir mit unserer Computertechnik schon heute technisch dazu in der Lage sind, geht es nur noch darum, diesen Plan auch umzusetzen.

5.6.5.2. Die japanische Kata-Tradition

Hier soll auch der Beitrag der japanischen Kultur Beachtung finden, die, wohl einzigartig für eine industrialisierte Zivilisation, noch heute eine Tradition der *Muster der reinen Bewegung* unterhält: Die *Kata*.[310] Dies wird in allen (Budo-) Kampfkünsten, sowie der Noh-, Bunraku-, und Kabuki-Tradition gepflegt. *Kata* ist die Esszenz des *Nicht-fixierbaren*, ein System von kombinierbaren Bewegungsformen, die jeweils im und aus dem Augenblick heraus inszeniert werden. Diese kompromißlose Fokussierung auf den Moment, das *Jetzt*, seine unbedingte Erfahrung und Auskostung, ohne ihn anhalten zu wollen, ist die Esszenz der buddhistischen Zen-Tradition. Sie stellt damit den komplementären Gegenpol zu dem Grundmotiv der Szene aus Faust (11581-11594) dar.[311]

---

[308] Bzw., da uns keine Originalwerke erhalten sind und die vorhandenen Schriften aus Notizen seiner Schüler zusammengeschrieben wurden, das, was alle die unzähligen Generationen seiner Rezipienten und Rezipienten von Rezipienten daraus gemacht haben.

[309] Siehe auch das obige "Spannungsfeld von Form und Substanz" ->:FORMSUBST, p. 29

[310] Spengler (1980: 703-713) beschreibt unter der leider sehr irreführenden Bezeichnung "Das Wesen der Rassen" die Esszenz seiner dynamischen Morphologie als "Physiognomie der Bewegung" (708). Da in den westlichen Zivilisationen kein Term existiert, der genau das Wort "Kata" übersetzt, und der Begriff *Morphologie* von vielen anderen Bedeutungen überfrachtet ist, wäre für den vorliegenden Kontext der Terminus Technicus *Kata-Logie* eher angebracht, um Mißerständnisse zu vermeiden.
Blassen (1987), ->:KATA, p. 221, ->:PATICCA_SAMUPPADA, p. 120

[311] ->:IMMORTAL_SOUL, p. 243

5.7. Kulturelle Transmission nach Altersstufen

@:ALTERSSTUFEN

Die Hauptformen der kulturellen Transmission beim Menschen lassen sich nach den Altersstufen unterteilen, in denen sie stattfinden.[312] Ihre Abfolge entspricht den Entwicklungsstadien und der Plastizität des Nervensystems:

5.7.1. Jahr 0 bis 3: Primäre Sozialisation

In dieser Phase findet kulturelle Transmission hauptsächlich auf neuronaler Ebene statt.[313] (Primäre Sozialisation, Radermacher (1998), Ebene 2).[314] Dies beginnt schon im Mutterleib, vor allem über klangliche / rhythmische / kinesthetische Einflüsse. Der Foetus nimmt den Klang der mütterlichen Stimme und ihre Bewegungen, sowie andere Geräusche der Umwelt wahr. In der Beziehung zwischen Säugling und Mutter kann man Muttermilch auch als Kommunikationsform ansehen, z.B. für Hormone und Antikörper. Der starke Emotional-(neuronal-) Kontakt zwischen Mutter und Kind beim Saugen an der Brust ist bestens bekannt. Das Kind lernt im engen Kontakt mit der Mutter die fundamentalen kulturellen Muster vom Umgang mit dem Körper (aufrechter Gang, Bewegungsmuster, Exkretionskontrolle), sowie primäre Sozialformen (Proxemik, Kinetik), die in seiner Kultur vorherrschen, sowie die *Muttersprache*. Das Kind hat in dieser Phase keine Wahl, als die angebotenen Kulturmuster zu übernehmen. Wenn auf dieser Ebene eine Blockade der neuronalen Resonanz eintritt (z.B. Autismus),[315] ist das Kind mit großer Wahrscheinlichkeit in seiner weiteren Entwicklung für immer gestört. Diese Ebene kann auch als *Prägung* bezeichnet werden, da die in dieser Phase erworbenen neuronalen Muster später nicht mehr durch andere zu ersetzen sind. So ist z.B. die in dieser Phase erworbene neuronale Disposition zum Verstehen und Aussprechen der Nuancen der chinesischen Tonsprache nicht mehr durch späteres Lernen akzentfrei zu beherrschen. Eine systematische Behandlung dieser Transmissionsformen ist dadurch erschwert, weil sie weitgehend unbewußt stattfindet. Sie läßt sich nur durch Beobachtung von Pathologien (s.o.) und differenzielle Analyse im Kulturvergleich durchführen. Das *Sprachlernen* bildet die Basis für die weiteren Formen der *Sekundären Sozialisation*.

5.7.2. Jahr 1 bis 5: Die Spielphase.

Je nach den kulturellen Gegebenheiten kann das Kind nach dem Laufenlernen mehr oder weniger autonom seine Umgebung aktiv erforschen.[316] Hier fand vor dem Zeitalter der Kleinfamilien und Massemedien der westlichen Zivilisationen (z.T. bei "indigenen" Völkern noch heute) eine wesentliche orale Transmission über Geschichten, Märchen, und Erzählungen statt, mit der die Kinder von den Großeltern (die von Erwerbsaufgaben freigestellt waren) und Verwandten, oder Ammen...

---

[312] ->:AGE_GROUP, p. 227
[313] ->:IMPRINTING, p. 227
[314] Lock (1996), Ch. 15; p. 587; Kolata (1984).
[315] Sacks (1995: 233-282)
[316] ->:EXPLORATION, p. 228

in die fundamentalsten Kenntnisse von Leben und Tod und Himmel und Hölle eingeführt worden waren... Die Institution, die die nahtlose Übermittlung vollzieht, heißt Kinderstube, und die kompetente Literaturgattung für solche Informationen nennt man seit alters 'Ammenmärchen'.[317]

Ebenfalls fand kulturelle Transmission nicht nur von den Erwachsenen, sondern auch von Kindern gleicher oder höherer Altersstufen statt. Es existier(t)en z.B. geschlossene Kindergesellschaften, die eine völlig eigene Traditionsform haben/hatten. Gleichzeitig ist diese Phase von aktiver Gestaltung gekennzeichnet. Die frühere, quasi autonome Tradition unter Kindern ist in den westlichen Zivilisationen (und heute mit dem *McDonalds-CNN-Effekt* praktisch global) durch das Fernsehen entscheidend verändert/zerstört worden, denn die modernen Mythen von Sesamstraße und Soap-Operas, bis zu den 100.000 Gewalt-Szenen, die ein Kind durchschnittlich im Fernsehen sieht, haben einen wesentlich anderen Charakter und Hintergrund als die alten Traditionen.

5.7.3. Jahr 5 bis 20: Die formale Lernphase

Die formale Lernphase unter Aufsicht der Erwachsenen, (Radermacher (1998), Ebene 3), Transmission der hauptsächlichen symbolischen Kulturinhalte.[318] Je nach den kulturellen Gegebenheiten wird das Kind entweder in die formale Schulung des Erziehungssystems eingegliedert, und lernt Schreiben und Lesen, sowie mathematische Grundfertigkeiten, oder wird in den traditionsorientierten Jäger- / Krieger- / Sammler- / Bauern- / Handwerks-Fertigkeiten seiner Gesellschaft ausgebildet.

5.7.4. Zwischen Jahr 14 bis 25: Übergang ins Erwachsenenleben

Je nach den lokalen Gegebenheiten wird der/die Heranwachsende mit mehr oder weniger Zeremoniell in die Welt der Erwachsenen eingeführt. Im indigenen Setting *Initiation*, in zivilisierten Gesellschaften "*Mittlere Reife*", "*Berufseintritt*", "*Matura*", "*Graduation*" o.ä. genannt.[319] Als Erwachsener kann er/sie dann die Aufgabe der Fortpflanzung und die Rolle der kulturellen Transmission an die nächste Generation übernehmen.

5.7.5. Über 25 Jahre

Danach ist (zumindest theoretisch) die Möglichkeit gegeben, an der kulturellen Transmission (Bildung) höherer Ebene bzw. höherer Abstraktionsgrade teilzunehmen,[320] entweder indigenen Initiationsgraden höherer Ordnung[321] oder in den Zivilisationen, akademischen Abschlüssen höherer Weihen ("*Promotion*", "*Habilitation*"), und in den Kreis derer aufzusteigen, denen die Lizenz zur aktiven Gestaltung und Re-Inszenierung des kulturellen Materials verliehen wird: Die Aufnahme in die kulturelle Elite einer Gesellschaft.[322] Dies wird das Thema des nächsten Abschnitts sein.

---

[317] Raible (1991: 172).

[318] ->:EDUCATION_INITIATION, p. 229

[319] Prahl (1974), ->:INITIATION_PATTERN, p. 229

[320] Radermacher, Ebene 4

[321] z.B. Elkin (1977), ->:INITIATION_PATTERN, p. 229

[322] Prahl (1974)

6. Kultur im Spannungsfeld von Tradition und Innovation

@:TRADITION_INNOV

Wahre Tradition scheidet Bleibendes von Vergänglichem.

Franz Kardinal König[323]

Der Schwerpunkt dieser Arbeit lag bei den "Formen der kulturellen Transmission". In diesem letzten Abschnitt soll eine kurze Darstellung der Innovation folgen.

Bazon Brock erinnert uns in seiner "Theorie der Avantgarde" daran,[324] wie die kulturelle Tradition aus dem "Jetzt" bestimmt wird:

Traditionen sind nichts anderes als die sich aus der jeweiligen Zeitgenossenschaft nach rückwärts ergebenden Auffassungen von den Zusammenhängen historischer Ereignisse... Traditionen wirken nicht, wie der gesunde Menschenverstand behauptet, aus der Geschichte in die jeweiligen Gegenwarten, sondern aus der Gegenwart in das Gefüge historischer Sachverhalte, insofern sie sie zur "Geschichte" zusammenschließen.[325]

Unter Verweis auf Klotz führt Brock weiter aus:

Das Neue in den Künsten der jeweiligen Zeitgenossenschaften wird nur substantiell erfahren in den jeweils neuen Kunstgeschichten. Die Funktion des zeitgenössisch Neuen besteht darin, dasjenige Alte aneignen zu können, zu dem wir ansonsten keinen Zugang hätten. Erst darin werden auch die alten Bestände über ihre historische Faktizität hinaus zu geschichtlichen Ereignissen in ihrer Unverwechselbarkeit und jeweiligen Einmaligkeit. Die historischen Bestände werden erst aus der Blickrichtung des zeitgenössisch Neuen als unwiederholbare und deswegen bewahrenswerte bestimmbar. Deshalb unsere These: Avantgarde ist nur das, was uns veranlaßt, die angeblich gesicherten Bestände der Tradition auf neue Weise zu sehen, d. h., neue Traditionen aufzubauen.

Im vorliegenden Kontext soll diese Darstellung auf den gesamten Bereich der kulturellen Transmission ausgedehnt werden. Es ist die (anzustrebende) Aufgabe der Avantgarde, den Gesamtbestand der kulturellen Transmissionen aus der Perspektive[326] des "Jetzt" zu erfassen, zu bewerten, und neu zu kreieren und zu inszenieren.[327] Natürlich ist dies angesichts der ungeheuren Massen akkumulierter "Kulturgüter" in Bibliotheken, Museen, und Archiven eine

---

[323] Zit. in Straub (1990, p. 139)

[324] Brock: "Theorie der Avantgarde"

http://www.uni-wuppertal.de/FB5-Hofaue/Brock/Schrifte/AGEU/Avantrad.html

Brock, AGEU, p. 344-349, "Sind Lebensformen gestaltbar?"

http://www.uni-wuppertal.de/FB5-Hofaue/Brock/Schrifte/AGEU/Lebensfo.html

Brock: "Begriff und Konzept des Sozio-Design"

http://www.uni-wuppertal.de/FB5-Hofaue/Brock/Schrifte/AV/SozioDes.html

[325] Brock: .../Avantrad.html

[326] s.a. das Kapitel zur Morphologie; ->:PERSPECTIVE_VIEW, p. 110

[327] Cassirer (1994: p. 111): "... warum die wahrhaft großen Werke der Kultur uns niemals als etwas schlechthin Starres, Verfestigtes gegenüberstehen, das in dieser Starrheit die freie Bewegung des Geistes einengt und hemmt. Ihr Gehalt besteht für uns nur dadurch, daß es ständig von neuem angeeignet und dadurch stets aufs neue geschaffen wird.

Und weiter unten auf p. 111, die Erwähnung der Renaissance als Neuschöpfung der damaligen Epoche und nicht bloß {Rezeption / Transmission} antiker Inhalte.

Ebenfalls hier demonstriert an dem Beispiel von Goethes Faust, das die antike Tradition re-kreiert, und in der in der vorliegenden Arbeit wieder aufgenommenen Re-Kreation spezieller Aspekte des Faust-Stoffs.

eher uchronische Vorstellung.[328] Aber diese Formulierung eignet sich gut dazu, den anderen, dynamischen Pol des "Spannungsfelds von Tradition und Innovation" darzustellen, dessen statischer Gegenpol die *Bibliosphäre* der gesammelten materiellen Aufzeichnungen und Darstellungen menschlicher kultureller Produktion der letzten ca. 5000 Jahre ist.[329]

@:INNOVATION_GEFAHR

Doch hier treten noch andere, sehr viel akutere Spannungen auf, nämlich die der sozialen Gruppen einer Gesellschaft, die als Agenten der jeweiligen Pole handeln. Dieser Aspekt des "Spannungsfelds von Tradition und Innovation" läßt sich in Paraphrase von Wilhelm Busch darstellen: "*Innovation wird als gefährlich oft empfunden, weil stets sie mit Veränderung verbunden*".

Es lassen sich die folgenden Fragen stellen:

1) Wer wünscht Veränderung, (*Druck*, *Drang*), wer möchte sie verhindern (*Inertia*, *Widerstand*)? Generell sind die unterprivilegierten und jungen Gruppen einer Gesellschaft mehr an Veränderung interessiert als die alten und privilegierten. In diesem Spannungsfeld entsteht Konfliktpotential: zwischen Generationen, und zwischen {Klassen / Schichten / Interessensgruppen} einer Gesellschaft.[330]

2) Wer ist *befähigt*, Innovation einzuleiten/ durchzuführen, wer hat die Erlaubnis (*Lizenz*) dazu? Zwar haben unterprivilegierte Gruppen sicher den größten *Drang* nach Veränderung der Verhältnisse, aber es ist zu bezweifeln, ob damit auch die *Befähigung* verbunden ist, wie die Erfahrung nach diversen Revolutionen zeigt, bei denen die neuen Herrschaftsschichten sich meist als erheblich unfähiger und korrupter als die alten erwiesen. Als Gegenbeispiel hat z.B.

---

[328] sprich: bei mehreren Millionen Jahren Lesezeit, die ein Mensch benötigte, um das Material zu verarbeiten, außerhalb des menschlichen Zeithorizontes. ->:BIBLIOSPHERE, p. 195

[329] Cassirer (1994: 103-127) "Die Tragödie der Kultur"; Zitat von Simmel:
p. 109: Je weiter der Kulturprozeß fortschreitet, um so mehr erweist sich das Geschaffene als der Feind des Schöpfers. Das Subjekt kann sich in seinem Werk nicht nur nicht erfüllen, sondern es droht zuletzt an ihm zu zerbrechen. ...
p. 109-110: Es ist die Form der Festigkeit, des Geronnenseins, der beharrenden Existenz, mit der der Geist, so zum Objekt geworden, sich der strömenden Lebendigkeit, der inneren Selbstverantwortung, den wechselnden Spannungen der subjektiven Welt entgegenstellt; ...
zwischen dem subjektiven Leben, das rastlos, aber zeitlich endlich ist, und seinen Inhalten, die einmal geschaffen, unbeweglich, aber zeitlos gültig sind.
p. 123: So begegnen wir in den verschiedenen Kulturgebieten immer wieder demselben, in seiner Grundbeschaffenheit einheitlichen Prozeß. Der Wettstreit und Widerstreit zwischen den beiden Kräften, von denen die eine auf Erhaltung, die andere auf Erneuerung zielt, hört niemals auf. Das Gleichgewicht, das zwischen ihnen bisweilen erreicht scheint, ist immer nur ein labiles Gleichgewicht, das in jedem Augenblick in neue Bewegung umschlagen kann. Dabei wird mit dem Wachstum und der Entwicklung der Kultur der Ausschlag des Pendels immer weiter: die Amplitude der Schwingung wächst mehr und mehr. Die inneren Spannungen und Gegensätze gewinnnen damit eine immer stärkere Intensität... Die beiden Gegenkräfte wachsen miteinander, statt sich wechselseitig zu zerstören. Der schöpferischen Bewegung des Geistes scheint in den eigenen Werken, die sie aus sich hervorbringt, ein Gegner zu erwachsen. Denn alles Geschaffene muß [p. 124] seiner Natur nach dem, was neu entstehen und werden will, den Raum streitig machen.
s.a. Faust, 1348-1352, ->:EX_ARCHAE, p. 36, ->:MAE_PHIS_TELES, p. 239

[330] Veblen (1967: 188-245); Erdheim (1984: 271-367), ->:INITIATION_PATTERN, p. 229

in einer streng hierarchischen Organisation wie der römisch-katholischen Kirche der Papst die oberste unanfechtbare Autorität, und damit die *Lizenz*, zur Einführung von Veränderungen, aber die geschichtliche Erfahrung zeigt, daß (aus welchen Gründen auch immer) davon recht selten Gebrauch gemacht wurde.

3) Welche Bereiche einer Gesellschaft sind für Innovation offen (und erleben schnelle Veränderungen), welche nicht?[331] Hier ist als bestes Beispiel der Bereich der *Mode* zu nennen, der aber sicher (und wohlkalkuliert) keine Bereiche politischer Relevanz tangiert.

4) Aufgrund welcher Bedingungen / Umstände treten Veränderungen welcher Art, und welcher Tragweite auf? Hier gibt es äußere Einflüsse, wie z.B. Klimafaktoren, und Seuchen, sowie Kontakte mit anderen Gesellschaften, incl. Kriege und Eroberungen, und innere, wie Revolutionen und kulturelle und technisch- wirtschaftliche Veränderungen.[332]

5) Welche Zusammenhänge bestehen zwischen den Eigenschaften der Hauptmedien der kulturellen Transmission und ihrer Flexibilität bzw. Regenerativität? Einige Faktoren wurden schon oben genannt unter: "Faktoren der Dynamik in der kulturellen Transmission". Allgemein ist eine Korrelation von dynamischen (heißen) Gesellschaftsformen und vorherrschender Transmission mit speichernden Medien (Schrift), sowie von statischen (kalten) Gesellschaftsformen und performativer Transmission zu beobachten.[333] Ein wesentlicher Aspekt dieser Verknüpfung ist, daß performative Transmission immer mit intensiver persönlicher Verbindung zwischen Lehrer und Schüler verbunden ist, und meist persönliche Abhängigkeitsverhältnisse involviert, während das Lernen über Bücher depersonalisiert ist und vom Lernenden autonom gesteuert werden kann.[334]

6) Und natürlich die Kernfrage: *Welches sind die wirklichen Wirk-Mechanismen der sozio-kulturellen Dynamik?*

Diese Frage, nach den *Wirk-Mechanismen*, stellt heute eine besonders heiß umkämpfte wissenschaftspolitische Front dar.[335] Ein Kernthema ist die Grenze zwischen phylogenetischer und ontogenetischer Transmission, und im weiteren Sinne, zwischen "Natur" und "Kultur". Einige Leitthemen dieser Auseinandersetzung heißen z.B. "Nature vs. Nurture", Soziobiologie,[336] Sozialdarwinismus,[337] Memetik,[338] (Radikaler) Konstruktivismus,[339] "Die Welt als sozialer Diskurs", "Die gesellschaftliche Konstruktion der Wirklichkeit"[340]. Im Zuge der "Austreibung des Geistes aus den Geisteswissenschaften" (Kittler 1980) dringen

---

[331] Bei Erdheim (1984): *Anachronizität*. p. 53 f., 87, 95, 108, 111, 185 ff. 199, 327, 353.

[332] S.a. die marxistische Geschichtsphilosophie; Herrmann (1977); Smith (1994), Mumford (1934, 1977).

[333] Erdheim (1984: 289), ->:INITIATION_PATTERN, p. 229

[334] Aber wenn Schrift an eine kleine Klasse von (privilegierten) Schriftkundigen gebunden ist, dann unterstützt sie eher den "kalten" Typ der Gesellschaft.

[335] ->:LIT_CULTMEDIA, p. 140

[336] E.O. Wilson, Lumsden, Dawkins...

[337] Herbert Spencer

[338] ->:MEMETICS, p. 248

[339] Maturana, Varela, v. Glasersfeld, v. Foerster, Watzlawick...

[340] Berger (1990)

naturwissenschaftliche und biologistische Ansätze in den Kulturbereich vor, während das sozialwissenschaftliche Lager z.T. herbe politische Niederlagen einstecken muß (wie in der Sokal-Affäre).[341] Auf der anderen Seite zeigen Arbeiten wie die von Dieter Straub,[342] daß es im heute vorherrschenden physikalischen Grundlagensystem durchaus politische Diskurse gibt, bei denen es ganz realpolitisch um die Kontrolle bei der Verteilung politischer Macht und über Billionen-Geldwerte in Forschung und Ausbildung (etwa die Vergabe der Ordinarienpositionen an den Universitäten) geht. Straub demonstriert, wie in diesem Verteilungskampf die Mathematik systematisch als Waffe eingesetzt wird, um über extreme Formalisierung einen Bereich zu schaffen, der nur von einer extrem kleinen Insider-Gruppe von Experten verstanden und kontrolliert werden kann, damit aber einer demokratischen Kontrolle durch die Öffentlichkeit völlig entzogen ist. Wie weiter oben, in "Der Bereich des Inter-Organischen" dargestellt wurde, lassen sich die Prozesse der Biosphäre auch unter dem Relationenparadigma[343] betrachten, obwohl bei den anfallenden ungeheuren Datenmengen das Unterfangen mit den heute verfügbaren formalen Mitteln noch etwas impraktikabel wäre. Das spricht aber nicht gegen die grundsätzliche Gangbarkeit des Weges, für den andere formale Techniken auch noch erfunden werden können (z.B. die Ansätze von Rene Thom).

Die vielleicht wesentliche Bedeutung der Thermodynamik hierbei wurde schon genannt. Daher sollen hier noch einige der Kernthemen aus dem Werk von Gumilev (1990) referiert werden, der auf Basis der Thermodynamik und Systemtheorie in "Ethnogenesis and the Biosphere" ein kohärentes Bild der *Wirk-Mechanismen der sozio-kulturellen Dynamik* darstellt. In seiner Darstellung werden kohärente Verhaltensmusterkomplexe, also synchron und diachron (horizontal und vertikal) stabile *cultural patterns*,[344] *Ethnoi* genannt.

Wie oben angedeutet, birgt der Aufbau von neuen Traditionen potenziell sozialen Sprengstoff, denn: "*Innovation wird als gefährlich oft empfunden, weil stets sie mit Veränderung verbunden*". Wirklich kritisch wird die Bildung von neuen Traditionen da, wo sich Verhaltensmusterkomplexe (*cultural patterns*) bei ganzen Bevölkerungsgruppen herausbilden, die mit denen der Restbevölkerung incompatibel sind.[345] In diesem Fall sieht sich die Mehrheit zu mehr oder weniger scharfen Sanktionen gegen die "Abweichler" gezwungen, und

---

[341] http://www.liberation.fr/sokal/

[342] Straub (1990), p. 7, 11, 12, 15, 16-18, 42-44, 46, 50-51, 52-56, 78-79, 209-211, 226-238.

[343] also die Erfassung aller möglichen kommunikativen Austauschereignisse aller Organismen mit allen anderen in ihrer Umgebung. ->:WHITEHEAD_SOCIETY, p. 112, ->:PATICCA_SAMUPPADA, p. 120

[344] Insofern entspricht Gumilevs Kohärenzkriterium des *Ethnos* Mühlmanns Anforderung an eine "wirkliche Kultur" (1996: 111): "Wenn es einer kulturähnlichen Organisation nicht gelingt, ihre Merkmale an die nächste Generation zu übertragen, kann aus ihr keine wirkliche Kultur entstehen."

[345] Wobei die Kriterien, warum sie nicht verträglich sind, natürlich kulturell determiniert sind, wie etwa "das gesunde Volksempfinden".

für diese dreht es sich dann meist ums nackte Überleben.[346] Solche Entwicklungen sind daher meist nur dann in die Weltgeschichte eingegangen, wenn es der betreffenden Gruppe gelang, ihr Überleben und ihre Vermehrung zu sichern, wie etwa in der biblischen Geschichte Israels, der Entstehung des Christentums, des Islam, oder den amerikanischen Pilgrim Fathers. Doch den bekannten, erfolgreichen Beispielen stehen tausende andere, untergegangene, gegenüber, von denen wir nichts wissen, weil sie nicht in die Geschichte eingegangen sind. Geschichtlich bekannt geworden sind aber viele Fälle der Vernichtung ganzer Ethnien, das dunkle Menschheitskapitel der Genozide.[347]

Gumilevs Theorie zeigt sowohl die Übergänge, als auch die wesentlichen Unterschiede, zwischen der Entwicklung (phylo-) genetischer Populationen und ontogenetischer *Ethnoi* (171-202). Ethnoi sind spezifisch der menschlichen Sphäre zuzuordnen, bei Tieren gibt es nur Populationen (171). Frühere Theorien, die ein Organismus-Modell der Kultur annahmen, übersahen die fundamentalen Unterschiede (171).[348] Endogamie innerhalb eines Ethnos ist ein häufiges Phänomen, und fördert die Stabilisation, Exogamie ist oft eine Degenerationserscheinung (172). Gegnerschaft zwischen Ethnoi ist ebenfalls häufig und fördert ebenfalls die Stabilisation (172). Die Bildung eines Ethnos geschieht über unbewußte

---

[346] Wenn es sich nicht um eine kohärente Gruppe, sondern nur einzelne Abweichler handelt, werden diese entweder mit den heutigen Mitteln von Gefängnis und Psychiatrie, in früheren Zeiten auch durch physische Elimination, neutralisiert.

[347] Diamond (1992: 276-309). Nach Gumilev (1987) fanden in der 2500-jährigen Auseinandersetzung zwischen China und den Steppenvölkern regelmäßig Exterminationskampagnen beider Seiten statt, in denen z.B. ganze Nomadenvölker von mehr als 1 Million Menschen aufgerieben wurden, oder Nordchina von den Mongolen 1210-1240 zwecks "Umwandlung in Weideland für Pferde" von der menschlichen Population "gesäubert" wurde. Nach der Tabelle in WER 56, Fall 1987, p.74-75 kostete das 40 Mio Chinesen das Leben (aufgrund der vagen Zählmethoden der damaligen Zeit natürlich nicht zu verifizieren). Howard Bloom: "The Weave of Conquest and the Genes of Trade" (History of the Global Brain) http://www.heise.de/tp/deutsch/special/glob/default.html :
"One horse people, the Mongols, took China, conquered its landmass, and killed off as much as a third of its population in the process". "For a vivid description of Mongol population decimations in East Asia, see: Ki-baik Lee. A New History of Korea. Translated by Edward W. Wagner with Edward J. Shultz. Cambridge, MA: Harvard University Press, 1984: 149."
->:PANETICS, p. 233,

[348] Hier ist besonders die Theorie Spenglers zu nennen (1980). Auch wenn Gumilev (aus verständlichen Gründen) keine direkten Bezüge auf Spengler macht, lassen sich ihre Werke durchaus in einen gemeinsamen Bezug setzen. Spengler sieht wie Gumilev die Notwendigkeit der Unterscheidung zwischen Volk, Nation, und Sprachgemeinschaft, aber anstelle des Begriffs "Ethnos" verwendet er die "Rasse" (1980: 688-745). Sein Begriff der "Rasse" ist im heutigen Verständnis mißverständlich, da (phylo-) genetische und (ontische) ethnische Transmission vermischt werden. Ebenfalls hat der spätere Mißbrauch des Rassebegriffs im Nationalsozialismus zu seiner Diskreditierung beigetragen. Wie Spengler aber selber in seinen Ausführungen darstellt, hat sein Rassebegriff eine ganz andere, nicht-darwinistische Begründung, die erst durch die Arbeiten der letzten 50 Jahre als nicht- (phylo-) genetische, sondern ontogenetische Transmissionsform auf Basis der *Neuronalen Resonanz* verstanden werden kann: Die *Physiognomie der Bewegung* (p. 694, 703-714, bes. 708), die im vorliegenden Kontext als *Kinemorphae* (oder Kata) bezeichnet wird. ->:KATA, p. 221, ->:DYNAMIC_CMM, p. 203, ->:WHITEHEAD_SOCIETY, p. 112

Attraktionsfaktoren (177-178).[349] Der kritische Faktor der Ethnogenese ist eine relativ seltene genetische Veranlagung, die *Energeia*: "Tatkraft, Potential um *Werke*, oder *Taten* zu vollbringen" (203-243).[350] Selbstlosigkeit, oder Selbstaufopferungsbereitschaft, sind ebenfalls Aspekte von *Energia*. Personen mit *Energeia* werden von ihrem Potential zu ungewöhnlichen Taten getrieben, und gehen oft dabei zugrunde. Typische Vertreter waren Alexander, Hannibal, Sulla, Jeanne D'Arc, Alexius Murzuphlus, Jan Huss, Napoleon (207-215). Aber nicht nur aufgrund der hohen Todesrate gehen solche Individuen unter, sondern sie werden auch oft marginalisiert, sind für die Normalbevölkerung untragbar, und sterben kinderlos (224-225).[351] Daher tendiert ihr genetisches Potential dazu, in einer Population verloren zu gehen (223-225). Dann aber setzt unweigerlich die Degeneration des Ethnos ein (231-241).[352] Die meisten Menschen einer Population gehören anderen genetischen Typen an, die Gumilev die "Harmonischen", die "Philister", und die "Degeneraten" nennt (226-231). Die "Harmonischen" stellen die große Mehrheit in der Bevölkerung, sie sind die guten Familienväter, anständig und tüchtig,[353] die an die Wahrung des Besitzstandes ihrer Familie denken, und das Risiko scheuen.[354] Die "Philister" sind solche, denen die Mehrung des Besitzstandes das höchste Ziel ist, und deren Berufswahl meist in Richtung auf Banken, Stock-Brokerage, Versicherungen, Kaufmanns-, Rechts- und Bürokratiegeschäfte geht.[355] Die "Degeneraten" sind Landsknechtstypen, solche, die jede Form von Gewalt und Niedertracht für die niedrigsten Zwecke bedenkenlos einsetzen (227-229).

Eine mögliche Anwendung der Theorie Gumilevs wäre die Interpretation der Geschichte Deutschlands der letzten 150 Jahre als ein "Sozio-Design"-Programm zur praktisch vollständigen Elimination des Potentials von *Energeia*. Nach 1848, in der Depression, und in der Zeit des Nationalsozialismus wanderten über etwa vier Generationen mehrere Millionen der Intelligentesten, Tatkräftigsten und Kreativsten aus. Die früheren Wellen bestanden hauptsächlich aus den unterprivilegierten Gruppen der Bevölkerung, während die Vertreibung der Nazizeit eine außerordentlich genaue Selektionsfunktion auf die kulturellen Eliten ansetzte.[356] Dann wurden im 1. und 2. WK weitere Millionen von ihnen praktisch ausgerottet,

---

[349] Im vorliegenden Kontext *Neuronale Resonanz* genannt.

[350] In der englischen Übersetzung wird der Begriff "*drive*" verwendet. Da aber das altgriechische *Energeia* genau das bedeutet, wovon Gumilev spricht, soll hier im weiteren der griechische Begriff verwendet werden.

[351] (224): "... the moderate, tidy family man becomes the ideal in quiet times, while those with drive have no place in life."

[352] Weitere Parallelen zu Spenglers "Untergang des Abendlandes".

[353] die typisch deutschen Tugenden

[354] und sie sind die besten Kunden der Versicherungen.

[355] Gumilev (1990: 288); Veblen (1964), (1967): "The vested interests", "Theory of the leisure class".
->:LOGOCENTRISM, p. 197

[356] Ein Seiteneffekt war, daß die amerikanischen Hochtechnologieprogramme des 2. WK, wie die Kybernetik, Computer und die Atombombe, wesentlich mit der "brain power" der Emigranten angetrieben wurden. Die bekanntesten Beispiele sind Norbert Wiener, Albert Einstein, John v. Neumann.

die begeisterungsfähigsten und selbstaufopferungsbereiten der männlichen Jugend, diejenigen, die mit dem sprichwörtlichen "Zarathustra im Tornister" in den Krieg zogen, und nicht mehr zurückkamen. Die Überlebenden waren entweder zu jung, zu alt, oder sonstwie untauglich, hatten mit Glück den Krieg überlebt, bzw. sich im Kriegsgeschehen zurückgehalten, oder waren psychisch vom Krieg "ausgebrannt". Diese psychisch-genetische Mixtur prägte dann im Nachkriegsdeutschland mit ihren Vorstellungen und Werten, und in zeitlicher Dauerwirkung, über Gesetze und Institutionen das gesellschaftliche System Deutschlands. Heute mehren sich die Stimmen, die über Verkrustungserscheinungen der deutschen Gesellschaft klagen.[357] Elwert (1997, 72) stellt zur heutigen gesellschaftlichen Situation in Deutschland fest: "Der Schein trügt. Unsere Gesellschaft wirkt hyper-jugendlich; sie ist es aber nicht. Denn nirgendwo sind die Freiräume der Jugend so gering wie bei uns. Da geht es den afrikanischen Jugendlichen besser... Eine Gesellschaft, die ihrer Jugend keine Chancen für Selbsterprobung und Experiment bietet, verliert ihre Innovationsfähigkeit". Jünger (1998: 21 ff.) spricht in seiner Gesellschaftsdiagnose der "kulturellen Krise" von dem "Bürger in uns" als Leitsyndrom der kulturellen Degeneration. Nach Gumilev (340-374) handelt es sich hier um eine typische Vergreisungserscheinung der Ethnogenese, oder "Ethnische Inertia". Nach Elwert (1997: 76) müßte dringend ein Raum für die Entfaltung der neuen Generationen geschaffen werden, so daß nicht nur die "abhängigen, bewußt höflichen jungen Leute dominieren" sondern auch die "jungen Krieger" (also nach Gumilev die Personen mit *Energeia*) ihren Eingang und "Integration in die Statuslinien der Gesellschaft" finden können.[358]

Es gibt verschiedene Formen der "Ethnischen Inertia". Viele indigene Völker befinden sich in diesem Stadium (Gumilev 370-374). Die Australischen Aborigines bis ca. 1850 sind ein weiteres gutes Beispiel. Ihre Kultur löste sich beim Kontakt mit den Weißen rapide auf. Dies nicht immer nur wegen der großen Brutalität der Weißen, die Treibjagden auf die Aborigines unternahmen,[359] sondern auch mit tatkräftiger Mithilfe vieler junger Aborigines, die ihnen als Fährtenleser halfen, ihre eigenen Stammesbrüder auszulöschen. Warum? In Australien herrschte eine starre Gerontokratie, und die jungen Männer sahen bei den Weißen ihre Chancen, schnell zu einem besseren Leben zu kommen, anstatt über 20 oder 30 Jahre den Ältesten in harter Fron zu dienen, und ihnen die jungen Frauen zu überlassen (Strehlow 1947-1996, Roheim 1945). Es ist also möglich, eine völlig starre Transmission über Jahrtausende durchzuführen, aber dies hat einen hohen Kostenfaktor. So besteht ein wesentliches Ziel der "Kultivierung der Kultur" (Eu-Kultur), in einem ausgewogenen *Balanceverhältnis von Tradition und Innovation*.

Dieser Aspekt des "Sozio-Design" gibt uns den wohl paradoxesten Aspekt von Eu-Kultur: Was können wir uns unter einer "Transmissionsdynamik von Innovation" vorstellen, oder um

---

[357] Beitrag von Altbundeskanzler Helmut Schmidt (1997); Focus Nr. 27, 30.6.1997, p. 54-63.

[358] S.a. Bly (1991), Campbell (1978), ->:INITIATION_QUEST, p. 222

[359] ->:ABORIGINES, p. 222

es in Paraphrase von Nietzsche auszudrücken: "Worin besteht die unendliche Wiederkehr des ewig Ungleichen?" Brock führt dazu das Wort von Goethe an, daß "der Wechsel die einzige Form von Dauer" sei. In Frankreich hat man hierfür eine sehr elegante Formulierung: "le plus ça change, le plus ça reste le même." Dasselbe läßt sich auch mit Derrida kurz formulieren: "Vive la différance!" Vornehmlich aus Frankreich kommt auch die auffälligste Form von "unendlicher Wiederkehr des ewig Ungleichen" in der Form der *Mode*.[360] Am letzten Beispiel ist zu erkennen, wie die permanente oberflächliche Veränderung, die die Menschen beständig in Atem zu hält, angewandt wird, um die Grundstrukturen des Systems zu stabilisieren,[361] an denen nichts geändert werden darf. Ebenso dazu gehört auch das überquellende Angebot von multimedialer Unterhaltung, das nur noch virtuelle Möglichkeiten der Betätigung bietet. (Elwert 1997: 76).

6.1. Social Design als Balanceakt in Spannungsfeldern

@:SOCIODESIGN

Als Beispiel für die angewandte Kunst des "Social Design" als Balanceakt unter den Zwängen des Faktischen und der begrenzten verfügbaren Mittel, der zu bewahrenden sozialen Stabilität (und der Machtverhältnisse) im eigenen Staat gegen innere Umsturzversuche, und der Sicherung gegen die ständige existenzielle Bedrohung durch mächtige äußere Feinde, im optimalen Einsatz der gestalterischen Freiheit, soll das Werk von Lars Karbe (1995) genannt werden: "Venedig oder Die Macht der Phantasie". Karbe liefert gewichtige Argumente für eine Esszenz der Kultur im Grad der immer neu zu schaffenden Gestaltungsfreiheit, die sich in Venedig in einer soliden Tradition von 1000 Jahren fortwährend neu inszeniert hat. Dies ist ein sehr subtiler Balanceakt, denn die im Moment der Freiheit gestaltete Schöpfung wird nur allzuleicht, sobald sie faktisch und Vergangenheit, und damit auch Besitzstand, Pfründe, und Privilegien geworden ist, zur Einschränkung und zur Last, die mit ihrem Ballast die Kultur ersticken kann. Das Schlüsselwort Karbes ist die "*Not-Wendigkeit*", also die *Wendigkeit*, um *aus der Not* einen *Vorteil* oder eine *Erfindung* zu machen, das damit auf die Wortspiele in unserem Titel-Thema: "Design und Zeit" und die Einleitung: "Design oder Nicht-Sein" zurückverweist.[362] Die Denkweise der Venezianer beruhte auf der Dynamik des Wasser-Elements, das auch so bestimmend im Werk Goethes war. (Karbe 1995: 20, 34).[363] Als geistige Nachfolgerin der griechischen und phönizischen Seefahrerstaaten hatte Venedig damit eine grundsätzlich unterschiedliche Ausrichtung gegenüber den sonst vorherrschenden land- und territorial-basierten Staatsformen. Sicher nicht ohne Relevanz in dieser Betrachtung ist der Mythos der Venus, der Namenspatronin Venedigs (und Mutter des Aeneas, des

---

[360] Brock: .../SozioDes.html

[361] Brock, Abs. 2 in .../SozioDes.html: "Die geforderte Tugend der Mobilität wird zum Mobilitätsethos, genauer: zur Veränderungspflicht".

[362] ->:DESIGN_ZEIT, p. 18, ->:DESIGN_NICHTSEIN, p. 19

[363] ->:FORMSUBST, p. 29, ->:GOETHEFAUST, p. 34, ->:MEPHAISTOMORPHOSE, p. 37

mythologischen Stammvaters von Rom), als Schaum- (*aphros* = heftig bewegtes Wasser-) geborene. (Hesiod).

Eine besondere Rolle spielte in Venedig die sorgfältige Installation von sozialen Spannungsfeldern im Herrschaftssystem. Karbe beschreibt im Detail die pentarchische Struktur der hohen Räte der Republik, die kein statisches Machtzentrum darstellte, sondern sich in immer neuen Konfigurationen und Koalitionen neu ausbalancieren mußte (19-31, 125-186). Im Verzicht auf feste und explizite hierarchische Strukturen wurde hier ein gelungenes Social Design der politischen Macht entwickelt, wie sein langedauernder Erfolg beweist.

7. Zusammenfassung

Die vorliegende Arbeit steht unter dem Thema: "Design und Zeit: Kultur im Spannungsfeld von Entropie, Transmission, und Gestaltung". Das im Titel genannte Spannungsfeld ist auch das Design-Prinzip der Arbeit selber: Es ist die Methode Goethes, die er in seinem "Faust" angewandt hat: das Aufbauen von primären Spannungsfeldern, und die Entwicklung des Themas (bzw. des Dramas) aus dem Aufeinander-Einwirken dieser Felder.[364] Die Grundlage der Arbeit ist nicht das *Gewordene*, *Fixierte* (*ergon*), sondern die *Dynamik* und das *Werden* (*en-ergeia*). Dynamik kann nur aus Dynamik verstanden werden. Auf diese Weise werden die Gestaltungs-Prinzipien der Arbeit selbst-reflexiv und konstruktiv eingesetzt. Andere Beispiele des konstruktiven Einsatzes von Spannungsfeldern kennen wir aus der Architektur, wie Buckminster Fullers Konstruktionsprinzip der "Tensegrity" (Tensional Integrity), oder von Frei Otto in Deutschland. Sein am besten bekanntes Werk ist das Zeltdach des Münchener Olympiastadions.[365]

Aufbau und Struktur der in der Arbeit verwendeten Spannungsfelder werden in Kapitel 2 beschrieben. Hierbei grundlegend ist der *Neuronale Attraktor*,[366] dessen Wirkungsweise mit einem bekannten Gestalt-Kippbild demonstriert wird. Das Umschlagen der Motive des Kippbilds wird als grundsätzliche Funktionsmöglichkeit unseres Weltbildapparats verstanden, in dem Sinne, daß Weltbilder, Referenzrahmen, Perspektiven, und Kuhnsche Paradigmata mehr oder weniger spontan umschlagen können. Ähnliche Erscheinungen werden auch als *Metanoia*, oder *Kata-Strophae* (im Sinne von R. Thom), bezeichnet. Im Goetheschen Sinne finden wir hier das Grundprinzip der *Metamorphose*, der Veränderung der Formen.[367]

Das tripolare Spannungsfeld der Zerstörungsfaktoren der kulturellen Transmission wird gebildet von den zu vermeidenden Polen:[368]

1) Zerfall: Die Tendenzen der entropischen Zersetzung, und Auflösung.

2) Erstarrung: Die Tendenzen von mechanischer, rigider Transmission, Gerontokratie.

3) Hypertrophie: Die Tendenzen des chaotischen, und blinden Wildwuchses, Jugendwahn.

Die anzustrebenden, gegeneinander auszubalancierenden, Maximen des guten kulturellen Design sind:[369]

1) Das *Bewahren*, die *Tradition* des Erreichten, die *Fortpflanzung* der kulturellen Güter und Errungenschaften von der Vergangenheit in die Zukunft.

2) Die *Kreativität*, die *Permanente Neugestaltung*, die *Selbst-Erneuerung* der "Kultur".

---

[364] ->:GOETHEFAUST, p. 34, ->:EX_ARCHAE, p. 36, ->:MEPHAISTOMORPHOSE, p. 37

[365] ->:SPANNUNGSF, p. 22

[366] ->:NATTRAKTOR, p. 23 ->:GESTALTBILD, p. 24

[367] ->:MEPHAISTOMORPHOSE, p. 37, ->:MORPHOLOGIE, p. 40

[368] ->:TRISPANNUNG, p. 30

[369] ->:TRANSM_SPANNG, p. 20

In Kapitel 1 wird die "Kultur als Transmissionsdynamik" eingeführt. Es ist der Bereich der Transmission ontogenetischer, d.h. in der Lebenserfahrung erworbener Muster.[370] In einem Wortspiel, das sich an Heideggers "Sein und Zeit" anlehnt, wird mit "Design und Zeit"[371] das Spannungsfeld angesprochen, in dem alle lebenden Organismen der Biosphäre, seit Anbeginn des Lebens auf der Erde, vor mehr als 3 Mrd. Jahren stehen: In der thermodynamischen Sprache der dissipativen Strukturen ist *Leben die ständige Aktivität von dissipativen Strukturen, ihre Muster gegen den entropischen Strom der Auflösung zu bewahren, fortzupflanzen, und fortzuentwickeln*.[372] Der Aspekt des "Design" bezeichnet in diesem Zusammenhang den Gestaltungs- und Freiheitsgrad der Organismen, der brutalen Kausalität der physikalischen Ereignisse durch ihre eigene, innere "*Not-Wendigkeit*" zu entweichen, wie es Lars Karbe, ebenfalls in einem Wortspiel, darstellt. Er meint damit ihre *Wendigkeit*, um *aus der Not einen Vorteil* zu machen.[373] Dies nennt er auch "Design oder Nichtsein",[374] in Anlehnung an den berühmten Spruch von Hamlet. Damit baut sich die Arbeit auch auf die Spannungsfelder dieser Wortspiele auf, die sich gegenseitig, wie ein freitragender semantischer Kuppelbau, unterstützen, und dynamisieren. Diese semantische Dynamik wird später, in Kapitel 3, bei der Analyse des Namens *Mephistopheles* wieder aufgegriffen, der hiermit als verkörperter Agent der *Metamorphose* erscheint, dessen Namen wie ein *uchronisches* Kraftfeld durch die gesamte Geschichte des Abendlandes hindurch reicht.[375] "Kultur" ist der Bereich der Transmission ontogenetischer Muster, welcher von der Transmission phylogenetischer Muster verschieden, aber darin eingebettet ist.[376] Ein "vitales" Kernthema der Mustertransmission ist die Bewahrung der Formen des Lebendigen gegen die zerstörende und auslöschende Wirkung der Zeit, also das Spannungsfeld von *Tod* und *Unsterblichkeit*. Dies ist eine Grundfrage aller Religionen, und so stellt sich die kulturelle Transmission dar als eine Form der "virtuellen Unsterblichkeit". Dies ist auch ein Zentralthema in Goethes Faust.[377]

Kapitel 4. werden die allgemeinen systematischen Grundlagen der "*Meta-Morphologie*: Eine Systematik der Muster, ihrer Transmission, und ihren Veränderungen" eingeführt.[378] Mit der Morphologie der Muster-Transmission lebender Systeme lassen sich phylogenetische (biologische) und ontogenetische (kulturelle) Muster unter einem gemeinsamen Generalbegriff behandeln.[379] Es wird insbesondere dargestellt, wie mit dem Entstehen von Zellkern-Organismen, den *Eukaryoten*, ein Bruch in der ontogenetischen Transmission auftrat

---

[370] ->:TRANSMISSIONSDYNAMIK, p. 20

[371] ->:DESIGN_ZEIT, p. 18

[372] ->:SEINWERDEN, p. 25

[373] ->:SOCIODESIGN, p. 89

[374] ->:DESIGN_NICHTSEIN, p. 19

[375] ->:MEPHAISTOS, p. 35, ->:UCHRONIE, p. 60

[376] ->:DESIGN_ZEIT, p. 18 ->:TRANSMISSIONSDYNAMIK, p. 20

[377] ->:SEINWERDEN, p. 25, ->:FAUSTVIRT, p. 54, ->:MENSCHZEITSTRU, p. 58,
        ->:ONTO_PHYLO, p. 63, ->:TRADITION_INNOV, p. 82, ->:IMMORTALITY_COMPLEX, p. 137

[378] ->:MORPHOLOGIE, p. 40

[379] ->:MUSTEREPOCHEN, p. 45, ->:MUSTERTRANSMISSION, p. 48, ->:BIOSPHAERE, p. 50

(die Weismann-Barriere), denn bei *Prokaryoten* (Bakterien) gibt es keinen Unterschied zwischen der Transmission *ontogenetischer* und *phylogenetischer* Muster.[380]

Mit der Entstehung hochentwickelter Nervensysteme, vor allem der Vögel und Säugetiere, war das Grundprinzip der *Transmission (quasi-) kultureller, ontogenetischer Muster* bei den höheren Vielzellern gegeben: es basiert auf *Neuronaler Koppelung*, oder *Neuronaler Resonanz*.[381] Diese wird zwischen der Eltern-Generation und den Jungen aufgebaut, und läßt sich zu Systemen von Kommunikation und quasi-kultureller Transmission plastisch überformen. Im Falle des Menschen treten die höheren Transmissionsformen auf, die mit *Symbolik* und *Sprache*, und *abstrakten Formalsystemen* in Verbindung stehen, die dann im engeren Sinne Kulturleistungen sind.

Kapitel 5.: "Die Systematik der Formen kultureller Transmission" stellt den Haupt- und Ergebnisteil der Arbeit dar.[382] Die kulturelle Transmission wird dargestellt als Muster von Mustern (Metapattern), die auf Basis der *Neuronalen Resonanz*[383] sowohl in den kulturellen Agenten, wie auch im erkennenden System eines Beobachters entstehen. Damit sind zwei polare, prinzipiell gleichwertige, Sichtweisen der kulturellen Transmission möglich: der *kollektiven Erinnerung* (Tradition, Übermittlung von Lebenserfahrungen zwischen den Generationen), und des *Kulturellen Musters* (als Manifestation und Transmission von Merkmalskomplexen). Diese Polarität ist ähnlich wie der Welle-Teilchen Dualismus der Physik als grundlegend und nicht zugunsten einer Seite auflösbar anzusehen. Hiermit wird ausgedrückt, daß die Menschen aus ihren eigenen, persönlichen Wünschen und Antrieben, ihrer Kreativität und Gestaltungskraft (Design),[384] ihre "Kultur" in jedem Augenblick der Performanz immer neu erschaffen, aber daß "Kultur" ebenso als lebensnotwendige Voraussetzung, als das Präsente in der Summe der neuronalen Prädispositionen der Mitmenschen, und der materiellen (medialen) Gegebenheiten einer jeden Gesellschaft, unausweichlich die Bedingungen (und damit auch die Zwänge) stellt, unter denen Menschen sich überhaupt betätigen können. Somit also entfaltet sich nach dem Titelthema die "Kultur im Spannungsfeld von Entropie, Transmission, und Gestaltung".

Menschliche kulturelle Transmission basiert auf somatischen (körperlichen) und extrasomatischen Faktoren.[385] Die somatischen sind die körperlichen und seelischen Vermögen: *Wahrnehmungsfähigkeit*, *Ausdrucksfähigkeit* und *Erinnerung*, die nach heutiger wissenschaftlicher Erkenntnis auf der neuronalen Basis beruhen. Die extrasomatischen

---

[380] ->:ERINNERUNGSBRUCH, p. 49
[381] ->:NEURO_RESONANZ, p. 52
[382] ->:SYSTEMATIK_TRANSMISS, p. 64
[383] ->:NEURO_RESONANZ, p. 52
[384] ->:DESIGN_NICHTSEIN, p. 19->:THEOPRAGMA, p. 27
[385] ->:FAKTOREN_TRANSMISS, p. 65

Faktoren werden *Medien* genannt.[386] Neben den Material-Eigenschaften der Medien, die etwas ausführlicher an den Eigenschaften von Papyrus und Ton-Tafeln diskutiert werden, lassen sich Transmissionen grob klassifizieren in *performative* und *speichernde*. Weiterhin ist eine Klassifizierung in *sprachliche* und *nichtsprachliche* Transmission möglich.[387] Ein wesentlicher Fokus der Arbeit ist der Faktor der Dynamik in der kulturellen Transmission, da in den Zivilisationen eine erhebliche Dominanz der speichernden und fixierenden Systeme, wie der Schrift, besteht, und viele dynamische, nicht-speichernde kulturelle Transmissionen der Menschheit in unseren Tagen vom Untergang bedroht sind. Da dynamische Transmission auch eine dynamische Partizipation des ganzen, somatischen Menschen bedingt und fordert, stehen hier auch Fragen der geistigen und seelischen Gesundheit der Menschen in den postmodernen Zivilisationen zur Debatte. Dies wird in einer neuen Formulierung des alten Erziehungsideals im Sinne der antiken *paideia*, als "*anima sana in corpore sano*" angesprochen, und es wird "Ein Programm zur Dynamisierung des Wissens: Die Wiedereröffnung der Peripatetischen Schule" vorgestellt.[388]

In Kapitel 6.: "Kultur im Spannungsfeld von Tradition und Innovation" werden in einem kurzen Ausblick aus der Sicht der oben gewonnenen Ergebnisse einige wesentliche Aspekte und Desiderata des *Social Design* dargestellt.[389]

Ergänzend zu den in den sechs Kapiteln behandelten inhaltlichen Themen ist das Informationsdesign der Arbeit ein strukturelles Element:[390] Hier stellt die Arbeit einen pragmatischen Beitrag zum Bereich der *Innovativen Gestaltung* eines *Hypertext-Informationsdesigns* dar. Dieses Thema ist seit Jahren ein Anliegen des Autors, der deshalb entsprechende Systementwicklungen auch selber betrieben und im Rahmen dieses Dissertationsthemas angewandt hat. Dies ist in sich ein Beitrag zum Thema dieser Arbeit, nämlich zu Formen der kulturellen Tradierung von Wissen und kann zugleich als eine Realisierung bzw. als ein Prototyp eines *Pyramidalen Buches* verstanden werden, wie es Robert Darnton in jüngster Zeit formuliert hat.[391] Hiermit wird eine *bicompatible* Lösung der Textgestaltung präsentiert, die sich sowohl für die konventionelle Darstellung im papiergebundenen Drucktext eignet, als auch die neuen technisch unterstützten Möglichkeiten der *Dynamisierung* von *Hierarchie und Vernetzung* in Form von *Hypertext* einsetzt. Damit wird der Goetheschen Vision des *Worte-Webens* eine vorher nicht praktikabel durchführbare Tiefendimension hinzugefügt.[392]

---

[386] ->:EXTRASOMATISCH, p. 66

[387] ->:SPRACHLICH_NICHTSPR, p. 71

[388] ->:FAKTOR_DYNAMIK, p. 77, ->:ANIMA_SANA, p. 78, ->:PERIPATEISCH, p. 78

[389] ->:TRADITION_INNOV, p. 82, ->:SOCIODESIGN, p. 89

[390] ->:INFO_DESIGN, p. 15

[391] ->:PYRAMIDAL_BUCH, p. 16

[392] ->:WORTE_WEBEN, p. 237

In diesem Sinne stellt die vorgelegte Arbeit auch einen innovativen Beitrag zur aktiven, schöpferischen Selbst-Fortpflanzung der "Kultur im Spannungsfeld von Entropie, Transmission, und Gestaltung" dar.

Materials Section: A Morphology of Cultural Patterns

8.   Preliminaries for the Materials Section

@:PRELIMINARIES

8.1. Index of abbreviations

{../..} Notation for alternatives either of which can be applied in the context
[ ]   Insertions in citation text by A.G.
3d   three-dimensional
4d   four-dimensional: moving
->:   {Jump / reference} to a Hypertext anchor ->:HYPERTEXT_MARK, p. 108
@:   Hypertext anchor   "
A.G.   Andreas Goppold
Amerind: indigenous inhabitants of North and South America
BCE   Before Common Era CE
CE   Common Era, or A.D. ->:CALENDAR_CONV, p. 106
CA   Cultural Anthropology
char/s   character/s
CM   Cultural Memory
CMA   Cultural Memory Art ->:CMA_DEF, p. 145
CMM   Cultural Memory Medium ->:CMM_TYPOLOGY, p. 140
CMS   Cultural Memory System ->:CMS_DEF, p. 139
CMT   Cultural Memory Technology ->:CMT_DEF, p. 141
CP   Cultural Pattern ->:MORPHOLOGY, p. 128
CS   Character System / Character Set
CT   Cultural Transmission
dt: deutsch (german)
EE   Evolutionary Epistemology
Encarta Encarta (1994): CD-ROM
engl: english
E.O.   The objective and impartial Extraterrestrial Observer ->:EXTRA_OBSERVER, p. 113
ERT   Entitiy, Relation, and Transition category scheme ->:ERT_TRIAD, p. 135
E&V   Elementar- und Völkergedanken of Adolf Bastian ->:ADOLF_BASTIAN, p. 246
HA   Haarmann (1992a), local abbrev. in: ->:WRITING, p. 175
HTML Hypertext Markup Language, standard format for WWW publications
MM-Encyc Multimedia Software Encyclopaedia, CD-ROM (1992)
NY   New York (abbreviation in bibliography)
RMA   ratiomorphic apparatus ->:RATIOMORPHIC, p. 122
SEMsphere = Semiosphere
URL   Universal Resource Locator (WWW address)
Univ.   University (abbreviation in bibliography)
WWW World Wide Web

8.2. Short glossary of terms

@:PRELIMINARY_DEF

This section provides short definitions of the key terms of this study. Since there exists a wide variance of usages in the literature, this is the meaning as used in the present context.

Abjad: a type of phonographic writing system that denotes only consonants (Daniels 1996: xxxix).

Alphabet: phonographic writing, single phoneme mapping, with separate characters for consonants and vowels (CV-Principle). (Haarmann 1992a), (Daniels 1996: xxxix).

Aoide, pl. *Aoidoi*: In ancient Greece, the name for the specialist CMBs. The best known Greek *Aoidoi* were *Homer* (Ilias, Odyssee), and *Hesiodos* (Theogony, Works and Days). In the present context, *Aoide* is used as generic for the CMBs of all traditions.

Character {set / system}, CS: a definite, delimited set of markings that are mutually disambiguated and which can be combined to form aggregates. The existence of an *orthography* (below) distinguishes a set from a system. A single *character* can only exist as an element of a CS. (Also called a *signary* in Daniels 1996: xliv).

Culture: because of the great disparity in definitions of culture (Gamst 1976, Jahoda 1992: 3-5, Kluckhohn 1980), this term is avoided if possible, and when used, in the definition given by Jahoda (1992: 5) characterized by the transmission aspect.
>:CULTURE_PATTERN, p. 132

Cultural Memory CM: here equivalent with Cultural Transmission. In the generalized abstract sense: those processes and structures by which personal subjective memory material is exchanged between individuals and across generations and made available on an intersubjective basis. The *diachronic* aspect of cultural patterns. In subjective terminology, that faculty by which one individual can {reference to / learn from / participate in} the memory content of (an)other individual(s), even without direct personal contact, e.g. when they live in a distant place, or in the distant past.
>:CM_LIT, p. 139, ->:CULTURE_PATTERN, p. 132

Cultural Memory Art CMA: systematic use of dynamic somatic (and possibly extrasomatic) processes for CM. Dancing may be an example of CMA
>:CMA_DEF, p. 145

Cultural Memory Bearer CMB: The carriers and transmitters of the *Cultural Memory*. Trivially, every human member of a society is a *Cultural Memory Bearer* in at least some respect, in order to be a functioning part of that society. In non-writing cultures, there have been, and still are, specially trained classes and groups of *CMB*'s, who serve(d) the most prominent and most vital function to preserve the essence and higher spiritual values of their cultures across and against the degradations of time. These were the *Aoidoi* of ancient Greece, the indian *Rishis*, the *Griots* of Africa, the norse *Skalden*, the welsh *Bards*, the *Troubadours* of the middle ages, and the *Guslar* of the Balkan. In the present context, *Aoide* is used as generic for the CMBs of all traditions.

Cultural Memory System CMS: Systematic theoretical account of those processes and structures by which the CM arises and operates. In a different aspect this is also called the *culture pattern replicator system* (after Benedict 1934), as the ways and means by which

cultural patterns are exchanged and transmitted in populations and across generations. This is the central term and core concept of the present study.
->:CMS_DEF, p. 139

Cultural Memory Technology CMT: systematic use of static extrasomatic devices for CM. Writing is the prime *cultural memory technology* of civilizations.
->:CMT_DEF, p. 141

Cultural Transmission CT: Transmission of *Cultural Patterns*, i.e. of ontogenic (learned) material in populations (*synchronic*) and across generations (*diachronic*).
->:MORPHOLOGY, p. 128

Energy (Microsoft Encarta CD)
Energy, capacity of matter to perform work as the result of its motion or its position in relation to forces acting on it. Energy associated with motion is known as kinetic energy, and energy related to position is called potential energy. Thus, a swinging pendulum has maximum potential energy at the terminal points; at all intermediate positions it has both kinetic and potential energy in varying proportions. Energy exists in various forms, including mechanical (see MECHANICS), thermal (see THERMODYNAMICS), chemical (see CHEMICAL REACTION), electrical (see ELECTRICITY), radiant (see RADIATION), and atomic (see NUCLEAR ENERGY). All forms of energy are interconvertible by appropriate processes. In the process of transformation either kinetic or potential energy may be lost or gained, but the sum total of the two remains always the same.
A weight suspended from a cord has potential energy due to its position, inasmuch as it can perform work in the process of falling. An electric battery has potential energy in chemical form. A piece of magnesium has potential energy stored in chemical form that is expended in the form of heat and light if the magnesium is ignited. If a gun is fired, the potential energy of the gunpowder is transformed into the kinetic energy of the moving projectile. The kinetic mechanical energy of the moving rotor of a dynamo is changed into kinetic electrical energy by electromagnetic induction. All forms of energy tend to be transformed into heat, which is the most transient form of energy. In mechanical devices energy not expended in useful work is dissipated in frictional heat, and losses in electrical circuits are largely heat losses.
Empirical observation in the 19th century led to the conclusion that although energy can be transformed, it cannot be created or destroyed. This concept, known as the conservation of energy, constitutes one of the basic principles of classical mechanics. The principle, along with the parallel principle of conservation of matter, holds true only for phenomena involving velocities that are small compared with the velocity of light. At higher velocities close to that of light, as in nuclear reactions, energy and matter are interconvertible (see RELATIVITY). In modern physics the two concepts, the conservation of energy and of mass, are thus unified.

Energy (Encyclopaedia Britannica CD):
in physics, the capacity for doing work. It may exist in potential, kinetic, thermal, electrical, chemical, nuclear, or other various forms. There are, moreover, heat and work--i.e., energy in the process of transfer from one body to another. After it has been transferred, energy is always designated according to its nature. Hence, heat transferred may become thermal energy, while work done may manifest itself in the form of mechanical energy.
All forms of energy are associated with motion. For example, any given body has kinetic energy if it is in motion. A tensioned device such as a bow or spring, though at rest, has the potential for creating motion; it contains potential energy because of its configuration. Similarly, nuclear energy is potential energy because it results from the configuration of subatomic particles in the nucleus of an atom.

Language: in the, present study used in the restricted meaning of *spoken verbal (natural) language* as used by people to communicate among each other by the use of words. Non-spoken gesture-sign systems used as substitutes for spoken language are included, like deaf / mute systems for the disabled. It excludes music, and formal systems like mathematics.

Morphology / morphological: a systematic approach to the study of pattern. From Greek: *morphae*: form, gesture, position, pattern. (Rost 1862: 98). For contradistinction of *form*

against {*content* / *matter*}. Based on Goethe's concept of morphology as used by Riedl (1987a) and Ruth Benedict's "patterns of culture" (1934: 49-56). Further elaborated under:

>:MORPHOLOGY, p. 128

Marking: 1) pattern {painted / scratched / inscribed / applied otherwise} {into / onto} a carrier material or 2) a 3-d form that a carrier material is shaped into, like a knot, a bead.

>:MARKING, p. 154

Memory: In the present context, *memory* is used as technical term for the basic constituent of a general pattern maintenance / propagation facility, in its structural and morphological aspects. In the sense of *memory structure* as contradistinct from *content of memory* (the memories). In the subjective view, a core constituent of consciousness. "Memory, process of storing and retrieving information in the brain". Literature: (Encarta: Memory), (Britannica: Memory) Schmidt (1991).

Non-phonographic writing: any writing system that does not employ the phonographic principle, eg. pictorial, iconic, ideographic ...

Orthography: a set of principles and rules for the formation and reading of aggregates of characters of a CS. (Daniels 1996: xliii).

Para-writing: any production of markings with an apparent cultural continuity, and intersubjective constancy (diachronic / synchronic extension), that has not been academically accepted as writing, but still appears to (have) serve(d) a purpose other than purely ornamental.

Phonographic writing, writing system encoding the sounds of a spoken language by using a mapping of {single / groups of} language phonemes onto a character set. (Haarmann 1992a)

Script: writing system. (Daniels 1996: xliv).

Sign: because of possible confusion over issues of syntax and semantics, this will be reserved for semiotic discussion only Its use in Daniels (1996: xliv) as synonymous with *character* is **not** followed here.

>:PEIRCE_SIGN, p. 154

Structure / structural: in twofold meaning:
1) general principle for organizing thoughts, ideas, and concepts, based on Kant's "Architektonik der reinen Vernunft" (Kant 1930, A832/B860): *The Architectonic Method*. Kant defined his *Architektonik* as the *Art of System* "die Einheit der mannigfaltigen Erkenntnisse unter einer Idee". Meaning: *Architektonik is the ordering principle for the manifold under one unifying idea*. Also: Goppold (1996b).
2) sytematic organizing method, based on Laughlin (1974: 5, 15)

>:STRUCTURAL, p. 130

Symbol: anything (a thing or event, an act or an object) that conveys meaning. (White 1987, 274). >:SYMBOL, p. 119

Writing system: a notation system, (ie. a character set, and an orthography), and usage of non-ephemeral carrier materials (writing medium), used to convey and preserve language across time and space. (O'Connor 1996: 787), (Daniels 1996: xlv).

8.3. Conventions, Fonts, Spelling

8.3.1. Fonts used

Font for normal text: Times New Roman

Font for quotation text: arial
Quotation source (date: page): When citing a whole text paragraph, I am using this font to visually contrast it from the normal text. In this case, no quotation marks are used. Because WinWord® does not allow two different stylesheet fonts in the same paragraph, I cannot use this font for inline citations, therefore quotation marks and normal Times New Roman font are used in this case.
"This is a sample inline citation".

Font for Headlines:
High order headlines are in Arial bold, and low order headlines in ***Arial bold cursive***

8.3.2. Non-english scripts, and foreign spelling

@:SPELLING

For the simplicity of the character set, with respect to the WWW version of this study, and ease of data communication in general (internet, email), a simplified transcription of non-english words is used. While special fonts do exist for non-english scripts, they are not normed and cannot be expected to be installed on the computer of someone receiving an email or a www text. The Greek names and terms are written in latinized script with accents omitted. The letter *aeta* is written as *ae; ay*, *ey* and *oy* are converted to *au*, *eu*, *ou*, and *o-mega* and *o-micron* are both written as *o*, *kappa* is written as *k*. The names of Greek philosophers are written such as to reflect as closely as possible their original spelling (instead of the standard english usage pronounciation and spelling): *Platon*, *Heraklit*, *Aristoteles*.

8.3.3. Calendar conventions

@:CALENDAR_CONV

Dechend (1997: 9): Behind the nursery tales which make pontiffs and shamans responsible for Mesopotamian, Egyptian, Mayan, etc. science, lurks the unconscious conviction of an archaic 'pre-logical' frame of mind which worked just the other way round from ours, according, somehow, to the counting of years B.C. and A.D., everything standing on its head along the negative side of Zero.

As Hertha v. Dechend indicates, a calendar convention is not just an innocuous arbitrary framework for keeping track of time, but it can also act as a cognitive filter that introduces a subtle bias into one's perception of historical developments. This problem cannot be left completely in the open, even if this is not the occasion to deal with this subject in depth. For the purposes of this study, the potential of negative bias toward BCE dates will be indicated by a slightly modified western European calendar convention in the following text: Dates *after* 1 CE (A.D.) will be indicated with their conventional numerical value, and dates *before* the CE zero point (BCE) as negative numbers, e.g. -600 denoting 600 BCE.

8.3.4. Gender terms

In the whole text, references to persons, observers, etc. are ment in the gender neutral terms of she/he, her/his, etc. For the sake of simplicity of writing, the more conventional male and female terms like "he", "his", and "she", "her", etc. are used as abbreviations, sometimes in male mode, sometimes in female mode.

8.4. Hyper- / Text structure design and organization principles

@:TEXT_DESIGN

8.4.1. Visual and structural Enhancements of the Alphabet

The example in the following paragraph illustrates well the problem of a pure alphabetic transliteration of spoken language, and this is similar to what ancient alphabetic texts looked like:

Thealphabeticalprinciplealoneconsistsofauniformlinearrepresentationofspokenlanguagesimilar- toamagneticrecordingtapewhichwouldbeextremelycumbersometohandleandreadifitwerefor- examplepresentedintheformofalongpapertapeearlywritingconsistedinjustthatrowsuponrowsor- columnsuponcolumnsofletterslinearlyarrangedonascrolloratablet

The same paragraph, with normal spaces and interpunction, reads like this:

The alphabetical principle alone consists of a uniform linear representation of spoken language similar to a magnetic recording-tape, which would be extremely cumbersome to handle and read if it were for example presented in purely linear form like on a spool of paper tape. Early writing consisted in not more than that: rows upon rows (or columns upon columns) of letters linearly arranged on a scroll, or a tablet.

In the old times, such unbroken streams of alphabetic characters made phonetic literacy a matter of great skill (Landow 1992: 54). The deciphering of such texts necessitated that they were read aloud. Basic information retrieval facilities in form of visual and structural ordering devices were added to alphabetical text in the course of the centuries: at first spaces between words, then interpunctuation, and then outline methods like chapter headings, table of contents, and index, as they now form the standard format of an academic text. Illich (1988: 46, and 29-51), Landow (1992: 49, 54, 57), Bolter (1991: 63-81).

Illich (1988: 49): Thus, some 250 years before printing made it possible, to refer to the text by page number, a network of grids was laid over the book - a method that had nothing to do with the content itself.

The visual graphic ordering principles of text are a very important enhancement to the alphabetic writing principle because they serve to remedy a basic shortcoming of this technology. The alphabetic principle needs to be aided and supplemented by those methods. Moreover, the visual picture (the layout) of a text is an important device for the conceptual organization of thought processes of the author. (Goppold 1994: 280-281). Structural organization principles of ideas like that outlined by Kant in his "Architektonik der reinen Vernunft"[1] serve to give a standardized canon of form for the presentation of scientific material. With the presently emerging hypertext technology, these ordering principles can still be augmented. The text structure design conventions of this work are influenced by the technical possibilities and the limitations of the Microsoft WinWord® outline editing and outline navigation facility.

8.4.2. WWW hypertext design principles

@:HYPERTEXT_DESIGN

The structural potential of hypertext can extend and complement that of a linear printed text in book format. Further literature: Kuhlen (1991: 28-40), Hammwöhner,[2] Landow (1992)[3].

---

[1] *Structure* ->:PRELIMINARY_DEF, p. 103

[2] Hammwöhner:

Landow estimates that hypertext brings changes to text production that are as profound as the printing press brought to the formerly manuscript book culture (1992: 24-70).

Landow (1992: 19): Electronic text processing marks the next major shift in information technology after the development of the printed book.

To fully utilize that potential, a concurrent design methodology is used to make the WinWord® text marker facility easily convertible to HTML with an extractor and converter program (a filter). It is safe to make the prediction that in a few years, HTML (or a more suitable version/derivative thereof, like XML) will be the standard mode of reporting academic work. (Landow 1992: 35). In the present design methodology, the hypertext markers are usable in a double role to serve as visual markers to facilitate reading in the printed text, and as identifiers for the automatic filters which construct hyper-links to other documents. In complement with the structural hierarchical outline method, the hypertext serves to indicate threads of thought which run through the whole work.

8.4.3. Hypertext markers

The hypertext principle used in this study provides a structural ordering scheme of text that can be technically supported with the functionality of WinWord® and WWW-HTML browsers. The present text is written such that it can be readily converted with a filter tool from WinWord® into WWW format. For this a few style conventions need to be introduced. There are two types of Hypertext markers:
@:   Hypertext anchor and
->:   Hypertext reference

Example of a hypertext anchor:
@:HYPERTEXT_MARK

This indicates that HYPERTEXT_MARK is a reference label that can be automatically converted with a filter program into a HTML hypertext address. For reason of easy visual identification in the printed text, the hypertext anchor is usually located with a left offset-aligned position.

Example of a hypertext reference to the above hypertext mark:
->:HYPERTEXT_MARK, p. 108

This system of markers can be automatically converted with a filter program into a HTML hypertext reference. In the present printed version, it indicates the page number where the corresponding hypertext anchor is located. In this example, it is page 108.

8.4.4. Quotations of WWW publications

WWW publications cannot be cited with page number, since the HTML layout doesn't preserve a uniform page sequence. Therefore, they have to be cited by the URL of a chapter or WWW page. For example, here George Landow's hypertext pages:
http://www.stg.brown.edu/projects/hypertext/landow/cv/landow_ov.html

---

http://rsls8.sprachlit.uni-regensburg.de/KHS-Docs/IW/Veren.html
http://rsls8.sprachlit.uni-regensburg.de/KHS-Docs/IW/Bewen.html
[3] Landow: http://www.stg.brown.edu/projects/hypertext/landow/cv/landow_ov.html

8.4.5. Robert Darnton: the pyramidal book

Darnton (1999)[4]:

I am not advocating the sheer accumulation of data, or arguing for links to databanks—so-called hyperlinks. These can amount to little more than an elaborate form of footnoting. Instead of bloating the electronic book, I think it possible to structure it in layers arranged like a pyramid. The top layer could be a concise account of the subject, available perhaps in paperback. The next layer could contain expanded versions of different aspects of the argument, not arranged sequentially as in a narrative, but rather as self-contained units that feed into the topmost story. The third layer could be composed of documentation, possibly of different kinds, each set off by interpretative essays. A fourth layer might be theoretical or historiographical, with selections from previous scholarship and discussions of them. A fifth layer could be pedagogic, consisting of suggestions for classroom discussion and a model syllabus. And a sixth layer could contain readers' reports, exchanges between the author and the editor, and letters from readers, who could provide a growing corpus of commentary as the book made its way through different groups of readers.

A new book of this kind would elicit a new kind of reading. Some readers might be satisfied with a study of the upper narrative. Others might also want to read vertically, pursuing certain themes deeper and deeper into the supporting essays and documentation. Still others might navigate in unanticipated directions, seeking connections that suit their own interests or reworking the material into constructions of their own. In each case, the appropriate texts could be printed and bound according to the specifications of the reader. The computer screen would be used for sampling and searching, whereas concentrated, long-term reading would take place by means of the conventional printed book or downloaded text.

Far from being utopian, the electronic monograph could meet the needs of the scholarly community at the points where its problems converge. It could provide a tool for prying problems apart and opening up a new space for the extension of learning. The Andrew W. Mellon Foundation has provided support for several initiatives in this direction. One, a program for converting dissertations into electronic monographs, has just been launched by the American Historical Association. Another, for producing more ambitious e-books, is now being developed by the American Council of Learned Societies. Others are in the works. The world of learning is changing so rapidly that no one can predict what it will look like ten years from now. But I believe it will remain within the Gutenberg galaxy—though the galaxy will expand, thanks to a new source of energy, the electronic book, which will act as a supplement to, not a substitute for, Gutenberg's great machine.

---

[4] Darnton (1999) http://www.nybooks.com/nyrev/WWWarchdisplay.cgi?19990318005F

9. A Historical Perspective View from the Top of the Pyramid

@:PERSPECTIVE_VIEW

Soldiers, from the height of these pyramids, forty centuries look down on you...
(Napoleon, addressing his troops before the Battle of the Pyramids, 21 July, 1798)

Description (1994: 12)

Napoleon's exhortation at his troops at that fateful date 200 years ago, relates to the present issue in more than one way. As a side-effect of his ill-fated expedition to Egypt, the stone of Rosette was discovered, one of the most important fortunate archeological accidents that gave modern humanity the keys to the deep history of our civilizations. With this initial discovery began a continuous process of unraveling the secrets of many vanished civilizations that had once dominated the earth in splendor. The stone of Rosette provided the key to the writings of one of the most ancient civiliations of humanity, the Egyptian. (Description 1994: 13-14). Today, 200 years later, we can with equal validation say that it is now possible for those of us, who have made the effort to learn to see and understand the patterns of our cultural and natural history, to stand at the peak of an immense pyramid of amassed written knowledge in form of books, the collected cultural memory of our civilization, and enjoy the grand panoramic spectacle of looking down on a history of about 5000 years of writing civilizations, about 50,000 to 100,000 years of graphic symbol use, and about 5000 million years history of the planet and its biosphere. And in a very real sense, the technology of writing was instrumental in erecting those Egyptian pyramids, because it was used by the Egyptian rulers and priests to organize their land and its inhabitants for those immense feats of mass organization, and mobilization, of which the construction of the pyramids is only the most spectacular example.

Writing also served to install the pyramidical hierarchical organization of the state, the form of social structure that has taken its origin there and in ancient Mesopotamia, and has by now spread all over the planet, all the while absorbing and often enough destroying, all other social organization forms that were in the way. And to those observers, who enjoy this spectacular view over the history of the universe, the future of humanity on this planet appears more clouded than ever. Looking down from this observation point, we can watch the soldiers and generals of technology getting ready for the battle over humanity's future amidst the impending spectres of world-wide rising tidal waves of eco-destruction and cultural disruption. Let us now focus on the media-technological aspect:

@:LANDOW_THOUGHT

Landow (1992: 29): This ... requires that one first recognize the enormous power of the book, for only after we have made ourselves conscious of the ways it has formed and informed our lives can we seek to pry ourselves free from some of its limitations... Claude Levi-Strauss's explanations of preliterate thought in *The Savage Mind* and in his treatises on mythology appear in part as attempts to de-center the culture of the book - to show the confinements of our literature culture by getting outside of it, however tenuously and briefly... Baudrillard, Derrida, Jean-François Lyotard, McLuhan, and others similarly argue against the future importance of print-based information technology, that ... sound and motion as well as visual information will radically reconfigure our expectations of human nature and human culture...

Derrida... understands that electronic computing and other changes in media have eroded the power of the linear model and the book as related dominant paradigms. "The end of linear writing," Derrida declares, "is indeed the end of the book"... "grammatological writing exemplifies the struggle to break with the investiture of the book"... The problem ... is that "one cannot tamper" with the form of the book "without disturbing everything else"... in Western thought.

In this quotation, George Landow hints at the immense weight of the book-based tradition of western civilization,[5] and at profound impending changes in individual lives and cultural organization with the spread of the "information revolution". And in a very definite sense, the engineers, designers, and financers of our future technologies, be it multimedia and information, or genetic engineering, or other, are the soldiers and generals on whose shoulders rests today the weight of the responsibility in the battle for humanity's future. With the so-called "infomation and multimedia revolution", there is presently a large-scale drive of monumental proportions underway, that transforms the previously (alphabetic-) writing centered cultural memory systems of civilizations into something quite different, and quite unknown by the standards of the last 5000 years of civilization. Most of that movement is technologically and financially driven, and it seems that there is little concern involved for researching the symbolic and mental potential that humanity has developed in the last 50,000 years since Altamira, Lascaux, and Chauvet, before and outside the major civilizations, which constitutes the non-written cultural heritage of humankind.

@:GOPPOLD_CODES

Goppold (1994: 280): Die Entwicklung der Computer-Programmierung kann als ein globales Phänomen in der geistigen Entwicklung der Spezies Homo Sapiens gesehen werden. Nach Derridas Grammatologie und Vilem Flusser ist hier eine Schwelle überschritten: Der Schritt weg von der kulturellen Fixierung der Menschheit auf sprachabhängige phonetische Codes hin zu nicht sprechbaren, geschriebenen, maschinell fixierten oder graphischen Codes.[6]

The present work is aimed to build a bridge between the future information and multimedia technologies and this human cultural heritage, much of whose legacy has been neglected, or destroyed to the point of almost complete annihilation, in the last 5000 years of unrelenting advance of writing civilization. The present generation may be the witness of the disappearance of the very last indigenous traditions unaffected by civilization. Already more than 100 years ago, Adolf Bastian[7] called out for a concerted effort to save the indigenous cultural heritage of humanity for the future:

@:BASTIAN_SAVE

Bastian (1881: 181): Man spricht vielfach von einem Aussterben der Naturvölker. Nicht das physische Aussterben, soweit es vorkommt, fällt ins Gewicht, weil ohnedem von dem allmächtigen Geschichtsgang abhängig, der weder zu hemmen, noch abzuwenden ist. Aber das psychische Aussterben, - der Verlust der ethnischen Originalitäten, ehe sie in Literatur und Museen für das Studium gesichert sind - solcher Verlust bedroht unsere künftigen Inductionsrechnungen mit allerlei Fälschungen und könnte die Möglichkeit selbst einer Menschenwissenschaft in Frage stellen.

Bastian (1881: 180): Eine brennende Zeitfrage allerdings! Es brennt in allen Ecken und Enden der ethnologischen Welt, brennt hell, lichterloh, in vollster Brunst, es brennt ringsum, Gross Feuer! und Niemand regt eine Hand. Die Autopsien der von 1850-1880 periodisch wiederholten Reisen liefern die gewaltsam zwingendsten Ueberzeugungen des in schreckbar steigenden Progressionen fortschreitenden Verderbens. Wenn indess ihnen, als subjectiven Eindrücken nicht zu trauen, so sei auf die Acten des ältesten der ethnologischen Museen verwiesen, mit ihren Belegen in Zahlen und Thatsachen... Wunderbar überraschendste Entdeckungen ruhen im Schosse der Zukunft. Sie sind uns gewiss, wenn wir uns darum mühen wollen, sie sind verloren für immer, wenn jetzt im kritischen Moment des Wendepunktes die Gleichgültigkeit fortdauert.

---

[5] ->:BIBLIOSPHERE, p. 195, ->:MULTIMEDIA, p. 189

[6] http://www.uni-ulm.de/uni/intgruppen/memosys/lpl12.htm

[7] ->:ADOLF_BASTIAN, p. 246

10. Structures, General Systems Theory, Paticca Samuppada, and the Relation Principle

In this section, the material is reviewed that provides theoretical foundations for a generalized *systematics of cultural pattern*, the *morphology*.

10.1. Whitehead's Philosophy: the world as a system of societies

@:WHITEHEAD_SOCIETY

Whitehead's Philosophy is an introduction to a world view that is based on the *Relation Principle*.

10.1.1. Maintaining an active novelty of fundamental ideas illuminating the social system

@:FUNDAMENTAL_IDEAS

(Encarta: Philosophy): Philosophy, Western (Greek philosophia, "love of wisdom"), the rational and critical inquiry into basic principles.

Western academic philosophical tradition is entirely based on written language. It is a cultural tradition whose main working materials are words and concepts and whose method consists of their systematic ordering (Whitehead 1966: 171-174). In the present context it is important to open avenues to deal with matters that are difficult, or even impossible, to cover in this way. Whitehead has mentioned one aspect of the problem:

Whitehead (1966: 173): There is an insistent presupposition continually sterilizing philosophic thought. It is the belief... that mankind has consciously entertained all the fundamental ideas which are applicable to its existence. Further it is held that human language, in single words or in phrases, explicitly expresses these ideas.I will term this presupposition, "The Fallacy of the Perfect Dictionary." ... The scholar investigates human thought and human achievement, armed with a dictionary. He is the main support of civilized thought... It is obvious that the philosopher needs scholarship, just as he needs science. But both science and scholarship are subsidiary weapons for philosophy...
The fallacy of the perfect dictionary divides philosophers into two schools, namely, the "Critical School," which repudiates speculative philosophy, and the "Speculative School" which includes it. The critical school confines itself to verbal analysis within the limits of the dictionary. The speculative school appeals to direct insight, and endeavours to indicate its meanings by further appeal to situations which promote such specific insights. It then enlarges the dictionary.

"It then enlarges the dictionary" is the salient point of Whitehead's statement in application to the endeavor of this study. But there are strong arguments for the case that there is no such thing as a fixed meaning in symbolization that could be put in a dictionary.
->:MEANING_OFMEANING, p. 225

Whitehead (1966: 174): The use of philosophy is to maintain an active novelty of fundamental ideas illuminating the social system... If you like to phrase it so, philosophy is mystical. For mysticism is direct insight into depths as yet unspoken. But the purpose of philosophy is to rationalize mysticism: not by explaining it away, but by introduction of novel verbal characterizations, rationally cöordinated.

To open a way beyond verbal and written description, one must seek in different directions. At a time when alphabet based thinking had scarcely taken hold in ancient Greece, Heraklit (1976: B18) gave the valuable advice: "*If you don't aim for the unexpected and the unthinkable, you will never find it: for it is untraceable and inaccessible*". It may be that there are "ideas" that have not been verbalized before, and that the 5000-year old dictionary of philosphical ideas of civilized humanity is as yet incomplete, because there exists no entry place for such things that may be thinkable, and imaginable, perhaps even doable, but there exist (as yet) no words for them. And moreover, there might even be essential "ideas" that can never be verbalized. Much work has already been accomplished in this direction in

mathematics and music, which cover large areas that are difficult to verbalize, but there are probably more such domains.

10.1.3. Towards an unbiased perspective: the Extraterrestrial Observer E.O.

@:EXTRA_OBSERVER

The following will be a *Gedanken-Experiment*. Let us imagine what it would be like to be in the enviable position of an entirely unbiased extraterrestrial observer who can watch the cultural patterns of humanity on this planet unfold throughout the last few hundred millennia on this planet and take snapshots of their development whenever she deems it useful:

Wilson (1975: 547): Let us now consider man in the free spirit of natural history, as though we were zoologists from another planet completing a catalogue of social species on Earth. In this macroscopic view, the humanities and social sciences shrink to specialized branches of biology; history, biography, and fiction are the research protocols of human ethology; and anthropology and sociology together constitute the sociobiology of a single primate species.

The proposal of the sociobiologist E.O. Wilson is interesting and useful for this Gedanken-Experiment, since he provides us with exactly that vantage position to view human cultures from an extraterrestrial point of reference. Seemingly, he allows us to take the stance of the "entirely objective and impartial observer" from outer space, who is not tainted by any anthropomorphic, anthropocentric or ethnocentric biases, studying the unfoldment of the planetary biosphere and in its later stages, the cultural domain, on the planet earth. In the honor of E.O. Wilson, I will call this the *E.O. approach* (short for the *objective and impartial Extraterrestrial Observer*).

But the stance he presents, is not at all unbiased. Rather, the sociobiologist view introduces a cognitive bias of methodology, in the terms of Feyerabend (1975), (1993)[8]. The sociobiologist interpretation attempts to discuss *society* in terms of the natural science paradigm of *biological organism*. It tries to apply the existing scientific knowledge of biological organisms, which are built up of cellular components, constructed to the regime of a genetic plan as laid down in the DNA. An early statement of this view has been expressed (among others) by Spencer: "A society is an organism" (White 1975: 121). Further discussions of that paradigm are found in (Dawkins 1976, 1986), Lumsden (1981) and Koch (1989). It is also dealt with in the discussion by Leslie White, in the chapter "the emergence of the concept of cultural systems" (1975: 118-131). When worded like this as flat equivalence, this statement is bound to give rise to controversial and problematic consequences and applications (Benedict 1934: 230-232). The problem can be resolved when we slightly reformulate Spencer's original statement: "A society is *like* an organism". This will immediately give rise to the question "in what ways and features is a society *like* an organism?" It will become clear from the discussion of the systems approach to society below, how "A society is *like* an organism".

->:CULTURE_PATTERN, p. 132

---

[8] The cognitive bias of Wilson is the natural scientific one. It is based on a specific set of assumptions embedded in the basic assumptions on wich the natural sciences operate. Specifically, following the Cartesian reductionism as outlined in "On Method", Descartes (1637), Dennett (1991: 3, 6, 8-9, 29-35). This means that all compound and complex phenomena are to be studied by recursively dissecting them into their simpler component phenomena, and so on, until one reaches the simplest components that can be understood as atomic elements, whose combination yields the phenomena of the next higher order. This essentially results in the natural scientific hierarchy of physics, chemistry, biochemistry, biology, sociobiology, and ethology that Wilson refers to.

10.1.4. The E.O. as sociologist from Mars

In Wilson's sociobiologist natural science approach, it is necessary to let the sciences of the social species on Earth shrink to specialized branches of natural science. But for an objective and impartial E.O., this is not inherently the necessity. Therefore we take E.O. Wilson's proposal and completely reverse it, and we choose to *interpret the planetary biosphere as a system of societies*. We will now situate ourselves as visiting sociologists from Mars who are at complete liberty to interpret the planetary biosphere and everything in it, also the human world, as a system of societies. This view has been elaborated by Whitehead (1934) in his *philosophy of organism* as presented in "Nature and Life" and "Process and Reality" (Whitehead 1969). The term *philosophy of organism*, by which he labels his approach, is somewhat misleading, since it can easily and falsely be interpreted as an uncritical application of biological ideas. But Whitehead hadn't intended to mean it that way at all - just to the contrary.

10.1.5. Whitehead's view of the world as system of societies

(1934: 33): There is the animal life with its central direction of a society of cells, there is the vegetable life with its organized republic of cells, there is the cell life with its organized republic of molecules, there is the large-scale inorganic society of molecules with its passive acceptance of necessities derived from spatial relations, there is the inframolecular activity which has lost all trace of the passivity of inorganic Nature on a larger scale.

Whitehead worked out this paradigm[9] in "Process and Reality" (Whitehead 1969).[10] (All further references in this subsection from this work). Here, he constructs a world system consisting of entities, prehensions, processes, relations, and *nexus*[11] (1969: 24, 33):

Whitehead (1969: 24): Actual entities involve each other by reason of their prehensions of each other. There are thus real individual facts of the togetherness of actual entities, which are real, individual, and particular, in the same sense in which actual entities and the prehensions are real, individual, and particular. Any such particular fact of togetherness among actual entities is called a 'nexus' (plural form is written 'nex**u**s'). The ultimate facts of immediate actual experience are actual entities, prehensions and nex**u**s. All else is, for our experience, derivative abstraction.

Whitehead (1969: 33): An actual world is a nexus; and the actual world of one actual entity sinks to the level of a subordinate nexus in actual worlds beyond that actual entity.

Whitehead (1969: 34): It is fundamental to the metaphysical doctrine of the philosophy of organism, that the notion of an actual entity as the unchanging subject of change is completely abandoned. An actual entity is at once the subject experiencing[12] and the superject of its experiences... The ancient doctrine that 'no one crosses the same river twice' is extended.[13] No thinker thinks twice; and, to put the matter more generally, no subject experiences twice... In the philosophy of organism it is not 'substance' which is permanent, but 'form'. Forms suffer changing relations; actual entities 'perpetually perish' subjectively, but are immortal objectively.

---

[9] In the Kuhnian sense. For further discussion of the relevance of the Kuhnian notion of paradigms in the social sciences and anthropology, especially as an answer to the approaches of sociobiologists like Wilson, see: Samuel (1990: 1-5).

[10] The work appeared first in 1929.

[11] Connexion, combination, intertwinement, gr.: synapsis, symplexis
For lack of the original character in the text: "u" with a bar "-" on top, this is writing is substituted here: nex**u**s.

[12] See the formal equivalence of the following paragraph with the buddhist discussion of *paticca samuppada*, below.

[13] As was formulated by Heraklit (1976), B 49a.

Whitehead (1969: 117): The physical world exhibits a bewildering complexity of such societies, favouring each other, competing with each other. The most general examples of such societies are the regular trains of waves, individual electrons, protons, individual molecules, societies of molecules such as inorganic bodies, living cells, and societies of cells such as vegetable and animal bodies.

Whitehead (1969: 118): Thus a molecule is a subordinate society in the structured society which we call the 'living cell'.

Whitehead (1969: 114-115): The appeal to Plato in this section has been an appeal to the facts against the modes of expression prevalent in the last few centuries. These recent modes of expression are partly the outcome of a mixture of theology and philosophy, and are partly due to the Newtonian physics, no longer accepted as a fundamental statement. But language and thought have been framed according to that mould; and it is necessary to remind ourselves that this is not the way in which the world has been described by some of the greatest intellects. Both for Plato and Aristotle the process of the actual world has been conceived as a real incoming of forms into real potentiality, issuing into that real togetherness which is an actual thing. Also, for the Timaeus, the creation of the world is the incoming of a type of order establishing a cosmic epoch. It is not the beginning of matter of fact, but the incoming of a certain type of social order... of the hierarchy of societies composing our present epoch... The physical world is bound together by a general type of relatedness which constitutes it into an extensive continuum.

In the present context, a thorough discussion of Whitehead's work and its principles would be out of place since that would necessitate a dedicated philosophical study by itself. The main purpose here is to demonstrate that it is entirely possible to assume the culture neutral E.O. position of an *extraterrestrial sociologist* and interpret the whole of the universe in terms of a sociological discourse. Whitehead's work can be taken as philosophical starting position for this. The connection between his work and the later general systems theory workers is shown elsewhere.

->:STRUCTURAL, p. 130 , ->:SALTHE_STRUCT, p. 126

Of course his notion of "society" (like a *society* of molecules) is not the same as a human society. Here, a more abstract principle is meant, an "analogous structure" as introduced by Salthe. It is the principle of (inter-) *relation* and inter-dependence.[14] And by this, we could (with some additional work) arrive at the notion that even atoms and chemical compounds are to be considered as "societies" rather than as atomic (isolated or isolable) entities-in-themselves, which would consequently lead to a natural science based on the relation principle. A salient issue of the "society" view is the preference of connectedness and cooperation over isolation and competition, which are the hallmark of Neo-Darwinist discourse. (Montagu 1976: 43-44): "This aspect of cooperation was also formulated early in the biological field by Espinas (Des Societés animales), the Russian workers Kessler (On the law of mutual aid), and Kropotkin (Mutual aid: A factor of evolution)". It is also reflected in the conception of the *biosphere* in the work of Vernadsky.

->:BIOSPHERE, p. 117

A similar position is expressed in the present socio-informational position as expressed by Marijuán (1996: 90), ranging the full spectrum of phenomena from the 'society of vacuum' via the 'society of cells' and the 'society of neurons' up until the 'society of nations'. And extending that even further, we may arrive at a 'society of the universe' as envisioned by Teilhard de Chardin (1981: 264-267).

As Whitehead mentions above (114-115), we can find the origin of this line of thought in western philosophy in Platon's Timaios (Platon 1988: 53 C, 54, 55). When we examine these

---

14   ->:SALTHE_STRUCT, p. 126, ->:RELATION_PRINCIPLE, p. 121

passages, we find there Plat**o**n describing the ultimate building elements of all matter as simple geometrical patterns, triangles, and polygons, and the derived spatial *Platonic Solids*. (Reale 1993: 488-496). This view of the ultimate composition of the universe is a different statement of the basic principle that the spatial geometrical *relations* of the atoms (i.e. the most basic configuration forms of the molecular society, in Whitehead's diction) are what defines the "nature" of chemical compounds. This is corroborated by present (bio-) molecular chemistry:

Kampis (1996: 122): By utilizing the geometrical form as a determiner of interactions, macromolecules recur to an open-ended set of variables, modulated by other molecules...

This gives an indication that it is possible to establish a way for using *relation* as a general epistemological principle, not only of human affairs, but for building one's world view, the *Weltanschauung*. This will be pursued in more detail in the following sections on the Semiosphere and Paticca Samuppada.
>:PATICCA_SAMUPPADA, p. 120, ->:RELATION_PRINCIPLE, p. 121

10.2. The Semiosphere

@:SEMIOSPHERE

10.2.1. The home of the unicorn

We are now going to perform a *Gedankenexperiment*, and to perform it, we need the cooperation of the reader.
*Dear reader: please create for yourself a mental picture of a lush green meadow by a forest, with a small creek running through it. Imagine the scene as vividly as you can or want. Imagine the sweet scent of the herbs, and the pleasant feeling of the warm wind as it caresses the leaves. Now, visualize in the center of that meadow a beautiful creature, with slender, lithe body, graceful like a deer, light in color, a **unicorn**. Imagine that unicorn as vividly as you can or want. See it strolling around the meadow, enjoying itself. Now, dear reader, I ask you the crucial question: Where does that unicorn live?*

The answer has three stages, that we need to consider.
1) The first obvious answer is that it lives in that scenery that we just imagined.
2) The second answer is that it lives in the imagination, commonly also called *the mind*. But that is not all:
3) The third answer is that it lives in the *Semiosphere* (also called *SEMsphere*).
This realm is the domain of all mental projections that are intersubjectively {shared / exchanged}, mainly through the mechanism of language. The present usage is derived from Lotman.

10.2.2. Lotman's semiosphere

Lotman (1990) coined the term *Semiosphere* (here also called *SEMsphere*) for the realm of all mental projections that are intersubjectively shared or exchanged, mainly through language. The SEMsphere is also the world of relations between communicating organisms as viewed from the viewpoint of semiotics. In the following quotation, Lotman refers to the work of Vernadsky as influence to his concept.

Lotman (1990: 123): By analogy with the biosphere, (Vernadsky's concept) we could talk of a semiosphere, which we shall derive as the semiotic space necessary for the existence and functioning of languages, not the sum total of different languages; in a sense the semiosphere has a prior existence and is in constant interaction with languages. In this respect a language is a function, a

cluster of semiotic spaces and their boundaries... Outside the semiosphere there can be neither communication, nor language.

The unit of semiosis, the smallest functioning mechanism, is not the separate language but the whole semiotic space of the culture in question. This is the space we term the *semiosphere*. The semiosphere is the result and the condition for the development of culture; we justify our term by analogy with the biosphere, as Vernadsky defined it, namely the totality and the organic whole of living matter and also the condition for the continuation of life.

The next quotation shows that Vernadsky considered the biosphere as a system of societies of living beings in quite the exact sense as Whitehead had expressed it in more philosophical terms in the section before[15].

@:BIOSPHERE

Lotman, (1990: 125), [citing Vernadsky on the biosphere]: ... all life-clusters are intimately bound to each other. One cannot exist without the other. This connection between different living films and clusters, and their invariancy, is an age-old feature of the mechanism of the earth's crust, which has existed all through geological time.

The same idea is expressed more clearly again:

The biosphere has a quite definite structure which determines everything without exception that happens in it... A human being observed in nature and all living organisms and every living being is a function of the biosphere in its particular space-time.

10.2.3. The (not so private) world of the mind

We will now deepen our enquiry of the world of mental projections, the *SEMsphere*, with a quotation from Julian Jaynes:

Jaynes (1976: 1,2): O, WHAT A WORLD of unseen visions and heard silences, this insubstantial country of the mind! What ineffable essences, these touchless rememberings and unshowable reveries! And the privacy of it all! A secret theater of speechless monologue and prevenient counsel, an invisible mansion of all moods, musings, and mysteries, an infinite resort of disappointments and discoveries. A whole kingdom where each of us reigns reclusively alone, questioning what we will, commanding what we can. A hidden hermitage where we may study out the troubled book of what we have done and yet may do. An introcosm that is more myself than anything I can find in a mirror. This consciousness that is myself of selves, that is everything, and yet nothing at all - what is it?

  And where did it come from?

  And why?

Few questions have endured longer or traversed a more perplexing history than this, the problem of consciousness and its place in nature. Despite centuries of pondering and experiment, of trying to get together two supposed entities called mind and matter in one age, subject and object in another, or soul and body in still others, despite endless discoursing on the streams, states, or contents of consciousness, of distinguishing terms like intuitions, sense data, the given, raw feels, the sensa, presentations and representations, the sensations, images, and affections of structuralist introspections, the evidential data of the scientific positivist, phenomenological fields, the apparitions of Hobbes, the phenomena of Kant, the appearances of the idealist, the elements of Mach, the phanera of Peirce, or the category errors of Ryle, in spite of all of these, the problem of consciousness is still with us. Something about it keeps returning, not taking a solution. It is the difference that will not go away, the difference between what others see of us and our sense of our inner selves and the deep feelings that sustain it. The difference between the you-and-me of the shared behavioral world and the unlocatable location of things thought about. Our reflections and dreams, and the imaginary conversations we have with others, in which never-to-be-known-by-anyone we excuse, defend, proclaim our hopes and regrets, our futures and our pasts, all this thick fabric of fancy is so absolutely different from handable, standable, kickable reality with its trees, grass, tables, oceans, hands, stars - even brains! How is this possible? How do these ephemeral

---

[15] The idea of a global networked system of organisms has been taken up and elaborated by Howard Bloom. It is available on the WWW under:

-> http://www.heise.de/tp/deutsch/special/glob/default.html

existences of our lonely experience fit into the ordered array of nature that somehow surrounds and engulfs this core of knowing?
Men have been conscious of the problem of consciousness almost since consciousness began.

As Jaynes points out, the question of consciousness has been brought up in many different guises throughout the ages. For the present study, it is not the aim to try to supply yet another approach to that eternal question of consciousness. Rather, this quotation was given to illustrate a grave fundamental and categorical error that Jaynes and many others writing or speaking on that subject have committed. The error lies in this statement: "And the privacy of it all! A secret theater of speechless monologue..." This is a logical fallacy, since Jaynes is selfspeakingly using the common interchange medium of written language to evoke that very same thought in our minds, and if you have followed the above *Gedankenexperiment* with the unicorn above, you understand it clearly. Language serves as an intersubjective projection mechanism, and by reading this very text that you are reading now, you are submitting yourself to my (the present author's) *written* language projections as much as I submitted to Jaynes' projection. But in the same token I rejected his expressed projection that these projections are private only. (This is basic logics. If there is a projection from one consciousness to another taking place at all, it cannot, by this very act, be private). They are not "speechless monologue" at all, but technically, *subverbalizing*, or going through rudimentary neuronal processes that have cut off the final motorics of the vocal apparatus. What is private, are our bodily feelings, pains, and joys. But the universe of words and concepts, the SEMsphere, is *intersubjective* and *not private*. Now, we, Julian Jaynes, I and you, dear reader, are engaged in an *intersubjective triad of mental projections in the SEMsphere*. And the fact that Jaynes wrote that piece of text sometime in the 1970's makes no difference to us, as little as that I wrote the Unicorn projection at a different time than *now, this moment* when you are reading it. In the SEMsphere, there exists no such time difference. Whenever we, by our projections, enliven these images, they *are*, outside of physical time and space, in the SEMsphere[16]. So, by the very fact that I could describe the unicorn's world to you and you recognized it, and you were able to follow my instructions, I have demonstrated to you that we are both partaking, in this little experiment, and completely unimpeded by spatial and temporal distance, in the SEMsphere[17]. And there is no question how *real* that is. *By the very fact that we have just co-created this consensus reality, it exists*. Even if you disagree with me, you must accept those statements that I have made at some other time, and at some other place, into your mind, here and now. In the diction of *memetics*, you must play a host to the *memes* that I have projected onto you.[18] This is the projection that I have created, and by reading it, you are alreading taking part in it, even if you disagree. In fact, humans have been doing this all the time in the last 5000 years, because when you have read my text, you were following my footsteps through the semantic universe of human cultural productions which have been recorded in writing in the last 5000 years of the current epoch, which I call the *bibliosphere*.[19] The question of *how real* the

---

[16] This interesting time-transcending capability of SEMsphere entities is also being touched in the discussion of the *immortality of the soul* and the property of cultural patterns as *immortality complexes*. ->:IMMORTALITY_COMPLEX, p. 137, ->:IMMORTAL_SOUL, p. 243

[17] To make this more precise: there are a few limitations, one of them being the paper that holds the message. If the paper is gone, the message is gone also. That is the question of the durability of the CMM which will be treated later. The other limitation is of course, in order to partake in that shared SEMsphere reality, we must speak the same language and write and read the same (alphabetic) script. More on this under: ->:TECHNO_FACTOR, p. 155

[18] ->:MEMETICS, p. 248

[19] ->:BIBLIOSPHERE, p. 195

entities of the SEMsphere are, or better, of what *logical category* the *reality* of the SEMsphere is, needs to be dealt with, and we will return to this issue in:

->:ERT_TRIAD, p. 135

10.2.4. Symbol and Symbol System

The definition given by Leslie White serves to illustrate the essential aspects of the symbol:

@:SYMBOL

White (1987: 274): A symbol may be defined as a thing or event, an act or an object, upon which meaning has been bestowed by human beings: holy water, a fetish, a ritual, a word. A symbol is, therefore, a composite of (1) a meaning, and (2) a physical structure. A symbol must have a physical form otherwise it and its meaning can not enter our experience - unless we are willing to accept the claims of telepathy and clairvoyance. But there is no necessary relationship between the meaning of a symbol and its physical basis...
The meanings of symbols cannot be grasped and appreciated (comprehended) with the senses... Symboling is trafficking in non-sensory meanings. And, be it repeated, no animal other than man can have, or be brought to, any comprehension of holy water or fetishes - or sin or sunday.

White (1987: 276): And because we symbol, we human beings can never experience the external, physical world precisely as non-human beings experience it.

Greek roots: *symbolon*: *sign*, *indication*, *insignia*, *badge*, *portent*, (Rost 1862,II: 459) and *symballein*: *to cast together*[20]. (Rost 1862,II: 457-8). In the present usage, an important meaning of *symbol* is the dynamic case. This is:
1) the time-dependent aspect of symbolization,

->:MULTIVOCALITY, p. 225

2) and movement patterns that are part of a (often ritual) performance as in many indigenous situations.

->:DYNAMIC_CMM, p. 203

Symbols appear only in context, the symbol system. For the present use in CMS, a definition will be given:

Symbol System: Any set of recognizable and repeatable shapes and performative expressions (which may be 2-d, 3-d, or 4-d[21]) that conveys meaning.

The *meaning of meaning* is dealt with in another section.

->:MEANING_OFMEANING, p. 225

10.2.5. The SEMsphere

In the present usage, the term *SEMsphere* will be used as term that encompasses communication and symbolization in the most general sense. It implies extended meaning as

---

[20] The connection of the word *symbolon* with *symballein* is illustrated by this tale from ancient Greece: A group of friends prepared to arrange a confidential meeting of each other's friends of friends in a house in a different city. Since the "friends of the friends" didn't know each other, they chose the following method to keep the circle of trustees secure: they took a pottery vessel (a *krater*) and smashed it to pieces. Then they handed out these pieces to their respective friends. At the day of comm-union, those people who had received a piece of the broken vessel (a shard), handed it in to their (unknown) host in that house in that city. And as the broken and distributed (diaballein) pieces of the krater reassembled into a form that was once a whole, the common intention under which these pieces were distributed, could re-emerge also.

[21] 4-d means a dynamic display systematically changing in time. This is also covered under the name of *kinemorphae* in the section on performative CMM.

->:KINEMORPHAE, p. 205

to include non-language symbolic performance, like ritual (Staal 1989). In this, it is used in a slightly wider meaning than Lotman's *semiosphere*. Since humans are enveloped in this omnipresent *SEMsphere*, all their bodily (somatic) experiences are filtered through the symbolic mechanism. (See White, above). Hoffmeyer (1996, 1997) has formulated the semiosphere view of recent biosemiotics research.

10.3. Paticca Samuppada, Buddhist philosophy, and General Systems Theory

@:PATICCA_SAMUPPADA

This section contains material on the base structures and processes of the cognitive system. We will begin with a discussion of the work of Joanna Macy (1991).[22] She presents a comparison of early Buddhist philosophy with General Systems Theory and workers who derive their methods from this source. Her sources of General Systems Theory authors are: Bateson, von Foerster, Jantsch, Maturana, Varela, Glasersfeld, Bateson, Varela, the founder Bertalanffy (1968), and Laszlo (1973). She concentrates her work on the different interpretations of the concept of causality in western and Buddhist thought. For her Buddhist sources, she concentrates on the very earliest scriptures of the Pali Canon, representing *pre-Abhidharmaist* thought, the *Sutta* and *Vinaya Pitakas* (p. 2). Her reason for this is given in the introduction:

Macy (1991: 2): I focus on them, ... because their presentation of dependent co-arising [=paticca samuppada] differs from the Abhidharma in some subtle but significant ways, which, as I delineate in Chapter 3, have implications for our understanding of mutual causality. These differences are often overlooked since the Abhidharma has tended to influence later interpretations of Pali texts as a whole, and *paticca samuppada* in particular. While the later concept of emptiness (shunyata) in Mahayana Buddhism renewed the emphasis on radical relativity found in the early teachings, such similarities fall outside the focus of this book.

Macy (1991: 3): The expressions *mutual causality*, *reciprocal causality*, *dependent co-arising*, *interdependence*, and *indetermination* are, for the purposes of this book, taken as roughly equivalent in meaning. As to the term *general systems theory*, it is not a theory proper, in the sense of a single hypothesis about a given set of phenomena, so much as a coherent set of principles applying to all irreducible wholes. These wholes, be they molecule, cell, organism, personality, or social body, reveal common principles and properties that are amenable to understanding when we view them as self-organizing systems. What we have here is not a theory about general systems, but rather a general theory (or a set of principles) about systems, which allows their dynamics and characteristics to become intelligible...
Some thinkers prefer the term *cybernetics* for the concepts and processes pertaining to self-regulating systems... I broaden it to systems-cybernetics and use it interchangeably with general systems theory...

Her work shows how the *relation principle* in the Buddhist *paticca samuppada* philosophy is a *first principle of cognition* (or *a priori*, following Kant, see Popkin 1956: 134). This principle was discovered by Gotama, the Buddha, on his enlightenment. Mavy cites the original account of Gotama:

@:BUDDHA_METANOIA

Macy (1991: 5-26), Samyutta Nikaya, II.91:
There arose in me vision, knowledge arose, insight arose, wisdom arose, light arose. Just as if, brethren, a man faring through the forest, through the great wood, should see an ancient path, an ancient road traversed by men of former days. And he were to go along it, and going along it he

---

[22] Secondary references: Buddhadhasa (1956-1992). Notes: Sanskrit and Pali terms are both written in simplified latinized transcription. ->:SPELLING, p. 106

should see an ancient city, an ancient prince's domain, wherein dwelt men of former days, having gardens, groves, pools, foundations of walls, a goodly spot.

Macy (1991: 45), Digha Nikaya, II.36:
This were a matter hard to perceive, namely this conditionality, this paticca samuppada ... against the stream of common thought, deep, subtle, difficult, delicate...

Macy (1991: 38), Digha Nikaya, II.33:
I have penetrated this truth, deep, hard to perceive, hard to understand, calm, sublime, beyond logic, subtle, intelligible only to the wise. But this is a race devoting itself to the things to which it clings. ... And for such a race this were a matter hard to perceive, to wit, that this is conditioned by that (*ida paccayata paticca samuppado*)...

When the Buddha contemplated the essential difficulty of understanding the *paticca samuppada*, he was tempted not to teach (p. 38). Macy cites Nyanatiloka (the *Abhidharmaist* scholar) as authority for the difficulty of comprehending the concept of paticca samuppada:

Macy (1991: 45): None of all the teachings of Buddhism has given rise to greater misunderstandings, to more contradictory and more absurd speculations and interpretations than the Paticca Samuppada, the teaching of the Dependent Origination of all phenomena of existence.

What is the reason for this essential difficulty to comprehend the essence of paticca samuppada, and why does it have such central importance?

Macy (1991: 28): Such words remind us of the limits of scholarship. No textual exegesis or conceptual elaboration can substitute for the training and psychological investment considered requisite for an understanding of *paticca samuppada*. We need, therefore, to be mindful that all conceptual treatments of dependent co-arising are by their nature limited and inadequate.

Macy makes clear the necessity for a crucial step to overcome the habitual modes of everyday perception and thinking. She expresses that to understand the *paticca samuppada*, a *metanoia* is needed, a fundamental re-organization of cognitive processes.

>:CULTURAL_BIAS, p. 192, ->:METANOIA, p. 136,
>:FAUST_METANOIA, p. 237, ->:SOCRATIC_CONTENTION, p. 198

10.3.1. From Substance to Relation

@:RELATION_PRINCIPLE
Macy (1991: 45-46): By virtue of the universality and impersonality of the causal process it perceives, it has also been acclaimed as a milestone in human thought... The reciprocity of causal process is integral to the Buddha's teaching of *paticca samuppada*. It is inherent in the doctrine of anicca and the denial of a first cause, evident in the interdependence of causal factors, and reflected in the linguistic structures employed.

From Substance to Relation

This, the essential cognitive switch of perception from "*Substance to Relation*" is described (as much as that is possible at all in words) in the chapter of Macy's book from p. 46 on. She starts with an outline of the foundations of the common *substance* view of reality that is characterized by "entities-substances that can impinge on others and transmit properties to them." (p. 46), this is derived from ancient Greek philosophy. (For this see also the discussion of the *Mae-phaisto* in *Faust*[23]). In the following pages to (p. 64), Macy gives a view of the fundamental difference of the *paticca samuppada* view. Such a basic cognitive principle is

---

[23] ->:WORLD_FOUNDATIONS, p. 39

here called *a priori* in a slight modifiation of the Kantian[24] usage. The notion of *a priori* needs to be further clarified:

Popkin (1956: 134): Our contacts with the experiential world supply the content of our knowledge, but our facilities supply the form in which we know it.

Now, the form in which we know the experiential world is determined by these factors:
1) the biologically given *ratiomorphic apparatus* (or RMA) of the sensory and neuronal processes.
2) the SEMsphere conceptual and symbolic filters ->:SEMIOSPHERE, p. 116.
3) Our individual disposition and action at that very moment when we cognize something[25].

10.3.2. The Ratiomorphic Apparatus (Weltbildapparat)

@:RATIOMORPHIC

Riedl (1976-1987c) gives in his works the complete description of the philosophical foundations and the biological details of the EE (Evolutionary Epistemology) views how the Kantian *a priori* is based on a phylogenetic *a posteriori*, ie. what is *a priori* for the individual organism experiences is a result of the evolution. This biological cognitive equipment is called the *ratiomorphic apparatus* (RMA) (after Brunsvik) (Riedl 1985: 59), it is the neuronal and sensory cognitive equipment of the human organism (Riedl and Lorenz call it the *Weltbildapparat*) which sets an a priori phylogenetic condition for cognition. This is an *unconditional a priori* for the individual organism. It cannot evade the genetically programmed capabilities and limitations of its biological structure. Even if we are using technical instruments to extend our capabilities, we have to read those instruments with the senses we have. The RMA is the biological structure of the neuronal network. We also speak of the *RMA filters* in the present context.

The important factor is now to find the dividing line between the effect of the RMA filters and SEMsphere filters that are influencing human life in contradistinction to animal experiences.[26]
There is a superimposition of filter effects, and the personal reality experienced is a result of
1) a neuronal autopoietic reality construction process (the RMA filters),
2) that arises in the structural coupling of individuals in a societal system. (the SEMsphere) and
3) the structural coupling of organisms leads to communication and self-reflexive consciousness.

This structural coupling can then be described as one further step in a recursive autopoietic self-organization of the social system on a higher level of organization. The same principle applies down from the (human) individuals into the prior levels of organic organization: Biological evolution has formed this equipment in the same autopoietic self-organization principle as the individual organism creates its own structures. This recursive hierarchical ordering has been described in detail in the works of Salthe (1985), Salthe (1993).
->:SALTHE_STRUCT, p. 126

---

[24] ... Wo doch "der Verstand a priori niemals mehr leisten könne, als die Form einer möglichen Erfahrung zu antizipieren" (Kant, in Mittelstraß 1984: 1078).

[25] As for example expounded by Heidegger in *Sein und Zeit*, (Mittelstraß 1984: 1078).

[26] ->:SYMBOL, p. 119

10.3.3. Cognitive reorientation through a Gestalt switch

The important question is the degree of *cognitive* freedom that an individual has for applying the SEMsphere filters. That there is such a freedom is evidenced by the Gestalt flip pictures. Here the nervous system automatically performs a switch of filter functions which derive different meanings from the same set of stimuli.

Boring women, Gestalt picture

The neuronal mechanism operating in the recognition of the Boring Gestalt picture is described by Bösel and Pöppel:

Bösel (1987: 299): Die Boring-Frauen... Auf die Frage "Wie alt ist die abgebildete Frau?" kann man je nach Betrachter sehr unterschiedliche Antworten bekommen. Die Schätzwerte variieren intraindividuell zwischen 15 und 95 Jahren. Es handelt sich nämlich um ein doppeldeutiges Bild. Dabei stellt sich die Frage, welche Faktoren die Wahrnehmung der alten und welche die Wahrnehmung der jungen begünstigen. Durch kleine Abänderungen kann man das doppeldeutige Bild in die eine oder andere Richtung eindeutig gestalten. Werden Probanden zunächst mit einem derart retuschierten Bild konfrontiert, so nehmen sie im doppeldeutigen Bild verständlicherweise die Gestalt wahr, die auch das Eindeutige zeigt. [....] Man muß voraussetzen, daß die Bildinformationen selbst gestalterkennende neuronale Filter verändern.

Pöppel (1985: 67): In der modernen Wahrnehmungsforschung hat dieser Mechanismus der Interpretation von Reizgegebenheiten den Namen »Top-down« erhalten - im Gegensatz zu »Bottom-up«. Top-down heißt, daß von unserem Kopf oder besser vom Gehirn nach unten, also zu den Sinnesorganen hin, bestimmt wird, was wahrgenommen werden soll.

Pöppel (1985: 69): Die zahlreichen Gesetze über Wahrnehmung, die von den Gestaltpsychologen formuliert wurden, lassen sich zu einem Gesetz zusammenfassen, nämlich dem Prägnanzgesetz. Das soll besagen: Was immer in unser wahrnehmendes Bewußtsein gelangt, erscheint in einer »prägnanten« Gestalt. Wenn eine Reizsituation nicht eindeutig ist, dann wird sie aufgrund unserer Hypothesen so gestaltet oder umgestaltet, daß der ins Bewußtsein gelangende Inhalt klar und deutlich ist. Mit anderen Worten heißt das, daß es für den Erkennenden nie ein Chaos gibt, daß immer Etwas gegeben ist, denn das Bedürfnis nach Prägnanz ordnet das möglicherweise vorhandene Chaos im Sinne einer subjektiven Ordnung. In Hinblick auf das Jetzt bedeutet das: Was immer gegenwärtig ist, wird es dies zwar nur für eine kurze Dauer sein, dafür aber in prägnanter, klarer und deutlicher Form.

10.4. Neuronal Aesthetics, Cognition, Pattern, Autopoiesis

@:NEURONAL_PATTERN

The current theories of neuronal network action and pattern cognition in human brains are described in Breidbach (1993), (1997) and Brock (NeuroAe), Brock (1994), Calvin (1989), (1991) (1996a), Edelman (1992), Gazzaniga (1989), Haken (1992), Maturana (1982-1994a), Pöppel (1978-1995), Riegas (1990), Roth (1996), Schmidt (1987, 1991), Spitzer (1996). Calvin (1996a) especially presents a theory describing actual spatial neuronal patterns in the brain that are responsible for the formation of meaning and concepts. The Gestalt processes play the essential role of pattern processes in the structural coupling of organisms. *Gestalt* recognition is the result of the neuronal processing when it is presented with a patterned set of stimuli, and that *Gestalt* manifests again as a pattern of neuronal excitation in that neuronal system.[27]

In the process of pattern recognition, a neuronal network enters a state of activity characterized by phase coherence:

Singer (1992: 58): Die oszillierenden Antworten räumlich verteilter Merkmale beginnen in Phase zu schwingen, wenn im Bereich ihrer rezeptiven Felder Konturen angeboten werden, die sich mit gleicher Geschwindigkeit in die gleiche Richtung bewegen. Besonders ausgeprägt ist diese Synchronisation zwischen Neuronengruppen, wenn diese von zusammenhängenden Neuronen aktiviert werden. Dieses bedeutet, daß sich Neuronengruppen, die sich an der Codierung einer durch die Kohärenz bestimmter Merkmale definierten Figur beteiligen, durch die Phasenkohärenz ihrer oszillatorischen Antworten auszeichnen. Das Ensemble von Neuronen wäre demnach nicht durch die *verstärkten* Antworten der einzelnen Mitglieder, sondern durch die *Phasenkohärenz* ihrer oszillatorischen Antworten definiert.

Now, we can apply this to the cognitive processes in general. With the SEMsphere filters, it is possible to perform a cognitive Gestalt switch that has two or more possible stable states for realizing complete world perception schemes. Applying the Gestalt switch with respect to the *paticca samuppada*, gives the following situation:

1) a redefining of *essential logical categories* of the SEMsphere filters is possible,

2) under which *any and all experience is experience-d*, and

3) involving the *logical switch of cognition from fundamental "substance" orientation to fundamental "relation" orientation* that has

4) been performed in the awakening process of the Buddha.

5) The fundamental cognitive reorganization thus represented is called *metanoia*,[28] and it is

6) within the ontogenetic (individual learning experience) RMA capability of the human organism and can be supported by its genetic ratiomorphic apparatus base.

See also Macy (1991: 193-212). A person who is experiencing existence from this position, will experience *being-in-relation* as profound emotional realization, and this will be the only conceivable attitude towards everything that she experiences as "being-other-but-not-quite-distinct-from-myself". Cognitively and epistemologically, the Buddha's achievement has been a successful break-out from an otherwise unreflected succession of habitual perceptional reference frames that are reproduced in the perpetual autopoiesis of the social system.

Landow (1992: 29): This ... requires that one first recognize the enormous power of [our present world views], for only after we have made ourselves conscious of the ways [they] have formed and informed our lives can we seek to pry ourselves free from some of [their] limitations...

---

[27] Roth (1996: 258-261); Brock: http://wwww.uni-wuppertal.de/FB5-Hofaue/Brock/Projekte/NeuroAe3.html

[28] ->:METANOIA, p. 136

10.4.1. Autopoiesis of the Cultural System and structural coupling of organisms

@:AUTOPOIETIC

The autopoietic formation of social systems is described in Berger (1990), Luhmann (1993), Maturana (1987, 1991), Schmidt (1987), (1992), and Sprondel (1994). The constituents and the whole of a social system stand in reciprocal structural coupling with each other, in other words, they are enmeshed in a *relationship system*. This *relationship system* is the "substance" of a social system. Its "matter" is communication: Luhmann (1993: 191-241): "Kommunikation löst Kommunikation aus."

Luhmann (1993: 166-167): Wir müssen uns jetzt der Frage stellen, wieso das Problem der doppelten Kontingenz »sich selbst löst«; oder weniger zugespitzt formuliert: wie es dazu kommt, daß das Auftreten des Problems einen Prozeß der Problemlösung in Gang setzt. Entscheidend hierfür ist der selbstreferentielle Zirkel selbst: Ich tue, was Du willst, wenn Du tust, was ich will. Dieser Zirkel ist, in rudimentärer Form, eine neue Einheit, die auf keines der beteiligten Systeme zurückgeführt werden kann...
(167): In dieser Einheit hängt die Bestimmung eines jedes Elements von der eines anderen ab, und gerade darin besteht die Einheit. Man kann diesen Grundtatbestand auch als eine sich selbst konditionierende Unbestimmtheit charakterisieren: Ich lasse mich von Dir nicht bestimmen, wenn Du Dich nicht von mir bestimmen läßt. Es handelt sich, wie man sieht, um eine extrem instabile Kernstruktur, die sofort zerfällt, wenn nichts weiter geschieht. Aber diese Ausgangslage genügt, um eine Situation zu bilden, die die Möglichkeit birgt, ein soziales System zu bilden. [....] Dieses soziale System gründet sich mithin auf Instabilität. Es realisiert sich deshalb zwangsläufig als autopoietisches System. Es arbeitet mit einer zirkulär geschlossenen Grundstruktur, die von Moment zu Moment zerfällt, wenn dem nicht entgegenwirkt wird.

Luhmann (1993: 157-158): Ein soziales System baut nicht darauf auf und ist auch nicht darauf angewiesen, daß diejenigen Systeme, die in doppelter Kontingenz stehen, sich wechselseitig durchschauen und prognostizieren können. Das soziale System ist gerade deshalb System, weil es keine basale Zustandsgewißheit und keine darauf aufbauenden Verhaltensvorhersagen gibt. Kontrolliert werden nur die *daraus folgenden* Ungewißheiten in Bezug auf das *eigene* Verhalten der Teilnehmer. [....]
(158): Die Unsicherheitsabsorption läuft über die Stabilisierung von Erwartungen, nicht über die Stabilisierung des Verhaltens selbst, was natürlich voraussetzt, daß das Verhalten nicht ohne Orientierung an Erwartung gewählt wird.

Maturana (1991: 293): In dem Maße, wie ein soziales System das Medium darstellt, in dem sich seine Mitglieder als lebende Systeme verwirklichen und in dem sie ihre Organisation und Angepaßtheit aufrechterhalten, in dem Maße wirkt sich das soziale System notwendig als eine Selektionsinstanz für die strukturellen Veränderungen seiner Komponenten und folglich für deren Eigenschaften aus. In dem Maße jedoch, in dem ein soziales System faktisch durch diejenigen Lebewesen gebildet wird, die es durch ihr gemeinsames Verhalten erzeugt, sind es de facto gerade diese Lebewesen, die als Komponenten des sozialen Systems durch ihr Verhalten die Eigenschaften der Komponenten eben dieses sozialen Systems selektieren.

Maturana (1987: 224): Immer wenn ein Beobachter die Interaktionen zwischen Zweien oder mehreren Organismen so beschreibt, als würde die Bedeutung, die er den Interaktionen zuschreibt, den Verlauf dieser Interaktionen bestimmen, gibt der Beobachter eine semantische Beschreibung...
Als sprachlich bezeichnen wir ein ontogenetisches kommunikatives Verhalten (d.h. ein Verhalten, das in der ontogenetischen Strukturkoppelung von Organismen entsteht), welches ein Beobachter *semantisch* beschreiben kann.

Recursive interactions lead to coordination of behavior which consists in the conditioned structural coupling of organisms:
Maturana (1987: 226): Es kann in der Tat zahllose Weisen geben, auf die rekursive Interaktionen, die zu einer Verhaltenskoordination führen, zwischen Individuen hergestellt werden (wie z.B. «Tisch»,

«table», «mesa»). Was dabei relevant ist, ist die Koordination der Aktivität, zu der sie führen, und nicht die Form, die sie annehmen. Tatsächlich entstehen sprachliche Bereiche als ein kulturelles Driften in einem sozialen System, dem - wie beim genetischen Driften der Lebewesen - kein Entwurf zugrunde liegt.

Repeated recursive interactions lead to the stabilization of communication patterns in the form of signs:
Maturana (1987: 227): Wenn die Sprache entsteht, dann entstehen auch Objekte als sprachliche Unterscheidungen sprachlicher Unterscheidungen, die die Handlung verschleiern, die sie koordinieren. So koordiniert das Wort »Tische« unsere Handlungen in Hinsicht auf die Handlungen, die wir ausführen, wenn wir mit einem »Tisch« umgehen. Der Begriff »Tisch« verschleiert uns jedoch die Handlungen, die (als Handlungen des Unterscheidens) einen Tisch konstituieren, indem sie ihn hervorbringen.

The whole ensemble of social coupling gives rise to the social context (Maturana 1987: 251-254), which has been called the SEMsphere : ->:SEMIOSPHERE

Maturana (1987: 252): So kommt es also, daß das Auftreten der Sprache beim Menschen und des gesamten sozialen Kontextes, in dem sie auftritt, jenes (soweit wir wissen) neue Phänomen des Geistes und der Selbstbewußtheit als die intimste Erfahrung der Menschheit erzeugt. Ohne eine geeignete Geschichte von Interaktionen ist es unmöglich, am menschlichen Bereich teilzuhaben... Gleichzeitig ist Geist als Phänomen des In-der-Sprache-Seins im Netz sozialer und sprachlicher Koppelung nichts, das sich in meinem Gehirn befindet. Bewußtsein und Geist gehören dem Bereich sozialer Koppelung an, und dort kommt ihre Dynamik zum Tragen.

@:SALTHE_STRUCT

On this base of the autopoietic self-organization principle of society, Salthe (1985) and (1993) works out a general theoretical structural model of hierarchically nested systems. Salthe describes his principle in those words:

Salthe (1985: 8-9): This book is about structures. They are held to have ontological primacy. The changing forms and relationships of entities not only reveal these structures, and even perhaps cause them to exist in measurable ways, but are also controlled by them. That is, the things in the world form a system... I will presume that no change of form or process can occur that violates the structural rules of the system of our world.

This model allows us to formulate the notion of the diachronic aspect of societal patterns, which is the question for the structure of the cultural transmission. Cultural patterns display a certain stability over time, but they also change. And what actually is change of cultural patterns, and by which processes they change, needs to be treated in more detail.
->:CULTURE_PATTERN, p. 132

Most of the material on autopoietic entities existant derives from observation of biological organisms, as the work of Maturana (1987) exemplifies. In the biological case, we have the by now well researched principle of genetically based formation, that helps us explain some of the principal mechanisms why organisms display the kind of self-similarity across generations that we can actually observe. Even the extent and the details of how the genetic mechanism determines this is still quite up to debate, as might be exemplified by the discussion in Salthe (1993: 251-267) on the differences between the *neo-Darwinian* (E.O. Wilson, Dawkins) interpretation and various alternative viewpoints like *developmental* (Salthe) or *organismic* (Whitehead) and its descendant, *general systems* (Bertalanffy, Maturana).

Salthe (1993: 266): For both Hegel and Whitehead, the organism was the fundamental kind of entity in the universe. If we have eschewed materialism, and if we are unwilling to leave materialism behind, this seems to be the available attitude. Historically, organicism in biology (Bertalanffy 1933; Haraway 1976) was generated partly by the realization that vitalism made sense only in the context of

mechanicism (Bertalanffy 1933; Van der Veldt 1943) and partly by the nonintelligibility of mechanism itself in the face of biological phenomena. The arrangement of organic matter became for organicists the source of life's phenomena, and the study of relations rather than of matter became the focus, giving rise in the event to general systems theory (Bertalanffy 1968), and, I believe, contributing as well to structuralism (Piaget 1970a; Laughlin and d'Aquili 1974).

11. Morphology, Structures, the Cultural Pattern

11.1. Morphology

The following section contains material on the systematics of *Cultural Pattern*, the *Morphology*. The salient aspect of *pattern* is that of *form* over *content* or *substance* or *matter*. We are deriving this usage from Goethe's concept of morphology as described in Riedl (1987a), Ruth Benedict's "patterns of culture" (1934: 49-56), and Bateson's (1972) and (1979) work on pattern. The cognitive model of of pattern is that of *relation* and *interconnectedness* as described in the section on *paticca samuppada*.[29] It has been characterized by Bateson (1979: 17, 18) as "*a pattern that connects*", referring to Goethe.

Bateson (1979: 18): We could have been told something about the pattern which connects: that all communication necessitates context, that without context, there is no meaning, and that contexts confer meaning because there is classification of contexts...
So we come back to the patterns of connection and the more abstract, more general (and most empty) proposition that, indeed, there is a pattern of patterns of connection.

Tyler Volk (1995: vii) has derived from Bateson's "pattern of patterns of connection" the term *metapattern*. Now "a pattern that connects" is strictly speaking, a tautology, because there is nothing else to a pattern than its connectivity in the neuronal action of the cognitive system of the observer.

Stafford Beer, in (Sieveking 1974, preface): What after all *is* order, or something systematic? I suppose it is a pattern, and a pattern has no objective existence anyway. A pattern is a pattern because some*one* declares a concatenation of items to be meaningful or cohesive. The onus for detecting systems, and for deciding how to describe them, is very much on ourselves. I do not think we can adequately regard a system as a fact of nature, truths about which can be gradually revealed by patient analytical research. A viable system is something we detect and understand when it is mapped into our brains, and I suppose the inevitable result is that our brains themselves actually impose a structure on reality.

It is true that a pattern as *Gestalt* has no separate reality in the physical world apart from a set of stimuli. That is cogently shown by the Boring flip Gestalt picture[30] where exactly the same set of physical visual stimuli is perceived in two very different ways. Thus the Gestalt must be a production of the cognitive system. But if these Gestalten have no *reality* in the physical world, they have so much more of a *presence* in the world of *relations*, the SEMsphere.[31] They certainly have an *effect*. Bateson makes a definition of *context* (1979: 15) "*as a pattern through time*". This will be taken as essential platform for the present systematics of the cultural pattern. Patterns *persist* in *time*, and in *communication*, and we wouldn't be able to communicate about patterns (or about anything) if we were not constantly and self-speakingly apply our ability to perceive and understand the patterns of our voiced and written communications (ie. react to them in an intersubjectively coherent manner). The best known cultural pattern by which context arises, is called *language*, but it is not the only one, and it probably is not the most fundamental one. The SEMsphere is the present term for the most encompassing, the all-embracing, pattern of patterns that generates context. So, the world of intersubjective communication, the SEMsphere, is created by the structural coupling of cognitive systems, and ensures that everything we tell each other is not just a chaotic mumbo-jumbo, but it is meaningful.

---

[29] ->:PATICCA_SAMUPPADA, p. 120

[30] ->:BORING_WOMEN, p. 123

[31] ->:SEMIOSPHERE, p. 116

Morphology derives from the Greek word *morphae:* form, gesture, position, pattern. (Rost 1862: 98). In philosophy, the concept found application in the Aristotelic *hylemorphism*, and in scholastic usage by Thomas Aquinas as *materia and forma* (Hoffmeister 1955: 310-311). There exists also a mythological connection to the Greek god of dreams, *Morpheus*. Mental images of waking life and dreams were considered by the ancient Greeks as productions coming from the same source. Hamilton (1942: 107).

(Encarta: Morpheus): Morpheus, in Greek mythology, god of dreams, the son of Somnus, god of sleep. Morpheus formed the dreams that came to those asleep. He also represented human beings in dreams.

The term *morphology* is used in slightly different meanings by different schools of thought. In linguistics, *morphology* is the study of *morphemes* -- the minimum meaning-bearing constituents of words.

(Encarta: Linguistics): *Morphology* is concerned with the units, called morphemes, that carry meaning in a language. These may be word roots (as the English cran-, in cranberry) or individual words (in English, bird, ask, charm); word endings (as the English -s for plural: birds, -ed for past tense: asked, -ing for present participle: charming); prefixes and suffixes (e.g., English pre- , as in preadmission, or -ness, in openness); and even internal alterations indicating such grammatical categories as tense (English sing-sang), number (English mouse-mice), or case.

11.1.1. Goethe's morphology

@:GOETHE_MORPHOLOGY

In the present context, *morphology* is used in a meaning derived from Goethe, Bateson, and Benedict, which we might call the *Gestalt tradition of morphology.* Its earlier traces go back to Herder and Vico. (Straube 1990: 168), (Herder 1975: XVI-XVII), Berg (1990: 61). Severi's (1993: 309, 311-315) description of Goethe's idea of *morphology* shows the similarity with the *paticca samuppada* principle of Macy, and later on p. 315, he describes how Bateson took up Goethe's idea. Further, on p. 318, he shows how Goethe's work "Farbenlehre" pioneered the application of the Gestalt principle to higher cognitive forms of perception.

Severi (1993: 314): Doch für Goethe ist jeder lebendige Organismus eine Ganzheit, die nicht auf die Summe ihrer Elemente reduziert werden kann... Diese spezifischen Formen, die das Reich des Lebendigen charakterisieren, ändern ihre Gestalten und folgen dabei einer von den Gesetzen der Physik unabhängigen Logik. Diese Logik kann nur von einer systematischen Morphologie enthüllt werden..
Nach Goethe... muß man die Idee, daß jede Ursache ihre bestimmte Wirkung hat, durch die Idee eines wechselseitigen Bedingtheitsverhältnisses mehrerer eine Ganzheit bildender Elemente ersetzen.
(315): Man muß vielmehr die Natur der Beziehungen analysieren, aufgrund derer die Elemente eine Ganzheit bilden.
(318-319): Die "Farbenlehre" ist im Grunde einer der ersten Versuche, die Beeinflussung der Wahrnehmung durch die Tätigkeit des menschlichen Geistes zu studieren... [dann] bedeutet dies für Goethe, daß der menschliche Geist auf spontane Weise eine Form der Organisation der Materie zum Ausdruck bringt. Wir können also etwa, wenn wir die Wahrnehmung einer Landschaft studieren... in dieser das Funktionieren des menschlichen Geistes wiederfinden, wenn wir dabei nur die kausale Betrachtungsweise ausschließen.

Goethe: Morphologie, cit. in Riedl (1987a: 21): Die Erfahrung muß uns vorerst die Theile lehren... und worin die Theile verschieden sind. Die Idee (die Vorstellung) muß über dem Ganzen walten und auf eine genetische (zusammenhängende Weise) das allgemeine Bild abziehen.

Riedl (1995: 114): Goethe... tried to understand the principle underlying his ability to discern pattern.

Riedl (1996c: 105): *Morphology*: since Goethe (1795), the methodology of comparing Gestalt and to generalize the Typus; the cognitive basis for comparative anatomy, taxonomy and phylogeny.

Riedl (1995a): This year, 200 years have passed since GOETHE focused his attention on the path of discovery the mental/cognitive process which allows us to grasp synthetic concepts in morphology, comparative anatomy and taxonomy, to justify them and to estimate their probability. Since this cognitive and epistomological path has become an indispensable foundation for modern science, we hereby honour the anniversary with a translation and commentary of this treatise. Key words: GOETHE, morphology, typus, comparative anatomy, homology, epistemology.[32]

Goethe's approach was elaborated in the art theory of Wölfflin, and the *Gestalt* psychology movement, whose founders were Ehrenfels, Wertheimer, Koehler, and Koffka. Severi (1993: 319), Rock (1991: 68), Luchins (1975: 21-44), Koehler (1969), Ertel (1975). These early Gestalt pioneers didn't have the recent neurological knowledge available to their research, but their methods were influential to the later biological and neurological research (Pribram 1975: 161-184), and on later models of neuronal networks (Rock 1991: 75). In the biological sciences, the Gestalt morphology found a main proponent in the work of Riedl who continues the Konrad Lorenz school and its specific branch of evolutionary epistemology (EE). (Riedl 1976-1996c), specific in: Riedl (1987a: 20, 21, 126, 128) and (1995). In the present usage, *Gestalt* will mean the phenomenal side of a pattern perception process. When a neuronal system interprets a pattern of external stimuli, the recognition configuration that it reaches, will be a *Gestalt*. And it needs to be noted, this *Gestalt* is also a pattern of neuronal excitation in the neuronal system.

->:CULTURE_PATTERN, p. 132, ->:NEURONAL_PATTERN, p. 124

11.1.2. Structures

@:STRUCTURAL

Laughlin (1974: 5): As generally formulated, structures are viewed as naive systems. That is, structures are comprised of elements of some sort and the rules of their combination. Structures thus form configurations, the meaning or total impact of which cannot be understood apart from the set of relationships between elements. This is really a restatement of philosophical holism present in Bergson (1907), Whitehead (1929)[33], and later perfected in the general system theory of Bertalanffy (1956-1971, cg. 1968). In this immediate sense the structuralist-functionalist controversy that was waged in anthropology during the first half of this century was also a very lively topic in ancient Greece - Plato's Timaeus certainly may be considered a structuralist document.

The view of structures as formulated by Laughlin serves to illustrate the role of Bertalanffy's (1956-1971) and Whitehead's work in the context of General Systems Theory.

Severi (1993: 312): Struktur ist ein aus interdependenten Faktoren gebildetes Ganzes. Jeder dieser Faktoren hängt von den anderen ab und kann, was er ist, nur durch seine Beziehung mit ihnen sein.

As Severi (1993: 311-315) further points out, the morphological work of Goethe had been influential on the concept of structure as used by Trubezkoi and Jakobson, as well as on the works of Levi-Strauss, Wittgenstein, G. Bateson (1968, 1972, 1979), Piaget, and Frobenius.[34] The usage of the structural principle in the present context seeks a generalization beyond the concept of language to non-verbal cultural transmissions. The Semiosphere[35] encompasses,

---

[32] Rupert Riedl (1995): "Goethe and the Path of Discovery: An Anniversary".
http://www.kla.univie.ac.at/Journal.html

[33] In the bibliograpy referenced under the Free Press edition date (1969). See also: ->:WHITEHEAD, p. 114.

[34] ->:GOETHE_MORPHOLOGY, p. 129

[35] ->:SEMIOSPHERE, p. 116

but extends beyond, the range of verbal language. The structural principle is based on the factor of interrelation that is described in Whitehead's relation principle of society.

->:WHITEHEAD, p. 114

11.1.3. The Kulturmorphologie movement

@:KULTURMORPHOLOGIE

In the field of cultural studies, Goethe's approach was taken up by Frobenius. Severi (1993: 312), (Haberland 1973: 15-20), and Spengler (1980), whose work "Untergang des Abendlandes" is mostly known for the controversy it generated. (Encarta: Spengler), Straube (1990: 168).

Frobenius (cited in Haberland 1973: 15): Cultural morphology, which endeavours to discover the meaning and the phenomena of culture as such. The data of the three other related disciplines [History, Prehistory, Ethnography] provide its raw material and its aim is to discover the correlations of the building up of human culture as a unity, according to meaning, geographical distribution and chronological order.

Even though the present academic consensus largely rejects the earlier interpretations of the cultural morphology workers as too much tied to their {biologistic / mentalistic / idealistic / romantic / Deutschtümelei}[36] ideas that are not valid any more in the light of present CA knowledge, in the present study the *method of the morphological approach* is still assumed useful.

(Straube 1990: 168, 169): Sieht man in einer Kultur nicht nur ein Aggregat von Einzelelementen, sondern einen Organismus [wenn auch nicht notwendigerweise im strengen biologischen Sinne (A.G.)], dessen Teile in einem sinnvollen Funktionszusammenhang stehen und sich gegenseitig bedingen, so wird sich die Bedeutung einer einzelnen Kulturgestaltung nur bei Erfassung des gesamtkulturellen Zusammenhanges erschließen... Er bezeichnete dieses wissenschaftliche Bemühen, also die ganzheitliche Betrachtungsweise, die heute eine Selbstverständlichkeit ist, als Kulturmorphologie.

Ruth Benedict recurs in her "Patterns of culture" to the Gestalt psychology movement and Spengler's work (1934: 49-56). In her discussion of Spengler, she makes clear the difference between the principles of his morphological method and his untenable and premature conclusions that derived from a falsely applied biological metaphor of culture

(p. 53): ...but Spengler's far more valuable and original analysis is that of contrasting configurations in Western civilization.
(p. 55): ... the facts of simpler cultures may make clear social facts that are otherwise baffling and not open to demonstration. This is nowhere more true than in the matter of the fundamental and distinctive cultural configurations that pattern existence and condition the thoughts and emotions of the individuals who participate in those cultures. The whole problem of the formation of the individual's habit-patterns under the influence of traditional custom can best be understood at the present time through the study of simpler peoples.

11.1.4. Connections of Harold Innis and cultural morphology

Harold Innis (1952-1991) was a pioneer of cultural media studies whose work is relevant for the present study.[37] There are several connections between his work style and that of cultural morphology:

Innis (1972:v, Foreword): If Hegel projected a historical pattern of *figures* minus an existential *ground*, Harold Innis, in the spirit of the new age of information, sought for patterns in the very ground of

---

[36] Erdheim (1984: 10): "Unbehagen über eine Ethnologie wie die von Frobenius, die die 'Seele des Negers' verstehen wollte."

[37] ->:LIT_CULTMEDIA, p. 140, ->:TECHNO_FACTOR, p. 155, ->:INNIS_SPACETIME, p. 244,

history and existence. He saw media, old and new, not as mere vertices at which to direct his point of view, but as living vortices of power creating hidden environments that act abrasively and destructively on older forms of culture.

Innis (1972: vii, Foreword): Innis is unique in having been the first to apply the possibilities of pattern recognition to a wired planet burdened by information overload. Instead of despairing over the proliferation of innumerable specialisms in twentieth-century studies, he simply encompassed them. Whether by reading or by dialogue with his colleagues, he mastered all the structural innovations of thought and action as well as the knowledge of his time.

Innis (1972: ix, Foreword): That is why Innis carefully watches the changing material conditions of cultures since a reversal of figure-ground relations will put an individualist culture overnight into an extreme bureaucratic or hieratic posture.

Innis (1992: x, Introduction): This is macro-history on a broad canvas. It freely acknowledges the influence of Oswald Spengler, Arnold Toynbee, and Alfred Kroeber, scholars concerned with understanding the fate of civilizations[38].

11.2. Cultural Patterns: observation, stability, transmission, synchrony and diachrony

@:CULTURE_PATTERN

Benedict (1934: 223): The three cultures of Zuñi, of Dobu, and of the Kwakiutl are not merely heterogenous assortments of acts and beliefs... They differ from one another... because they are oriented as wholes in different directions... and these ends and these means of one society cannot be judged in terms of those of another society, because essentially they are incommensurable.
(231-232): It is obvious that the sum of all individuals in Zuñi make up a culture beyond and above what those individuals have willed and created. The group is fed by tradition; it is 'time-binding'. It is quite justifiable to call it an organic whole. It is a necessary consequence of the animism embedded in our language that we speak of such a group as choosing its ends and having specific purposes... These group phenomena must be studied if we are to understand the history of human behaviour, and individual psychology cannot of itself account for the facts with which we are confronted... only history in its widest sense [observation / documentation of cultural patterns in their diachronic extension, A.G.] can give an account... history is by no means a set of facts that can be discovered by introspection.

With the morphological approach and Ruth Benedict's (1934) concept of "Patterns of culture", the theoretical basis of the cultural memory system will be further elaborated. Patterns are most generally, *Gestalten* that are perceived in the neuronal system of an observer. To be of cultural relevance, there must be an intersubjective stability of patterns on the side of the observer as well as on the observed. That is, if a pattern is just a subjective hallucination, then it has no intersubjective relevance. Also, the sensory inputs impinging on a neuronal system must not be just a random noise. The intersubjective stability of cultural patterns is insured by the structural coupling of organisms in social systems. This factor, their *stability*, is what makes the study of cultural patterns possible at all, and justifies their stystematic treatment. Stability shows as *diachronic* and *synchronic extension*. If there were no such stability or extension, then again, no observation would be possible. A quotation of Delius supplies those essential traits of observable cultural patterns.

Delius (1989: 26):Culture will be taken to mean ... the ensemble of behavioural traits that characterize specific human groups in the sense that members of such a group at a given period of time tend to hunt with this or that technique, sow seeds in this or that way, adore this or that god, speak this or that dialect, wear this or that dress, greet in this or that manner, build this or that kind of housing, cultivate this or that kind of music, respect this or that institution and so forth. Furthermore, it will be understood that the behavioural traits that constitute a culture are passed on among the members of the population by individuals taking them over from other individuals. The transmission of cultural

---

[38] Also: Innis (1972: 1, 3).

items occurs through learning by observation of others, by imitation, through instruction, through tradition. The transmission may be direct or may involve intermediaries such as letters, newspapers, advertisements, books, records, videotapes, radio, television. Behavioural traits that are transmitted from parents to children by biological inheritance, such as the coordination patterns of suckling, crying, smiling, sleeping and the organic bounds of perceptual, cognitive and motor capacities of individuals, are thus not part of culture... Thus culture does not include traits that are innate or that are learned individually but only those that are learned from others, directly or through media.

Culture is not inherited through genes, but the genetic endowment of the human sets the constraints to what can be acquired by learning from other human beings and what can be re- or creativly new-produced. Wilson (1978: 21):

In a sense, human genes have surrendered their primacy in human evolution to an entirely new nonbiological or superorganic agent, culture. However, it should not be forgotten that this agent is entirely dependent on the human genotype.

Mühlmann (1996: 112)[39]: Kultur ist eine Transmissionsdynamik. Merkmale werden innerhalb einer Generation und von einer Generation auf die nächste übertragen.

Clarke (1978, 84): ...every attribute on an artefact is equivalent to a fossilized action, every artefact is a solidified sequence of actions or activities, and whole assemblages of artefacts are tantamount to whole patterns of behaviour... then we can understand artefacts as simply 'solid' behavior...

To be observable, and to class as cultural patterns, and not as individual idiosyncrasies, there must be a measure of constancy of *reproduction* of behavior instances. The factors in cultural pattern reproduction involve
1) the facilities of the human agent, especially *memory*, and possibly
2) external *storage*, and
3) *transmission*.

ad 1) Cultural pattern reproduction is done by the human agent. The prime factor for reproduction is in the structures of the *human memory*, and, to allow action on the environment, to make memory content intersubjectively experienceable, the human body as expressive device. This is also called the *somatic* aspect of cultural pattern reproduction.
->:SOMATIC_FACTORS, p. 145

ad 2) A secondary storage factor is to be found in (some of) the material and biological elements of the cultural environment. This may be called the *extrasomatic*, artefacts, or technological aspect of cultural pattern reproduction. This is elaborated further elsewhere.
->:CMM_TYPOLOGY, p. 140

ad 3) *Transmission* of cultural patterns is effected by direct human communication and (trans-) action, and indirectly, through media and artefacts.

@:PATTERN_OBSERV
The life patterns, and life habits, the behaviors, creeds, and the forms of the artefacts of peoples of specific human cultures on the planet Earth preserve a certain degree of constancy even while the generations come and go. In some cases, cultural patterns change very profoundly and very rapidly during the lifetime of one generation, such as fads and fashions, or mass conversions. (Bee 1974: 12, 186). A primary cause for rapid cultural change is a disruption resulting from confrontation with external cultural influences, like invasion or colonization by people from another culture. (For example the colonization of the Americas

---

[39] http://www.uni-wuppertal.de/FB5-Hofaue/Brock/Lehrbetr/MUEHLMAN.html

which changed the cultural patterns of the Amerind people profoundly, or the post- world-war-II cultural turnabout in Germany and Japan.). Leclerc (1973), Said (1979, 1994). Cultural change is the inverse of cultural pattern stability. Bee (1974: 9-11) gives a discussion of the problematics by which factors and criteria to discern cultural change, factors that are as much observational as they are attributable to some "objective" data of a society observed.

@:HUMAN_LIFETIME

The most remarkable and most problematic factor for observation of the diachronic extension of cultural patterns is that many of them extend beyond the life span of individuals. How are long-lasting, slowly changing, cultural patterns observed at all? The diachronic extension of cultural patterns can be indefinitely large, spanning many millennia, as in the case of languages and religions. To objectively observe and study their diachronic extension, one would need to be in the position of an (quasi-) immortal "Extraterrestrial Observer",[40] since within the lifetime of one human being, only partial views of the long-time cultural pattern process are available. Therefore the recognition and classification of such patterns depends on the cultural memory itself, but cultural memory consists of transmission of cultural patterns, and so the whole task of the study of cultural pattern is self-referential.

11.2.1. The Collective Cultural Memory and the Cultural Pattern Replicator

@:MEMORY_PATTERN

In addition to the biological construction and the facilities of the body, the expressive and impressive facilities of the human being are provided by the framework of cultural pattern templates available in a specific culture. Cultural patterns are those standardized forms of behaviors and artefacts that serve as the *cultural memory framework* for the individual humans, as contradistinct from the *contents* of human memories, which are {dependent on / expressions of} individual experiences and dispositions.

Eco in (Lotman 1990: xi): ... led Lotman to ... see that culture as a set of texts and a *non-hereditary collective memory*.

Dudley (1991: 80), Society has value to the individual primarily as a means of obtaining, storing, and transmitting information.

It is possible to view the unfolding cultural process from the different positions centered at the end of the individual, or at the society. This gives rise to a possible antagonism between the aspects of determination (of the individual) by the existant biological and cultural structures, versus aspects of individual freedom and creativity. Ruth Benedict declares this is as virtual:

Benedict (1934: 251-252): There is no proper antagonism between the role of society and that of the individual. One of the most misleading misconceptions due to this nineteenth-century dualism was the idea that what was subtracted from society was added to the individual and what was subtracted from the individual was added to society... The quarrel in anthropological theory between the importance of the culture pattern and of the individual is only a small ripple from this fundamental conception of the nature of society.
In reality, society and the individual are not antagonists. His culture provides the raw material of which the individual makes his life... Every private interest of every man and woman is served by the environment of the traditional stores of his civilization...
The man in the street still thinks in terms of a necessary antagonism between society and the individual. In large measure this is because in our civilization the regulative activities of society are singled out, and we tend to identify society with the restrictions the law imposes on us... Society is only incidentally and in certain situations regulative, and law is not equivalent to the social order. In

---

[40] ->:EXTRA_OBSERVER, p. 113

the simpler homogenous cultures collective habit or custom may quite supersede the necessity for any development of formal legal authority.

Since all human activities take place within the context of the social system, so is also the study of cultural patterns itself an application case of structural coupling in social systems. Cultural patterns are replicated from the memory of the people, and conversely, the collective repertoire of all their cultural achievements, their cultural facilities, their techniques and crafts, *are the collective cultural memory*, on which each new generation builds their world anew. We can thus view the two aspects of:
1) cultural pattern and
2) cultural memory
as complementary images, or aspects of the same phenomenon, like the two possible aspects of the Boring women Gestalt picture shown above.[41] Thus the *Cultural Memory System CMS* can be also viewed as a *Cultural Pattern Replication System* that is based on the structural coupling of self-organizing biological organisms (the humans), which forms itself a self-replicating, auto-poietic, quasi-living, self-organizing system.

> ->:CMS_DEF, p. 139

The morphological principle of pattern perception, maintenance, stability, and replication, applies to the neuronal networks active in the brains of observers as much as in the connection networks between individuals of an abstract society. The pattern laws are equivalent for neuronal as well as cultural networks, since the agents of culture are (neuronal networks active in the brains of) humans, and all events and data of the cultural world must in some way be reflected in the human brain and acted / re-acted upon through structural coupling of many brains. By this we are able to apply the morphological principles of pattern laws to any networks whatsoever, to treat any (non-human) "social" phenomena as abstract pattern propagation processes, for example networks of physical nature, as already Whitehead and Vernadsky have presented. The structural laws of such pattern processes are the laws of the SEMsphere.

> ->:NEURONAL_PATTERN, p. 124, ->:WHITEHEAD_SOCIETY, p. 112, ->:SEMIOSPHERE, p. 116

11.2.2. The Entity-Relation-Transaction triad

@:ERT_TRIAD

The following will be an elaboration of the systematics of metapatterns. For this we will recur to the principle of *paticca samuppada*. We will supply a general logical structure of cognitive dynamics models that generalizes the *paticca samuppada* principle and sets it in a logical relation to the other known philosophical a priori principles of fundamental perceptual orientation. The following is based on Goppold (1998). In a prior section above, Whitehead's view of the world as system of 'societies' was described.[42] It had been stated that his notion of 'society' is not that of a human society. This is now generalized and brought to an abstract formulation:

Goppold (1998: 1): *Society* is defined in this context as a generic term for a "*relation and transaction system between agents*". An *agent* is an acting entity as described in Salthe (1993, p. 159). A *transaction* is defined as a *process* between agents involving a energy/matter exchange. Transactions can only occur along the path of a physical *relation*. This definition makes society functionally equivalent to a thermodynamically open system of dissipative flow, regardless of whether the constituent members are human, organic, or purely physical, like for example a turbulent flow in a hurricane. "Biological systems are only more complicated because of their relative stability, achieved through genetic information - we are especially stable dissipative structures" (Salthe, 1992). J.

---

[41] ->:BORING_WOMEN, p. 123

[42] ->:WHITEHEAD, p. 114

Barham (1996, p. 238) notes another vital difference: "One of the chief properties distinguishing biological systems from inorganic ones is their limited autonomy from local energy potentials... by actively seeking out more favorable conditions."

Goppold (1998: 2): One of the fundamental analytical aspects concerns the archetypal notion of *state* and of separated (external) dynamical laws, so entrenched in natural science; it appears particularly at odds with "the fluid nature of life" (Marijuán (1997) and Introduction to this Issue). Whitehead in his philosophy of process was the main contemporary philosophical proponent of the issue. Whitehead (1957, p. 27): "...the actual world is a process, and ... the process is the becoming of actual entities."
> ->:WHITEHEAD, p. 114.

Goppold (1998: 2): Interestingly, a sideways glance to another region of the planet shows us that at the same time, when the Greeks laid down the ontology of the western world, an ontology of process and relation sprung into existence with the "pratitya samutpada" (paticca-samuppada in Pali) as it was laid down in the teachings of the Buddha.

Goppold (1998: 2): Peirce has described the ontological categories of Firstness, Secondness, and Thirdness as "a table of conceptions drawn from the logical analysis of thought and regarded as applicable to being". (Peirce, 1958, CP 1.301-1.353). An essential characteristic of category is its non-conversibility (with other categories), or as it will be called further down, its mono-contexturality. The examples of *entity*, *process*, and *relation*, give a primary triadic categorization of being (i.e. a many-valued ontology)... As the discussions between the Parmenides and Heraklit schools show, anything in the world can be perceived either as state (entity) or in flow (process), and it was noted in the beginning (and by the Buddhist philosophy), that the world can also be perceived as a system of relations, thus showing that non-entity oriented systems of ontology are entirely feasible, and whole civilizations have been built on these foundations. The design of the *holon* as given by Ian Smuts and Arthur Koestler corresponds closely to the positioning of *entity* as ontological category.

11.2.3. The morphology of metapatterns: the triad of Entity-Relation-Transaction

@:TRIAD_SWITCH

The above statements can now be condensed and lead to a **three-fold** Gestalt flip of cognitive dynamics. This is here called *the morphology of metapatterns, the ERT: {entity / substance}, relation, {transaction / transition / process}*. The *morphology of metapatterns* is the logical ordering by which *patterns of patterns* arise.
> ->:MORPHOLOGY, p. 128

The cognitive dynamics can take three forms of *metapatterns*:

1) *by Parmenides* and *Zeno*, we can entertain a fundamental cognitive model based on {static entities / unchanging substances / persistent objects / eternal, immutable ideas}.

2) *by Heraklit,* we can entertain a fundamental cognitive model based on {*process / transaction / transition*}

3) *by the Buddha,* we can entertain a fundamental cognitive model based on {*paticca samuppada / inter-relation / inter-causality*}.

@:METANOIA

On reflection of these metapatterns, a Gestalt flip of the cognitive dynamics can occur, called *metanoia*. The ability to perform a metanoia, leads to the formation of the next level of metapatterns, ie. reflexions upon reflexion. A still further level is to reflect on the form of the changes of reflexions.

Cyrill von Korvin-Krasinski, a researcher who sought to overcome the dualism of the western mentality, saw the potential of the Christian idea of the Holy Trinity which was never used by its philosophy. He wrote in "Trina Mundi Machina" (Korvin-Krasinski 1986):

Korvin-Krasinski (1986: 51) Ein Vertreter der indisch-tibetischen Lebensanschauung sagte mir einmal: "Ihr Christen habt in Eurer Religion einen geoffenbarten Gott, die Hl. Dreifaltigkeit; und in Eurer Philosophie betreibt ihr nur die dualistische Spekulation des Aristoteles. Eure Philosophie ist kein Abglanz der Trinität! Wir Asiaten dagegen kennen oft keinen persönlichen Gott, noch weniger kennen wir die Göttliche Trinät der Christen, aber unser Welt- und Menschenbild, unsere ganze Spekulation ist triadisch aufgebaut. So eignet sich unsere asiatische triadische Spekulation anscheinend viel besser für die Auslegung Eurer trinitären Religion, als Eure eigene dualistische Philosophie!"

11.3. Cultural patterns as immortality complexes

@:IMMORTALITY_COMPLEX

Dennett (1990) points out one essential property of cultural patterns (which he calls memes)[43]: they are potentially immortal.

Dennett (1990): Memes, like genes, are potentially immortal, but, like genes, they depend on the existence of a continuous chain of physical vehicles, persisting in the face of the Second Law of Thermodynamics. [material carriers]... tend to dissolve in time. As with genes, immortality is more a matter of replication than of the longevity of individual vehicles... Brute physical replication of vehicles is not enough to ensure meme longevity... for the time being, memes still depend at least indirectly on one or more of their vehicles... a human mind.

(Wright 1994: 157): The only potentially immortal inorganic entity is a gene (or, strictly speaking, the pattern of information encoded in the gene, since the physical gene itself will pass away after conveying the pattern through replication).

In the present study, cultural patterns are said to form *immortality complexes*. Cultural patterns share this property with the genetic patterns of the DNA molecules, which Dawkins (1976) had therefore awarded the attribute "The Selfish Gene". Whether such a character trait can at all be attributed to some otherwise quite harmless strings of nucleotic acid, is a discussion for which this is not the place. The observation is indeed, that the patterns of life forms have enjoyed a fairly good constancy as long as our cultural memory will attest to (the rhinocerosses, antelopes, bisons and horses in Altamira and other caves look pretty much the same as they do now) (Anati 1991), and what comparisons of fossil bones with those of presently living species can tell us.

Within the cultural memory of humanity, we can also conclude, that certain cultural patterns have endured for a very long time indeed: The Australian Aboriginal rituals, which are, to the claim of the Aboriginals themselves, tens of thousands of years old (Strehlow 1947-1971), and the rites of the major religions of the world that are one to several thousand years old, the Vedic and Parsee: Staal (1982), (1986), (1989), the Jewish: Assmann (1992: 196-255), and the Christian (Encarta: Christianity), and Islam (Encarta: Islam, Muhammad). And, as we see from the example of ritual, these patterns depend in their transmission from the past into the future on the humans to perform (enlive) them. A central aspect of *cultural memory* could be characterized as: *CM is that of the personal memories which doesn't die with the person who is dying*.[44] Since cultural patterns are also the cultural memory, we thus come to the *pact* or *bargain* (pistis) that is being struck between the mortal humans as living agents in the transmission of the (potentially) immortal patterns: the humans can gain a piece of that immortality for themselves. In this way, we can re-interpret the significance of those very old and venerable rituals that the most long-lived traditions of humanity have upheld during all

---

[43] ->:MEMETICS, p. 248
[44] ->:IMMORTAL_SOUL, p. 243

those millennia. To be a transmitter of cultural patterns is a virtual equivalent of an "Alternative to the immortality of the Soul".

12. The Cultural Memory System (CMS)

The Cultural Memory System (CMS) is the systematic theoretical account of those processes and structures by which the *Cultural Memory* CM arises and operates.

12.1. The dual perspectives of the CMS

@:CMS_DEF

The CMS can be viewed from two different perspectives, which are dual aspects of the same phenomenon,[45] much as *wave* and *particle* are dual aspects of the same physical phenomenon:

1. the *Cultural Memory* (CM) view, of the individual humans, and
2. the *Cultural Pattern* (CP) view, the intersubjective aspect.

12.1.1. The Cultural Memory view

ad 1.: In the *Cultural Memory* view, the CMS refers to *those processes and structures by which personal subjective memory material is exchanged between individuals and across generations and made available on an intersubjective basis*. It is the *diachronic* aspect of *Cultural Transmission*.[46] In ethnological diction, it is the *emic* view, and philosophically, it is based on *intentionality*. From the subjective viewpoint, it is that faculty by which one individual can {reference to / learn from / participate in} the memory content of (an)other individual(s), even without direct personal contact, e.g. when they live in a distant place, or in the distant past.

>:CULTURAL_MNEMO, p. 230, ->:MEMORY_PATTERN, p. 134, ->:PRELIMINARY_DEF, p. 103

The starting point for the concept of *Cultural Memory* are the works by Aleida and Jan Assmann (1983-1992), Cassirer (1954-1985), Yates (1989, 1990), Connerton (1989), and Halbwachs (1985). References on memory: Schmidt (1991), Harth (1991), Norman (1970-1982), Bergson (1919), Heinz v. Foerster (1985: 133-172) "Gedächtnis ohne Aufzeichnung", Johnson (1991), Illich (1988: 14-28).

12.1.2. The Cultural Pattern view

ad 2.: in the *Cultural Pattern* view as intersubjective position, it is called the *culture pattern replicator system,* those processes and structures by which *cultural patterns* are maintained, exchanged, and transmitted in populations (*synchronic*) and across generations (*diachronic*). In ethnological diction, it is the *etic* view. The cultural pattern view is here called a *morphology*, in the sense that morphology is a theoretical tool for the study of pattern {maintenance / replication / perception} in the most general sense. Related material under:

>:MORPHOLOGY p. 128, ->:CULTURE_PATTERN p. 132, ->:MEMORY_PATTERN p. 134.

Douglas (1970: 11): A symbol only has meaning from its relation to other symbols in a pattern. The pattern gives the meaning. Therefore no one item in the pattern can carry meaning by itself isolated from the rest.

12.2. The basic typology of CMS: somatic and extrasomatic factors, sensory modalities

The *typology* of CMS has to account for the different ways and means by which CM is manifested, maintained or stored, and transmitted.

The most basic distinction is according to

---

[45] See also: Luhmann (1993: 292)

[46] Spengler (1980: 738-738), ->:MORPHOLOGY, p. 128

1. *somatic* and
2. *extrasomatic* factors.

ad 1.: *Somatic Factors* are those concerning CM as an affair of the human memory, and the human body and its facilities, the nervous system, the brain, the sense organs and *sensory modalities*, etc. Another term used in this context is *incarnat/-ed/-ion*, for: *factors bound in the bodily flesh*. A further basic differentiation can be made into the different *impressive* and *expressive* sensory modalities available to the human body.
>>:SOMATIC_FACTORS, p. 145, ->:IN_EXCARNATION, p. 199

ad 2.: *Extrasomatic Factors* are those of the intersubjective domain, or of the external media, here also called the *Cultural Memory Media* CMM. All communication between organisms takes place through some medium. The primary medium is the body, and in performative modes, without material storage, as in dance or song, there is the physical medium of air, light, or sound, between the sender and receiver[47]. The various types of CMM can be classed according to their technical and informational properties, and along the line of the sensory modalities.
>>:CMM_TYPOLOGY, p. 140

12.3. Extrasomatic factors: the typology of Cultural Memory Media (CMM)

@:CMM_TYPOLOGY

In the most general sense, the *Cultural Memory Media* CMM is that aspect of the CMS that can in any way be observed from the intersubjective position, the *extrasomatic* aspect of the CMS. The concept of medium is further treated in Böhme-Dürr (1997), Posner (1997: 228-229). More references with many types of CMM in semiotic categories: Posner (1997), and Noeth (1985).

12.3.1. Sonderforschungsbereich Literatur und Anthropologie

@:LIT_CULTMEDIA

The research of SFB 511 (Sonderforschungsbereich Literatur und Anthropologie), Universität Konstanz, maintains a database of their research (SFB-511 1995). The systematics of the SFB 511 is based on the conventional categorizations of literature sciences, i.e. the western logocentric-/ graphocentric vista,[48] and with this provision, its material can serve as base foundation for a more general CMM studies. The role of media systems in the cultural context is summed up by Aleida Assmann, and a condensation and translation of her article will be given here:

Assmann (1995: 348-349): In the last 20 years, a change of orientation has taken place away from the humanities (Geisteswissenschaften) towards media and culture sciences. From this new vantage point it has become apparent that the humanities themselves are based on a construction that arose in the 18th century, on ideas that were created through a singularization: *Geist* (mind / spirit[49]), man, history, or art... out of which were formed those new disciplines of the 19th century: history, literature, esthetics, anthropology, linguistics, art history (Kittler 1980). In place of the integrative concept *Geist*, there have now been substituted concepts like communication, notation systems, or in short: media. There are presently three main directions of research interested in media and the materialities of communication:
First the hard technological history of communiations, for which the name Kittler stands as representative. The salient point and provocative of this approach is that it converts literature science into an engineering science. This school is based on two other approaches that reach back into the 60's and earlier.

---

[47] ->:SYMBOL, p. 119.

[48] ->:CULTURAL_BIAS, p. 192, ->:LOGOCENTRISM, p. 197, ->:IN_EXCARNATION, p. 199

[49] For problematics of translation, see Jahoda (1992: 3), Güther (1976: 269)

[Second] The older of these is the historical study of media whose first important impulses originated in the 20's and 30's that were developed further in Canada in the 50's and 60's, the Toronto school. To this school belong, among others, Harold Innis, Eric Havelock, and Marshall McLuhan. Havelock, for example, is a classicist and researcher of the "cultural revolution of the alphabet". He understood his work as a continuation of the investigations of Milman Parry in the 20's and 30's... The central thesis of this school is: cultures are defined by the capacity of their media, i.e. their recording, storage and transmission technologies. With this thesis, the focus of attention was directed towards issues of writing systems and -institutions, types of communication, transmission channels for messages, and storage technologies of knowledge. This perspective of media determination of culture that came in a time of immensely accelerated technological evolution, has not only revealed its critical impact, it has also given rise to new issues of research...

[Third] The other direction is the French post structuralistic philosophy of writing that is connected with the names of Foucault, Lacan, and especially Derrida. Here the focus is not on media and their historical forms but in the most general and fundamental sense on an insubversible materiality of writing that resists the attempts of meaning and signification.

These areas of research are to be supplemented by a history of writing which focuses, besides the evolutionary perspective, the technological history and metaphysics of writing, on the cultural examination of writing.

12.3.2. Static vs. performative

The CMM can then be classed into *static* and *material* vs. *performative* and *dynamic* ones.

The *static* CMM are those involving a (more or less) enduring carrier material. They are treated at ->:STATIC_CMM, p. 154

The *performative* CMM, also called *ephemeral* or *dynamic*, are treated at
->:DYNAMIC_CMM, p. 203

Before the introduction of technological media like film, audio recording, and computerized multimedia, the material CMM allowed only static representations. Writing is the best known and most widely used application of such static CMM. The overt and covert influences of this factor of stasis in material CMM is of prime importance for the present study.

12.3.3. Cultural Memory Technology: CMT

@:CMT_DEF

The *Cultural Memory Technology* CMT: systematic use of static material extrasomatic devices (CMM) specifically for transmitting CM. Writing is the prime Cultural Memory Technology of civilizations.

12.3.4. A table view of the main types of cultural memory media

The typology of CMM can be shown in a diagrammatic ordering according to those main categories:

I.   verbal language oriented[50]
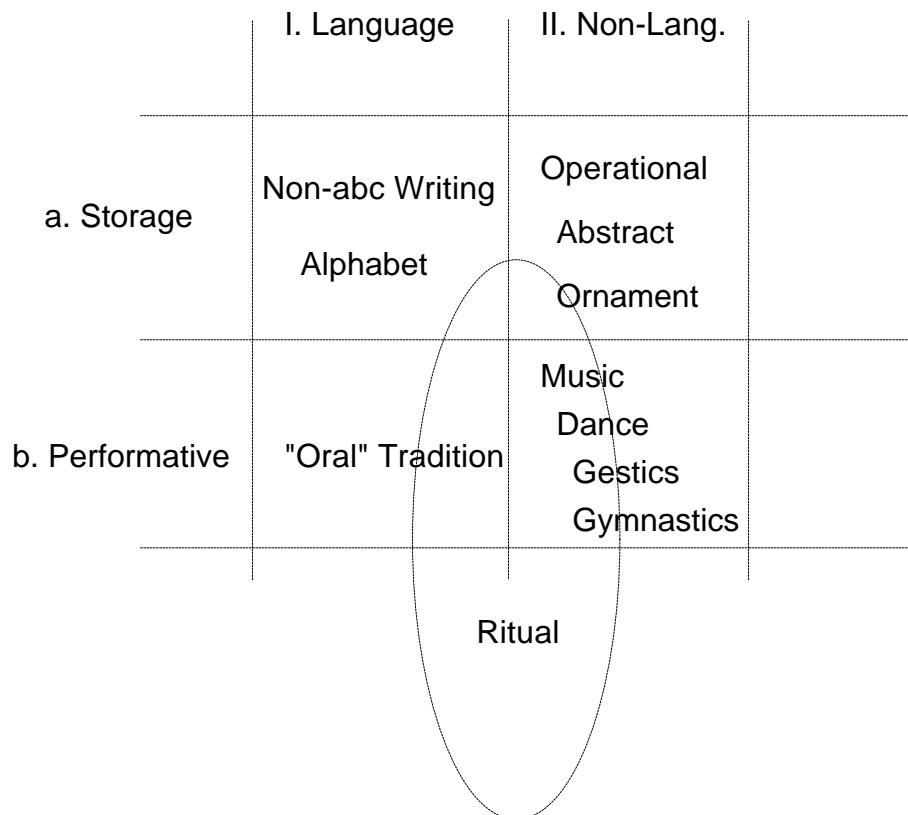II.   non-verbal language oriented

and

---

[50] S*poken verbal language in this sense*: as everything consisting in the production of certain patterns of sounds, which we call *words* that can be written down with an alphabet.
->:PRELIMINARY_DEF, p. 103

a. using markings in/on material storage, with more or less permanent material substrates, static
b. performative based on human-to-human transmission, ephemeral, and dynamic

This classification can be mapped in a table serving as a general coordinate system for overall orientation and overview. It leaves out the different sensory modalities which will be treated in the next subsection. We can diagram it in the following way:

	I. Language	II. Non-Lang.	
a. Storage	Non-abc Writing Alphabet	Operational Abstract Ornament	
b. Performative	"Oral" Tradition	Music Dance Gestics Gymnastics	

Ritual

The broken lines indicate that the categorizations cannot be made to conform to strict set-theoretical rules. The term "oral" tradition is used in quotation marks, as the term is used in the literature for many different, not only verbal, non-written transmissions. The following systematic will provide a more detailed classification.

The element of *ritual* is drawn as to intersect the categorical ordering, as it does in real life. In common use, ritual is usually multimedial, with acted performance, and often with song, music and dance as dominant elements. Hanna (1979: 198), Aquili (1979). Discursive prosa speech, the recording of which is the main purpose of writing, is not the most important element in ritual (Staal 1986: 252). Ritual is placed partly outside the CMM ordering grid, since it transcends the categorization. It indicates primary CMS mechanisms that are deeper than what can be conveyed with the semantic content of spoken prosa language, and which will lead into areas where we cannot tread with the alphabet.

Noeth (1985: 350-351): Nonverbale Kommunikation erweist sich hier nicht als Alternative oder Ergänzung zur Sprache, sondern als ein der Sprache semiotisch überlegenes Ausdrucksmedium.

12.3.5. The general classification of the spectrum of CMM

@:SPECTRUM_CMM

Another display of the different categories of CMM can be made in a more detailed hierarchy mode, and by further combining the four main categories with the different sensory / somatic modalities.

->:SOMATIC_FACTORS, p. 145

12.3.6. Sensory / somatic modalities

1. Auditive ->:AUDITIVE, p. 147
2. Visual ->:VISUAL, p. 147
3. Kinesthetic ->:KINEMORPHAE, p. 205
4. Tactile ->:TACTILE, p. 147
5. Olfactory (smell) ->:SMELL, p. 149
6. Taste (gustatory) ->:TASTE, p. 151

12.3.7. Non-specific somatic modalities

7. Para- (non-) senses ->:PARA_SENSES, p. 205
8. Electro / magnetic ->:ELECTROMAGNETIC, p. 153
9. Existential ->:EXISTENTIAL_CMM, p. 205

12.3.8. Cross product of Modalities and CMM

Combined with the different modalities, we arrive at the spectrum of CMM:

1. verbal language oriented, material carrier, visual, color-insensitive
1.1.   writing (phonographic, non-phonographic)
->:WRITING, p. 175, ->:WRITING_TYPOLOGY, p. 177, ->:ENCARTA_WR, p. 181
1.1.1. phonographic writing: non-alphabetic
->:PHONOGRAPHIC, p. 178
1.1.2. phonographic writing: alphabetic
->:PHONOGRAPHIC, p. 178, ->:ENCARTA_ABC, p. 184
1.1.3. non-phonographic writing (pictographic, iconic, ideographic, logographic, etc.)
->:LOGOGRAPHIC, p. 178

2. verbal language oriented, performative, auditive
2.1.   "oral" tradition
2.1.1. epic poetry, laws, prayers, oaths
2.1.2. folk tradition: fairy tales, myths, riddles, jokes, insults, swear words, spells

3. verbal language oriented, various modes
3.1.   material carrier, tactile
3.1.1. Braille (Encarta: Braille), Noeth (1985: 364-365)
3.2.   performative, auditive, non-vocal
3.2.1. drumming and whistle "language" (speech-surrogates)[51]
3.3.   performative, visual
3.3.1. sign languages, Noeth (1985: 280-291)

4. non-language oriented, material carrier
4.1.   visual color-insensitive

---

[51]Ong (1977: 92-120)

4.1.1.   operational symbolic: mathematical, engineering [52]

4.1.2.   abstract symbolic: e.g. music, and dance scripts [53]

4.1.3.   geometrical, pictorial, diagrammatic, iconic, technical drawing[54]

4.1.4.   non-semantic, symbolic: ornament[55]

4.2.   visual color-sensitive

4.2.1.   pictorial: painting

4.2.2.   abstract: Inca quipu and other Amerind CMM[56]

4.3.   tactile

4.3.1.   craft traditions ->:CRAFT_TRADITION, p. 221

4.3.2.   Inca quipu, numeric knot systems, rosary
      ->:QUIPU, p. 163, ->:QUIPU_MNEMOTECH, p. 173

4.4.   olfactory (smell): perfumery

4.5.   gustatory (taste): cooking

4.6.   mixed-mode, and non-classified

4.7.   media technologies, Multimedia, 4d (moving, changing) displays

4.7.1.   visual media technology[57]

4.7.2.   auditive media technology[58]

4.7.3.   other sensory modality media technology

5. non-language oriented, performative

5.1.   gestic, Noeth (1985: 339-354)

5.2.   tactile ->:TACTILE, p. 147

5.2.1.   massage ->:GYMNASTIC_ART, p. 220

5.2.2.   torture ->:PANETICS, p. 233

5.2.3.   marital (sexual) arts ->:MARITAL_ART, p. 219

5.4.   kinesic: ->:KINESIC_TRADITION, p. 218

5.4.1.   dance ->:DANCE, p. 218

5.4.2.   martial arts ->:MARTIAL_ART, p. 218

5.4.3.   marital (sexual) arts ->:MARITAL_ART, p. 219

5.4.4.   gymnastics ->:GYMNASTIC_ART, p. 220

5.5.   auditive: music, rhythm, drumming[59]

6. multimedial forms, ritual ->:RITUAL_PATTERN, p. 224

Ritual occurs generally in multimedial form and therefore overlaps the classifications.

---

[52] Krämer (1988), (1991), (1994a), (1994b), Floyd (1992), Bolter (1990) (1991)

[53] Jeschke (1983)

[54] Emmer (1993), Williams (1979)

[55] Albarn (1974), Alexander (1977), Bain (1973), Critchlow (1976), Emmer (1993), Gombrich (1982), Jones (1987), Merne (1974), Williams (1979), Tufte (1990, 1992).

[56] Silverman (1991), Barthel (1971), Ascher (1981), Scharlau (1986: 80-94)

[57] visual and auditive media technology can of course also be used for language oriented productions, but for ease of the classification it is included here.

[58] see visual media.

[59] Noeth (1985: 390-400), Nettl (1983), (1991), Blacking (1976, 1985), Merriam (1964), Goodwin (1989), Schneider (1951-1990), Roscher (1997)
There are cases where verbal language is translated into rhythm: African drumming languages.

13. The somatic factors:
The human body as cultural transmission device

@:SOMATIC_FACTORS

13.1. Cultural Memory Art: CMA

@:CMA_DEF

Cultural Memory Art CMA: systematic use of dynamic, performative, and incarnated somatic processes for cultural memory purposes. In the present study, CMA is also called *mnemotechnics*. Examples for CMA may be dance traditions,[60] and the song/rhythm/epic Aborigine tradition as described by T. Strehlow.[61] The reason for adopting a special term instead of the more common "oral tradition" is that in many cases, the CMA is extraverbal. Usage of the special term avoids the tacit, and misleading, implication of the word "oral tradition", that the transmitted material is verbal in content or completely verbalizable (and could consequently be written down without resulting in transmission loss).

-->:WRITING_CRIT, p. 193, ->:STAAL_RITUAL, p. 225, ->:CULTURAL_MNEMO, p. 230

13.2. Classification of impressions and expressions

This section presents a description of the somatic factors: the human body as *cultural transmission* and *cultural memory* device. The range of the human *impressive* and *expressive* capabilities will be reviewed and classed here. This classification includes the semiotic communication models, but covers a wider range, since many somatic modalities have no direct semantic content, while they still are part of the cultural transmission. The basic semiotic descriptions of communication models are given in Posner (1997: 247-356), Noeth (1985: 129-137), and Krampen (1997: 247-287). These models are based on the instances of *sender*, *communication channel*, and *receiver*. In semiotic terminology, for anything to be appreciated as a sign,[62] it must be noticed, distinguished, experienced, and by any way impinge as sensory inputs in the neuronal networks of the brain. In information technogy, this is called the *input channel*. The main sensory channels are: auditive, visual, kinesthetic, tactile, smell, taste. (Encarta: Sense organs).

The *expressions* are the converse of the *impressions*, covering all the kinds of productions that the human body is capable of. If something is to serve as a cultural transmission instrument, the human body must be able to *produce it*, and *modulate* it, consistently, repeatably, and the results must be consistent with the intentions. This will cover the range of *expressions*. In information terminology, this is called the *output channel*. Between the impressions and expressions is a complementary relationship, but it is often not symmetrical. Among these modalities, many non-language, non-written cultural patterns are transmitted.

The range of *impressions* of the human being is roughly coincident with the senses, with addition of various forms of body experience. The term is derived from Hume (Popkin 1956: 210*)*. The present usage is adopted from Whitehead (1934: 28-41).

Whitehead (1934: 28-29): Without doubt the sort of observations most prominent in our conscious experience are the sense-perceptions. Sight, hearing, taste, smell, touch constitute a rough list of our major modes of perception through the senses. But there are an indefinite set of obscure bodily feelings with form a background of feeling with items occasionally flashing into prominence. The peculiarity of sense-perception is its dual character, partly irrelevant to the body, partly referent to the

---

[60] ->:DYNAMIC_CMM, p. 203

[61] ->:ABORIGINES, p. 222

[62] ->:PEIRCE_SIGN, p. 154

body. In the case of sight, the irrelevance to the body is at its maximum. We look at the scenery, at a picture... as an external presentation given for our mental entertainment or mental anxiety... But, on reflection, we elicit the underlying experience that we were seeing with our eyes. Usually this fact is not in explicit consciousness at the moment of perception. The bodily reference is recessive, the visible presentation is dominant. In the other modes of sensation the body is more prominent. There is great variation in this respect between the different modes... The current philosophic doctrines, mostly derived from Hume, are defective by reason of their neglect of bodily reference. Their vice is the deduction of a sharp-cut doctrine from an assumed sharp-cut mode of perception. The truth is that our sense-perceptions are extraordinarily vague and confused modes of experience.

Cassirer (1954, III: 30-36) gives a similar discussion of the differences between phenomenal sensory experience and the physically measurable data.

@:PHANERON

Peirce (1931-1958) defined the most general case of experience, the *phaneron*, which is related to the *phainomenon* in Heidegger's "Sein und Zeit" (1977).

Peirce: CP 1.284. Phaneroscopy is the description of the phaneron; and by the phaneron I mean the collective total of all that is in any way or in any sense present to the mind, quite regardless of whether it corresponds to any real thing or not. If you ask present when, and to whose mind, I reply that I leave these questions unanswered, never having entertained a doubt that those features of the phaneron that I have found in my mind are present at all times and to all minds. So far as I have developed this science of phaneroscopy, it is occupied with the formal elements of the phaneron. I know that there is another series of elements imperfectly represented by Hegel's Categories. But I have been unable to give any satisfactory account of them.

CP 1.285: English philosophers have quite commonly used the word idea in a sense approaching to that which I give to phaneron. But in various ways they have restricted the meaning of it too much to cover my conception (if conception it can be called), besides giving a psychological connotation to their word which I am careful to exclude. The fact that they have the habit of saying that "there is no such idea" as this or that, in the very same breath in which they definitely describe the phaneron in question, renders their term fatally inapt for my purpose.

13.2.1. Relation to measurable physical properties, and social range

The relevant articles in (Posner 1997: 247-356) are: Strube (1997: 294-299) for the auditive channel, Landwehr (1997: 288-293) for the visual, Heuer (1997: 300-305) for the tactile, Kröller (1997: 306-315) for the chemical (smell, and taste), Moller (1997: 316-324) for the electric and magnetic channels.

A subclassification is made in social range (proxemics), after (Hall 1976: 118-133), Noeth (1985: 365-375):
1) far-senses: pertaining to events more than 10 m away[63].
2) near-senses: events of interpersonal communication, official social behavior, range of arms and feet, 1 m to about 10 m.
3) intimo-senses: events occurring in intimate settings, close physical body contact.
4) proprio-senses: events inside the body, and of body-states.

13.3. Classing of somatic modalities in cultural transmission

Douglas (1970:cover page): Every natural symbol - derived from blood, breath, or excrement - carries a social meaning... the ways in which any one culture makes its selection from body-symbolism.

---

[63] Evolutionally and survival related, the dividing line is the minimum distance to keep in face of potential enemies.

13.3.1. Auditive

Strube (1997: 294-299). The auditive domain is connected directly to that most important element of culture: language. In terms of information processing, it is notable that there is an almost exact match between expressive and impressive capability of the human body, i.e. the human voice can produce a similar range of sounds as we are able to hear. It is also possible to speak almost as fast as one can understand. This is the culturally most important advantage of auditive productions. Their most important problem is that they are ephemeral. Once a word has been uttered, it is 'gone with the wind'.

Impressions: *Hearing* involves physiological response to air vibrations of a frequency between 16 and 16,000 Hz. Range up to 100 m for verbal communication, about 1 km for signalling as in whistling. Hearing is effected with fine hairs in the cochlea that are sensitive to the vibrations of the specific wave length of audible sound. Low frequency vibrations can be felt with the skin and body organs.
Far- to near-sense.

Expressions: The audible productions of the human body are mainly made with the breathing and vocal apparatus, like speech and song. Non-language vocal sounds are covered under the term *para-linguistic* (Noeth 1985: 273-279). Seezing is an involuntary expression that has found considerable attention in ancient culture with respect to omens: Dufour (1898,II: 98-99) mentions that sneezing was attributed to the invisible visit of a protective deity, "the bird of Jupiter Conservator". We can then add the sounds of the digestive system (the fart as most conspicuous, see: smell), and miscellaneous: clapping, tapping, and finger-knuckle and knee joint cracking[64]. Dufour (1898,II: 97) makes note of a remarkable aspect of ancient Roman non-verbal communication, that the Roman nobles, who abhorred any verbal expression of the sexual or excretive sphere, had devised a whole system of signs for this domain. A cracking of the finger joints was the signal for the attendant slave to fetch the urinary pot for the master to relieve him/herself.

13.3.2. Visual

Landwehr (1997: 288-293). Impressions: *Vision* involves physiological response to electromagnetic radiation (of the spectrum of visible light). Far- to near-sense. The visual domain is connected directly to the most important CMM component of civilizations: writing. The phonographic writing process involves a transformation of data from the auditive domain to the visual. McLuhan assumes that fundamental changes in sensory organization were brought about by alphabetic writing (McLuhan 1972: 177-178). They involve a societal emphasis of sensory orientation to auditive and visual (Noeth 1985: 361-362).

13.3.3. Tactile

Heuer (1997: 300-305), Noeth (1985: 361-365), Tasten (1996). The tactile sense is connected to the physical properties of weight, density, rigidity, and texture of objects. It also overlaps with the heat/cold sensorium. The fine hairs covering the whole body process tactile sensory data, as well as special tactile receptors in the skin. Since vibrations can be perceived through

---

[64] From my field notebooks: Bruce Lee was the only one known to be able to produce the same effect with his spinal vertebrae joints. It was an impressive sound, that still makes it worth the while to see (*er... to hear*) a Broce Lee movie, especially if one knows how he is producing this sound. Most viewers in the West never noticed.

touch, there exists an overlap with the sense of hearing. Low frequency sound patterns can be felt with the body skin if a vibrating object touches it. Montagu (1974: 180-181). We can touch only by direct physical contact. The tactile sense is a typical near- and intimo- sense.

Repression of the tactile element

As Noeth (1985: 361) notes, the dominance of the visual and auditive senses leads to a tendency of cultural repression of the tactile sense. In many cultures, and increasingly so, as the organizational level rises toward civilization, the tactile dimension is more and more covered by taboos, and only allowed in special settings, like medical and intimate. But a specific kind of tactile impressions and expressions is cultivated diligently: the punitive cultures (below). Montagu (1974) gives an extensive account of the sensory capabilities of the skin and its importance in the life of humans, and presents an in-depth treatment of the socially disruptive side-effects resulting from repression of the tactile dimension in the child rearing practices among many of the "higher" civilizations. (Puritan English and WASP Anglo-Americans serving as glaring examples), (236-240). He compares this to the more freely expressed tactile experience of indigenous cultures (183-219). Gay (1993: 181-212) accentuates that the punitive side (below) of the tactile dimension has an overall effect on cultural psychopathology, and his data support Montagu's diagnosis.

The tendency of cultural repression of the tactile sense may also affect the CA study of the tactile dimension in a negative way: Montagu (1974: 184) explicitly mentions a study by Williams among the Dusun of North Borneo "as the only anthropological study of the tactile sense in an indigenous culture that he knew of".

As sense of the intimate, touch is connected to the marital arts ->:MARITAL_ART, p. 219. Another large field of cultural patterns of touching is massage ->:MASSAGE_ART, p. 220.

The rich elaboration of painful touching: punitive culture

@:TOUCHING_PAIN

While the domain of pleasurable touching tends to be culturally repressed, the painful tactile stimulation of skin (in punishments and initiations) is not only expressed much more liberally and freely world wide, but one can even say that there is a cultivation of inflictment, a systematics of punishments and tortures that form cultural patterns. The converse situation to the pleasureable case holds: painful stimulation of the skin is practiced very widely and elaborately in highly civilized societies as well as indigenous ones. This theme is treated in more depth elsewhere.

->:EXISTENTIAL_CMM, p. 205, ->:INITIATION_PATTERN, p. 229, ->:PANETICS, p. 233

Some cases in point are:

1) The elaborate practices of ritual torture and genital mutilation at initiation procedures practiced by indigenous and civilized peoples.

->: INITIATION_PATTERN, p. 229

2) Ritual torture as part of ceremonial and religious activities: Well known are the Maya, Aztec and North Amerind. Benedict (1934) makes the (self-)torture aspect an important classifier of dionysian societies.

@:RITUAL_FLAYING

The Aztecs valued especially human skins for their rituals, which were considered most suitable when obtained while their owners were still living. See the accounts of Bernardino de Sahagun, as recounted by James Frazer (Campbell 1996,I: 251-254). Flaying humans was of

high enough ritual import that there was a god dedicated to it: Xipetotek, "the Lord of the flayed ones", Markman (1992). So the Aztecs made the mass live flaying in public ceremonies a cultural institution.[65]

3) Widespread are practices of ornamental scarification, tatooing, tribe markings, that are having their resurgence in present western subcultures, like piercing. See:
    ->:SKIN_CMM, p. 161

4) Then the punitive cultures, mainly of higher civilizations. Around this have arosen whole schools and high colleges of flagellation and the high art of torture. Siu (1993) has compiled a bibliography with several thousand entries on the various methods, techniques, and frequencies of usage. Also: Villeneuve (1988), Gay (1993), (Encarta: Punishment, Torture), Foucault (1969).

The accomplishment and sopistication of torture techniques world wide are impressive. While the Europeans have not been unimaginative at all, inventing ingenious methods of torture, the Chinese must be considered the grand masters of them all, having invented the "water drop torture" and "death by a thousand cuts"[66].

13.3.4. Smell

@:SMELL

Literature: Kröller (1997: 306-315), Tembrock (1971), Wright (1964), (1982), Morris (1984), Corbin (1982), Classen (1993), Kohl (1995), Riechen (1995) Bourke (1891).

Impressions: smell is a chemical sense, and connected to air and breath. It detects small molecules dissolved in the air. Expressions: human body odor in general, sexual odor in specific. Far- (e.g. smoke) near- and intimo- sense. Smell nuances are difficult to characterize verbally, and therefore cannot be verbalized (and written down) very well. Wright (1982: 111-114).

Drawing on data from animal signalling systems, smell is one of the most important, and quite *markedly* concentrated to the sexual sphere.[67] Tembrock (1971), Wright (1964) (1982). It would be a great wonder if this connection of smell and sex hadn't preserved itself through to the animal species *homo indigenus*, only to be maximally repressed in the equally animal species *homo civilisatus*. Ebberfeld (1996), (1997), (xxxx)[68], Kohl (1995).

Cultural practices cover ceremonial hygiene, toilet procedures, perfume, smoking. As with the tactile dimension, modern western civilizations tended to repress the natural human odor, or covers it with perfumes. Guérer (1995: 37), Classen (1993: 9, 15-36). For their importance as cultural patterns, the variances and specialities of {smell / odor} culture deserve a closer scrutiny in the present context. As with the tactile sense, the repression of smell by civilizations may also affect the CA research negatively. Of the few CA data that the literature research has been able to locate on indigenous *smell culture*, was Classen (1993: 1), who

---

[65] The gruesome record of mass human sacrifice seems to have been the tearing out of the hearts of 14,000 victims in four days and nights, at the occasion of the dedication of the temples of Uitzilopochtli and Tlaloc in 1487. Siu (1993: 49). The flesh of the victims was distributed to the populace (Wilson 1978: 94, 237).

[66] Source: Prof. Ye.

[67] ->:MARKING, p. 154

[68] Habilitation (in progress at 1997) at Universität Bremen, Prof. H.P. Dürr, "Geruchsempfindung und Sexualität", Dr. Ingelore Ebberfeld.

describes the Ongee of the Andaman islands as a culture who live in a world ordered by smell. Another is the account of Eskimo (Inuit) smell culture: Montagu (1974: 179-180). Also Schleidt (1995). A practical problem with CA researches of smell culture is that there exist no smell-recorders, like there are tape recorders available for sound recordings,[69] and it is difficult for the ethnological researcher to distinguish between "smell culture" or just a "sloppy lack of hygiene".

Bourke (1891: 140): A traveller who lately returned from Pekin asserts that there is plenty to smell in that city, but very little to see.
(143): The greatest curse that the Tartars have is: "I would that thou mightest tarry so long in one place that thou mightest smell thine own dung as the Christians do."

Prof Ye (1997: personal communication): 1) the most overwhelming experience of a Chinese person coming from his homeland to a city in Europe is the almost absolute smell-less-ness of the air there. 2) The incidence of air pollution related cancer deaths makes China number one in the world, and its industrialization drive makes it the world leader of air pollution in terms of the highest concentrations of air borne toxines, and it will soon surpass the prior world leader, the US, in the gross amount of air borne toxines released, not to mention water pollution and soil poisoning.[70]

Kohl (1995: 127): To close our excursion into the limbic mind and its place in the triune brain we can offer Paul MacLean's provocative interpretation of a custom found in tribal cultures around the world where men use houseguards - stone monuments representing or showing an erect phallus - to mark their territory or home for other men and women. Unlike the males of other species, men do not mark their territories and assert their dominance with urinary pheromones. For MacLean, this behavior suggests a question. Could the phallic markers at the entrance to an aboriginal village or hut tap into deep-rooted limbic memories ... from ancient times with their urinary pheromones and genital display?... It is as though a visual urogenital symbol is used as a substitute or subliminal reinforcement for [the] olfactory, urinary territorial markings of animals.[71]

Napoleon, in a letter to Josephine: "I will be arriving in Paris tomorrow evening. Don't wash." (Kohl 1995: 43)

Smell is (or could be) a crucial diagnostic instrument for the medical profession (Guérer 1995: 42-43), Corbin (1982: 53-68), Wright (1982: 129-132). Any metabolic imbalance will express itself through the smell. Arabic doctors could diagnose a sick harem inmate without seeing her, by a wet cloth that she had wrapped around her body for one night. Similarly with taste: For more audacious doctors, the tasting of a patient's urine will provide an even better diagnosis, much more efficient than any chemical analysis. This is used by Tibetan doctors. Personal communication with Tibetan practicioners on the Ulm meeting of tibetan medicine, organized by Prof. Dr. Aschoff, Universität Ulm 1996.

To paraphrase Hamlet: To bathe or not to bathe, this is the question... of body odor. An extreme example of neurotic smell repression may be the proverbial civilization dweller who takes five showers a day, or the woman who daily uses intime spray to cover up any natural smell traces that she may have left on her body. (So ardently celebrated in U.S. TV commercials). Ebberfeld (1996: 207-208).

---

[69] Illich (1988: 5)

[70] also: http://www.spiegel.de/wissenschaft/nf/0,1518,15235,00.html , ->:PROF_YE, p. 187

[71] From my personal field notes: the fact that those ubiquitous "post-it" sticky marker-pads that one can easily attach to any objects of the environment, are *yellow*, seems to support this hypothesis. One more circumstantial piece of evidence towards this was the printed motto that I read on one of these stickers: "The more I have found out about men, the more I like my dog". (That is: the dog makes no pretenses and still does the *real thing*.)

Kohl (1995: 43): One might well speculate about how the natural order of human relations is altered by advertisers promoting an American obsession with deodorants and antiperspirants out of a profit interest. Or the effects of the American Puritan tradition of "cleanliness is next to godliness" on male-female relations.

Corbin (1982). The historical pattern of the European odor culture shows several remarkable reversals performed with regards to patterns of cleanliness and smell. Corbin describes in detail the heroic efforts that were made in the 19th century to ban the pestilential stench that penetrated the whole of European social life. This had not always been the case. The Romans were avid bath-takers, (Dufour 1898,II: 23-26) and built their thermal bath temples wherever they went, leaving this heritage after their empire collapsed. In the middle ages, bathing culture was not as comfortable but still quite lively in Europe, but it caused problems with the Christian moral code. Not the least reason why the baths were so popular was that both sexes were in the same bathtubs, and did that either completely naked, or just scantly dressed. This caused a lot of excitement for the participants and the authorities alike, and was reason for a lot of great literary masterpieces of sin and damnation preaches from the pulpits. When the Syphilis became endemic in Europe, the authorities had a good reason to clamp down on the vice, and the bath-houses were shut down. Schmölzer (1993: 319).

The culture of aromatic scents and fragrances has a rich history probably reaching back to prehistoric times, and was widespread in the ancient civilizations of Egypt, Mesopotamia and China. Kohl (1995: 174-179), Morris (1984). Because smell works strongly on unconscious levels, it is "intimately" connected with religious ritual, as the use of incense in Christian, Hindu, and Buddhist religious practice shows. Schleidt (1995: 92). The popular francincense of Christian ritual is from Northeastern Africa and the Arabian peninsula. (Encarta francincense). The Arab chemical technology brought an advance in fragrance processing through various distilling methods which gave rise to perfumery. Morris (1984: 127-284).

@:PET

Another smellable expression of the human body is the fart. Elias (1997,I: 164, 266-272). Although it is tabooed in modern Western civilization, there are cultural applications, like the farting contest. It is to be noted that the fart is the voice of the belly, and bespeaks its own truth, wording messages that cannot be uttered with the vocal cords, and therefore evade written recording. The Egyptians esteemed this so highly that they had an own god for the fart: *Pet*.

Bourke (1891: 154): Le Pet était une divinité des ancients Égyptiens; elle était la personification d'une fonction naturelle.

Clemens Alexandrinus, in Dufour (1898,II: 98): Aegiptos crepitus ventri pro numinibus habent.

Cicero, in Dufour (1898,II: 98): stoici crepitus aiunt aeque liberos ac ructus esse opportere.

Erasmus, in Elias (1997,I: 164): Reprimere sonitum, quem natura fert, ineptorum est, qui plus tribuunt civilitati, quam saluti.

13.3.5. Taste

@:TASTE

Kröller (1997: 306-315), Geschmack (1996), Bibliography: Geschmack (1996: 319-342). Widely known examples of CMM usage: cooking, food and drink culture. Food has multisensory effects, because there are strong smell and tactile elements.

Impressions: "Before living beings were able to see and hear, they were able to taste. Taste is phylogenetically the oldest sensory facility". Geschmack (1996: 229). *Taste* is a chemical sense, and connected to watery solution of chemicals and the physiological processes of eating and drinking. We can only taste something that we are incorporating. The survival value of the taste sense is that it supplies an instant chemical analysis of the thing tasted. There are actually very few harmful natural substances that don't taste or smell bad, like mushroom poisons. If something is determined harmful by the taste sense, one can usually still spit it out without greater harm. Schleidt (1995: 93-94). Taste is an internal or proprio-sense. To be experienced, something from outside has to be brought into the body and chewed. It is also an intimo-sense.

Expressions:
The cultural taboo zone surrounding the tasteable bodily expressions is thick and dense. It is an area deeply steeped in dark, stark, and forbidding mythology, magic, and rituals. The most extreme form of tasteable human body product is the human body itself, which appears as a frequent cultural pattern in indigenous culture: Cannibalism. Benedict (1934: 131, 164, 178), Villeneuve (1965). Other literature, e.g. Bourke (1891).

Bourke (1891: 134) [The existence of] the Roman goddess Cloacina suggests an inquiry into the general history of latrines and urinals.
(135) Martial Epigram XXXVI: minxere et cacare.

Churchill performed the strongest possible magical conjuration of archaic powers, when he promised the English people "*blood, sweat, and tears*". This proved to be an effective magical counter-weapon to the German "*Blut und Boden*". Wars are not won with arms alone.

Adding to this mother's milk, sperm, saliva, urine and feces, we have listed the whole range of tasteable human body products. Characteristically, when someone in our civilized societies even mentions these tasteable human body products, he is described as "tasteless". Ebberfeld (1997). Concerning the matter of *sperm*, the following accounts are instructive. In certain societies, sperm was the substance which {represented / contained} the manly ethos, or male virtue (greek: *araete*). Gennep (1960: 171). Therefore it was a ritual practice that the older members of the society transmitted the *araete* to the younger ones. In New Guinea, this was done orally, each boy had to swallow a certain amount of *araete* dispensed by his superiors, until the council of the elders had determined that he had swallowed enough *araete*, and was declared mature. (LeVay 1994: 189/190) (Simbari Anga), (Arbeitsgruppe 1989: 143-144) (Baruya). In ancient Greece, the *araete* was dispensed anally, leading in modern times to the completely unfounded and unwarranted suspicion that ancient Greek society had been homosexual. Dover (1978), Reinsberg (1989).

13.3.6. Para-senses

@:PARA_SENSES

The positivistic scientific study of the sensorium underlies the general law, that the stimuli and effects can be scientifically measured and predictably reproduced. The somatic channels listed above can be scientifically validated. Then there is a class of phenomena that falls out from this raster: the para-senses (or *para-channels*). In the positivist view these are outside the scope of serious research, and discounted as phantasy or as *non-sense*. But their widespread intersubjective occurrence, the many occasions when people believe they themselves or others, make use of such facilities, renders their treatment in the present context of CMS valid and necessary. These occurrences form extremely stable and durable cultural patterns, as thousands upon thousands of books in the mystical and esoteric literature testify. They include mindreading, clearvoyance, precognition, spirit -channeling, -encounters, and -travels,

voodoo, conjurations, exorcisms, uage of charms, and amulets, etc. The whole magical and shamanic theater abounds with {claimed / imagined} application of these phenomena. Since many of these phenomena have a strong cultural role in indigenous societies, they have been extensively treated in the CA field, e.g. the famous novels of C. Castaneda (one of which had been accepted as CA PhD dissertation at the U. of California: Kohl 1993: 413), H.P. Duerr (1993), Goodman (1974-1990), Kressing (1997), Rösing (1990-1993).

->:TRANCE, p. 206

General literature, e.g. Noeth (1985: 244-250), Haarmann (1992b), Lucadou (1997). The subject is also systematically treated in *memetics* as a prime example for a class of phenomena that have no physical referent but still enjoy a phenomenal intersubjective replicative success. In Germany, a large resource for this subject is the library of the Freiburg "Institut fuer Grenzgebiete der Psychologie".

13.3.7. Electromagnetic

@:ELECTROMAGNETIC

Moller (1997: 316-324), Popp (1979), BdW (1996). Many animals have electric and magnetic sensors and effectors. Electric fish are best known. Conversely, many fish, even if they produce no electric activity, can sense electric fields. Humans can sense a static electric field, if it is strong enough. Everyone who has come near to a TV tube can attest to this. The bristling of skin hairs functions as electric receptor. Some anecdotal accounts exist of sensitive people also feeling magnetic fields. Then, people have different propensities to generate electrical charges. This depends not only on weather condition and plastic carpets and synthetic clothes but also on metabolism. Women in menstruation seem most susceptible to this. Weather sensitivity patterns have been tentatively linked to air ion sensitivity (BdW 1996).

13.3.8. Existential

@:EXISTENTIAL_CMM

Extreme states of somatic experience serve as widely used CM devices. Among these: food and water deprivation, {toxic / hallucinatory / psycholytic} drugs, pain, near-death experience, punishment, ritual torture and ritual mutilation at initiation. In the framework of cultural memory, the various procedures of initiation used by various cultures serve as particularly ingenious coding and powerful mnemonic devices for the transmission of cultural patterns.

->:NIETZSCHE, p. 77, ->:INITIATION_PATTERN, p. 229, ->:PANETICS, p. 233

14. Static-Material Cultural Memory Media (CMM)

@:STATIC_CMM

14.1. Markings / signs / codings

@:MARKING

markings[72], in the most general sense: systematic and consistent recognizable patterns of {modifications / modulations / marking substances}, introduced {into / onto} a {medium / substratum / material / flow of material or energy}.

(en-)coding: marking, *with respect to intended information*. (Watt 1997: 404-413). The verbal language oriented CMM are used to encode language words and concepts, and phonographic writing encodes language sounds. But in the non-verbal language oriented CMM the kinds of information encoded belong to many different domains. In a certain class of applications, cryptocodes, codings serve to *transmit* as well as to *hide* an information (Watt 1997: 405).

@:PEIRCE_SIGN

sign: a similar usage to marking is in the semiotic term *sign* (Posner: 1997). The difference is that *markings* are always the result of intentional action. Signs are observer-dependent and anything can be a sign for someone signifying something for him/her. Peirce's definition of a sign is:

Peirce, (1931-1958) Collected Papers:
(CP 2.303): Anything which determines something else (its interpretant) to refer to an object to which itself refers (its object) in the same way, the interpretant becoming in turn a sign, and so on ad infinitum.[73]
(CP 2.304): No doubt, intelligent consciousness must enter into the series. If the series of successive interpretants comes to an end, the sign is thereby rendered imperfect, at least. If, an interpretant idea having been determined in an individual consciousness, it determines no outward sign, but that consciousness becomes annihilated, or otherwise loses all memory or other significant effect of the sign, it becomes absolutely undiscoverable that there ever was such an idea in that consciousness; and in that case it is difficult to see how it could have any meaning to say that that consciousness ever had the idea, since the saying so would be an interpretant of that idea.
(CP 2.305): A sign is either an icon, an index, or a symbol. An icon is a sign which would possess the character which renders it significant, even though its object had no existence; such as a lead-pencil streak as representing a geometrical line. An index is a sign which would, at once, lose the character which makes it a sign if its object were removed, but would not lose that character if there were no interpretant. Such, for instance, is a piece of mould with a bullet-hole in it as sign of a shot; for without the shot there would have been no hole; but there is a hole there, whether anybody has the sense to attribute it to a shot or not. A symbol is a sign which would lose the character which renders it a sign if there were no interpretant. Such is any utterance of speech which signifies what it does only by virtue of its being understood to have that signification.
(CP 2.307): A Sign (q.v.) which is constituted a sign merely or mainly by the fact that it is used and understood as such, whether the habit is natural or conventional, and without regard to the motives which originally governed its selection.

---

[72] According to the *re-markable* theory of some researchers, the origin of all *marking* is in the leaving of urinary sexual scent marks on objects of the environment: Kohl (1995: 127). ->:SMELL, p. 149

[73] This seeming infinite regress is solved: ->:MEANING_OFMEANING, p. 225, ->:NEURONAL_PATTERN, p. 124

The *interpretant* is being *re-interpreted* as the said neuronal patterns in the cognitive system, *plus its recursive coupling with the environment* which is indeed an endless reverberation to and fro, continuing forever without being bounded by the dissolution and recycling (death) of individual organic entities.

14.2. Economical, technological and informational factors of material CMM

@:TECHNO_FACTOR

Marvin (1986: 356): As the means of production are critical for Marx, so the means of communication are critical for Innis. What governs the potency of voice, stone, clay, parchment, papyrus, and paper are their relative attributes of durability and portability. These attributes select victors among competing historical powers by conferring relative advantages of range and longevity in the exercise of authority.

Innis (1952: 78): I have attempted elsewhere to develop the thesis that civilization has been dominated at different stages by various media of communication such as clay, papyrus, parchment, and paper produced first from rags and then from wood. Each medium has its significance for the type of script, and in turn for the type of monopoly of knowledge which will be built and which will destroy the conditions suited to creative thought and be displaced by a new medium with its peculiar type of monopoly of knowledge.

Assmann (1995: 349): The central thesis of this school is: cultures are defined by the capacity of their media, i.e. their recording, storage and transmission technologies. With this thesis, the focus of attention was directed towards issues of writing systems and -institutions, types of communication, transmission channels for messages, and storage technologies of knowledge. This perspective of media determination of culture that came in a time of immensely accelerated technological evolution, has not only revealed its critical impact, it has also given rise to new issues of research...
>:LIT_CULTMEDIA, p. 140.

Dechend (1997: 9): ... we have to state first, that next to no phenomenon should be accepted as "suggesting itself", and "obvious", no instrument, no technique, no rite, no game, no dance. The more fundamental, and the more apparently self-suggesting a technique, the more ingenious the brain that hatched it.

In this section, the method of Innis will be applied to general material CMM, including those of indigenous cultures. Heeding the advice of H. v.Dechend, one needs to scrutinize all cultural productions as representants of CM, since all needs to be handed down between generations, and re-learned by each new generation. This may be such commonplace and everyday tasks as finding and preparing food, cures for small ailments, building shelters, constructing implements, and tools, making clothes, etc. Levi-Strauss (1975: 390-393). The label "oral tradition" is not correct for this type of CM transmission, since verbal language may accompany it, but the main transmission is either performative, or a skill in the preparation of materials. In many cases, language is not part of the transmission e.g. Staal (1982), (1986), (1989), The general label for this was coined above as *diachronic extension of cultural patterns*.[74] In most cases of everyday-use indigenous CM, the utility fabrication of tools, implements and performances are their own CM carriers. Thus, in the strict sense of McLuhan: "the medium is the message". (Goetsch 1991: 124). The practice itself is the carrier of the cultural memory, or: *memory is process*.

Writing is a CMT that originated in highly differentiated agricultural societies where the necessity arose to devise CM transmission methods for large volumes of records. Lambert (1966). The advantages and cost factors (the tradeoffs) of different writing systems have been amply discussed in the works of the Toronto school following the works of Innis (1972), (1991) and the media studies research.[75] An ideal writing system would be one that is easy to learn, that doesn't tax the writer's physical and mental resources too much, and that is receivailable by a maximally large audience for a maximally long time. These conditions cannot be met optimally by any single system, and therefore some optimizations here must be traded for other weaknesses elsewhere. Raible (1991: 327-328). The environmental factors

---

[74] >:CULTURE_PATTERN, p. 132, >:WITTGENSTEIN, p. 198
[75] >:LIT_CULTMEDIA, p. 140

have a strong influence on the development of human societies, as is described by Diamond (1992) and (1997), and this influences their CMM (1997: 215-238). The ensemble of economical, technological and informational tradeoff factors of materials for record keeping become crucial for highly organized pre-industrial cultures as we can see in the history of early civilizations. (Lambert 1966). The most durable materials, stone and metal, were too costly for widespread administrative use, and so the availability of cheap writing materials proved crucial for their development. The optimal technical requirements for a writing material are: it must be cheap, light, flat, durable, easy to inscribe, and must provide for at least some measure of correctability. In pre-electronic technology, these conflicting requirements are best met with paper, which is the product of a very long process of technological development (Sandermann 1997)[76]. The sometimes heavy cost tradeoff factors involved in the procurement and usage of CMM materials had a direct influence on the civilizations using them. Their interdependence and interplay have influenced the rise and fall of civilizations and have also added some specific accents to history, like the burning of the Alexandrian Library (Canfora 1988) and the fall of the Roman Empire. McLuhan emphasizes (1972: 61): "The Roman empire fell apart because of scarcity of papyrus. The Roman road was a paper route." Modern critics of electronic media point out that present day civilizations may rush into electronic conversion of their precious paper and alphabet based CM stores without considering hidden traps which might lead to serious civilatory backlashes (Stoll 1996, especially 110-119, 227-311).

General sources: Innis (1952) (1972) (1991), Dechend (1977), (1993), (1997), (personal communications). Forbes (1972), FIS94, FIS96, Goppold (1996a), Marijuán (1996, 1997), Hertz (1930), Marvin (1986), McLuhan (1972), Needham (1959) Neuburger (1919), Posner (1990), (1997), Scarre (1990), Smith (1981), Stonier (1992, 1994), Kornwachs (1984, 1996), Wertime (1980). Schinz (1989), (1997), (personal communications[77]). Literature on data stability in electronic media: Rothenberg (1995: 66-71). A speech given by Klaus Kornwachs at FAW Ulm in 1996 on the long-term stability of information carriers, and personal communications. Conversations at the FIS96 conference, Vienna (1996). Application of general information engineering knowledge derived from 15 years practice in the information industry to the information media situation of ancient and indigenous societies. More sources listed in the respective paragraphs.

---

[76] But, as can be seen from the current self-destruction of millions of books made with acid-containing wood paper, there are hidden side effects possible, that act as veritable time-bombs in our cultural memory stores. (Sandermann 1997: 231-249).

[77] Dr. Alfred Schinz had a longtime experience to Mesopotamia as a city planner in Iraq, and was a student of Walter Andrae, the restorator of the Ishtar gate in Berlin.

14.3. Informational factors for classification of material CMM

This is a condensed list of informational factors for classifying and evaluating material CMM in cultural context, together with some examples extracted from the following sections.

1) Substratum material properties, classed by persistence or ephemerality:
> fixed, persistent: stone, metal, wood, skin (parchment[78]), baked clay, paper, papyrus
> phase-changeable (meltable, malleable, rewriteable, persistent): metal, wax, fresh clay
> material flow, ephemeral: scent, smoke, air and water flow
> energetic flow, ephemeral: sound, light, electric

2) Retention time of storage:
> long-term, (100 years+): stone, metal, baked clay, skin,
> medium, (10 years+): wood, paper, papyrus, skin,
> short, (0-1 year), rewritable: blackboard, sand markings, calculi, wax, raw clay,
> ephemeral: sound, light, and electric signals.

3) Instrumental and material properties of marking device:
> hardness, flexibility: chisel, engraving tool, pencil, pen, brush, airbrush,
> range of shapes coded: brush->waveforms, pen->lines, airbrush->color clouds.

4) Technical / material / social cost factors, to produce/reproduce:
> energy * (man-hours) * (skill level of training of personnel) for the
> procurement of material/energetic substrate, and encoding devices,
> process of modulation,
> process of recovering the content,
> preservation/copying of the materials vs. information losses due to copying errors
> economic and organizational cost factors of copying, collating,
> comparing, re-ordering, systematization.

5) Miscellaneous Information factors
> information density absolute,
> information quantity per mean unit of storage,
> information quantity per weight unit of storage,
> transportability (factors of weight and durability),
> storability (factors of durability),
> information transmission speed:
> a) speed by which the material substrate can be transported, i.e. by a man on foot, on horse,
> > wheel, chariot, or by boat.
> b) Signal travelling speed and relaying delay for optical and other ephemeral systems.

6) Sensory modality affected
> visual (color-insensitive /-sensitive), auditive, tactile, kinesthetic, olfactory, gustatory

The following sections contain an extended systematic exposition of the economical, technological and informational tradeoff factors of markings in durable CMM materials that are or have been used in indigenous cultures and ancient civilizations.

---

[78] Parchment was rewriteable, of a sort: The term *palimpsest* denotes a parchment that had been scraped off to remove its content and written anew. (Encarta: palimpsest).

14.3.1. Anorganic

Stone

Neuburger (1919: 271-410), (Encarta: Egyptian Art and Architecture), Anati (1991), Lock (1996), Semiotica (1994), Edwards (1961), Mendelssohn (1976), Roeder (1944/49). Stone is among the first materials used by humans / humanoids from earliest times on. Because stone utensils are so much more durable than any organic material used by early humans, the archeological record has preserved those remains in much better condition and much larger quantity than any other remains. The best known cases of prehistoric stone CMM are rock paintings and engravings (Anati 1991). Rocks and caves are mainly found in mountainous terrain, and because of these situational peculiarities, the CM technique of rock paintings and engravings could be used only in very specific circumstances, for example by nomadic people who visited these sites on their wanderings. A mountain range is not the the ideal place for large agricultural settlements, like the civilizations as they arose after -4000 in the river lowlands of the Nile and Mesopotamia. In those civilizations, stone was used for monumental architecture and writing. If stone has to be quarried and processed for such purposes, it requires a great expenditure in effort and the concerted work of many people. The technology of the earliest civilizations, like the ancient Egyptian, of -3000 was basically neolithic, although hardened copper or arsenic bronze were available. Flinders Petrie had assumed that tools for machining stone were constructed in a composite manner with hard (precious) stones inset in (arsenic bronze) metal saws (Innis 1972: 13). But most of the work had to be done using stones on stones, to cut, polish and inscribe, the material. (Neuburger 1919: 400-404). This process is considerably slower than when using iron tools. While stone monument recordings are very durable, their cost for mundane record keeping is prohibitive. And for ordinary accounting in a highly organized society, stone is thus useless. Stone was mostly used for writing when the cutting and shaping of the stones was part of a construction project, ie. the monumental architecture as affair of the state (and/or) religion. Architectural monuments served a multi-purpose role with CMM as side effect.

Norcia (1986: 346): In Egypt kingly and priestly power rested on different media; but religion and politics and their media monopolies could reinforce each other as well as compete. The durability of stone helped the Paraoh to control time and resist the priests. Indeed their switch to papyrus made the Pharaoh's administration and military more efficient.

The principle of monumental architecture as CMM has been followed (or independently developed) in all civilizations - be it in the Egyptian and Mesopotamian monuments, Greek and Roman temples, the European church architecture (cathedrals as most prominent example), Islamic mosques, Buddhist and Hindu temples (Borobudhur, Khajuraho), or Maya monomuents.

Another widespread use of stone for CMM has been in the form of counting stones, called *psephoi* in Greek and *calculi* in Latin (Ifrah 1991: 47, 117, 136, 188-193).

Slate

(Encarta: Slate), Kittler (1997: 194). Every rule has its exception: A stone writing material that is very easy and cost-effective to use, is slate. Its natural consistency makes it ideal for many purposes of short-term rewritable record keeping, since it occurs naturally in large and flat panels, and is fairly abundant. It can be written onto with chalk, and the writing is easily erased with water. So it was used in the schools and in the shops everywhere. In western Europe, it has just died out recently around the 1950's. It is still used as a water resistant construction material for roofs and exterior wall coverings in large parts of Europe.

Clay and pottery

(Encarta: pottery), Herrmann (1977: 53-56), König (1997: 116-123), Neuburger (1919: 133-154), Levi-Strauss (1975: 391-392). Baked clay was probably used by humans as soon as fire was available. (Leroi-Gourhan 1984: 220). The hardening of pieces of soil in the fire is too conspicuous to have escaped early humans' attention. But its great ascent in importance is connected to the neolithic "revolution". This was a longtime, gradual transition from hunter-gatherer lifestyle to various forms of plant cultivation, high-intensity garden-oriented horticulture and later to agriculture. (Thompson 1987: 194). Plant cultivation and pottery are reciprocal cultural technologies, one supporting the other. Pottery vessels are ideal for storing grains and they are inherently rodent-proof, a very important factor considering that rodents multiply exponentially and eat all the harvest where storage conditions are not sufficient, like in third world countries. So, clay became a most widespread and favored material for neolithic material culture, as well as CMM. Gimbutas (1974), (1995) amply describes the CMM use of pottery in the Old Europe cultures of the Balkans.

The use of clay involves several diverse factors and implications: First, the source material is abundant and cheap to procure, easy to form into a vast range of 3d shapes, and best of all, very durable when baked. Vessels made of baked clay can be made water proof by glazing, needing higher temperatures than normal firing. (Leroi-Gourhan 1984: 223-227). About 600° C is needed for low level firing which is water-permeable. This can be achieved with a low energy cow dung open fire without an oven. The use of semipermeable clay vessels is very important for the storage of water in hot climates since the evaporation keeps the water cool (Neuburger 1919: 140).

Nothing comes without a cost, however. Baked clay is quite heavy, and breaks easily. Therefore, a widespread use of clay utensils is only useful for people who lead a sedentary lifestyle. The high temperature firing technology for high grade pottery is equally suitable for metal smelting smelting (Leroi-Gourhan 1984: 220-227). As the chinese Shang example indicates, their very high pottery technology allowed those people to develop one of the most refined cast-bronze technologies of all times. The clay models for these vessels were fabricated to a precision that can only today equalled with modern high industrial material technology. Rawson (1995: 76-81), Goepper (1995). An insidious drawback of fired clay and metal smelting technology is the insatiable hunger for (wood) fuel. Since wood (charcoal) is the main firing material in pre-industrial culture, this will eventually lead to deforestation and ecological destruction. Campbell (1985). The widespread use of cow dung for fire in India is the main ecologically sustainable exception. Harris (1989: 309-313).

The use of clay for purposes of CMM coincided with the functional use: Right from the beginning, clay objects were most lavishly adorned with ornaments. A particularly important case of ancient European CMM pre-history is in the Old Europe cultures of the area of former Jugoslavia, near Belgrad.[79] Clay was used especially for CMM in ancient Mesopotamia. See also Denise Schmandt-Besserat's (1978, 1992) treatment of the clay tokens to which she attributes a crucial role in the development of writing. Ancient Greek culture before the Hellenistic era had a shortage of paypyrus and used pottery as CMM in form of vases and shards (ostraka). McLuhan (1972: 61). For further discussion of clay use for CMM, see:

Sand, Soil

Sand and soil paintings are known in many parts of the world. Well known are US southwest Amerind (e.g. Encarta: Navajo) and Tibetan Buddhist sand mandalas. Some ancient designs on the ground have probably survived throughout millennia, like the monumental Nazca lines in South America (Aveni 1986: 5), and on the British islands.

Metal

Neuburger (1919: 4-70), Forbes (1972), König (1997: 97-110), Wertime (1980), Smith (1981). The metals / alloys known and used in antiquity: Gold, silver, copper, tin, lead, arsenic-bronze, tin-bronze, iron, mercury, zinc. Metal technology is based on (high temperature) fire and oven technology (Leroi-Gourhan 1984: 220-227), (Hermann 1977: 90-91, 109-110).[80] In ancient times, the expression "aere perennius" (more durable than bronze) was proverbial (Kittler 1997: 200), (Cassirer 1994: 126). The material strength and corrosion stability of bronze give it as high a resistance to the wear and tear of the ages as stone. Its chemical stability is much greater than iron. Hundreds of thousands of well preserved ancient bronze objects dug out of the soil in many places attest to this. Notable are *Shang* and *Zhou* Chinese and Celtic bronze relics (Rawson 1995: 76-94, Creel 1935). Bronze was among the most expensive materials used in antiquity. Its strategic importance derived from its potential to equip armies with weapons that proved superior against neolithic armory, but the long trade routes of tin also made states using it vulnerable when the supply fell short. (Zangger 1995: 216), (Hermann 1977: 112-116, 136). Besides weapons, it was used most widely for money and by this, coins became a very wide spread CMM. (Without being intended this way. The coincidence serves extremely well for archeological purposes. If paper money had been wide spread in antiquity, we would be out of luck for a lot of our historical knowledge.)

14.3.2. Organic

Wood

(Neuburger 1919: 71-78, 399-400) (Encarta: wood carving). Wood is an ubiquitous material used for the construction of nearly everything in the life environment of preindustrial culture almost everywhere on the planet, except possibly Inuit, where only driftwood was available (Encarta: Inuit), and Mesopotamia[81] (Encarta: Mesopotamia / Mesopotamian art and architecture). Therefore it has always been used for markings in form of carving and painting the surfaces of wooden objects. The oldest usage for record keeping was in form of tallying sticks (Ifrah 1991: 110-118). It has further found widespread use in form of wax covered wooden boards which were in heavy use in antiquity (Böhme-Dürr 1997: 367). Only a few specimen are preserved in the archeological record, a pair of these boards was found in an ancient wreck off the coast of Turkey (Symington 1991).

Bone

Used often like wood, especially where wood was scarce (Inuit). Ivory was used as luxury material for calculi and abaci. (Ifrah 1991: 136-159). Tallying sticks (Ifrah 1991: 110-118). Prehistoric use: Marshack (1972).

---

[80] Except gold which is found as pure metal deposits and can be worked cold. Copper similarly, but not to the same extent.

[81] The wood scarcity of Mesopotamia was notable as remarked by Vajda (1995: 23) and the ubiquitous clay provided only a poor subsitute material. ->:ANCIENT_MESOPOT, p. 167

Skin, leather, parchment

@:SKIN_CMM

Skin and animal hide is among the oldest cultural implements of humanity (Neuburger 1919: 79-84). In the northern climates, where vegetal fibers are of less variance than in the tropics, animal fiber has found wide use. The skins of animals, and also humans were used for utilitary purposes as well as CMM surface.[82] Also of high importance are leather knotworks and braidworks. The best known mythology connected to this is the famous Gordian knot of Alexander which he declined to unravel, hacking it to pieces instead. The legend explicitly mentions that the knot was made of leather. The models for the celtic braidwork patterns of the book of Kells were originally leather artefacts (Bain 1973, Merne 1974, Illich 1988: 29-30). The use of leather and skin was of course more connected to hunting and pastoral cultures. Leather thread- or braidworks are among the most durable and flexible materials, with very high tensile strength. It was also used for body armor.

The best known CMM material made from skin is parchment. (Encarta: Parchment and Vellum):

Parchment and Vellum, writing materials made from specially prepared and untanned skins of animals, usually sheep, calves, or goats. Parchment has been used at least since about 200 BC; its name is derived from the ancient Greek city of Pergamum, where an especially fine quality of the material was produced. Vellum is a finer quality parchment made from the skins of kids, lambs, and young calves. Parchment, which gradually replaced papyrus and was itself later replaced by paper, is still used occasionally for formal honorary documents. Parchment or vellum is prepared by cleaning the skin and removing the hairs, scraping and smoothing both sides of the skin, and finally rubbing it with powdered pumice. Coarser parchments made from the skins of older animals are used for the heads of drums, banjos, and tambourines. So-called parchment paper, a modern invention, is made by dipping ordinary unsized paper into a solution of two parts concentrated sulfuric acid and one part water for a few seconds and then quickly neutralizing the acid.

The finest grade of parchment came from unborn calves, cut out of the womb of the mother cow. Also the highest cost, since one had to kill the cow as well as the calf. The finest bibles were fabricated from this material.

A profound change in information economy was caused by the switch from papyrus to parchment in the middle ages. (Innis 1972: 116-140). Parchment is more durable, but also more costly than papyrus. By this, a severe economical clamp is put on writing culture, squeezing the flow of information to a mere dribble in medieval times compared to Roman times.

Human skin

The skin of living humans is used as CMM by body painting in many parts of the world, Grössing (1997), Australia: Mountford (1964), Amazon: Boggiani (1895), (1930), Lehmann-Nitsche (1904), Münzel (1988), Ribeiro (1980) (1983) (1987) (1988), Vidal (1981), (1987), Levi-Strauss (1942), (1978: 168-180, 208-209), (1977: 267-291).

Other widespread applications are tattooing, in Polynesia, China, India, and Japan. (Encarta: tattooing), Schönfeld (1960), also scarification and piercing, Straube (1964: 675-704). Schildbach (1997). Further cases of CM usage of human skin, see also:

---

[82]

Feathers

A widely used material for ornamental objects and designs are feathers. Most notable are the usage by North and South Amerind people: Nicola (1980) Ribeiro (1957), (1987), and in Australia: Strehlow (1971) (1996), Mountford (1964: 385-396).

Human Hair

Hair fashion is an important CMM in many African cultures (Frehn 1986).

Tree bark

Tree bark is by its biological function of serving as "skin" for the tree, a naturally occurring material that can be used like paper for CMM. It can be peeled off, and yields large and flat sheets. In this role, it has mainly been used in the Amerind theater, like for the Maya and Aztec codices (Boone 1994: 60), Gebhart-Sayer (1987: 267). Also in India (Staal 1986: 278). The material also was used for clothes and it is of sufficient strength to even have served for the fabrication of boats, as the North Amerind use in birchbark canoes exemplifies (Encarta: canoe).

Fiber Products

The use of plant and animal fibers accounts for the oldest cultural implements of humanity, which are likely to have co-originated with stone tools. The problem with proving this hypothesis is that as organic material, fibers usually haven't survived the time spans that stone tools endure. There are no one-million year old ropes and braidworks to be found in the fossil strata[83]. Just because of their durability, stone tools are the *leitfossils* of the paleolithic, and we must infer the use of fiber from indirect evidence and reasoning. One factor is that stone tools are more usable if mounted in some kind of handle, which is mostly made of wood or bone, and the combination of both elements is either done with a glue or resin, or a kind of thread or rope, or a leather band. The ecological environment influences whether it is predominantly animal material (hair, sinew, leather, see the paragraph on leather) or vegetable fiber that is used. In northern climates, animal material will be dominant, in tropical climates, vegetable fiber.

Another method to determine the use of fiber in paleolithic culture is by accounting the economic and life support necessities of a hunter/gatherer culture. All their implements, like huts, tents, clothes, and ornaments, must be held together with some kind of threads and yarns. Before the advent of pottery, the storage of materials was mostly in nets and baskets, as well as hollowed trees, and gourds. (See also: baskets). Up to the industrial age, nets and baskets were also the most important carrying containers. If one were to account for the sum total of all the uses of fiber in a culture like this, it would be apparent that as much human energy and craftiness went into the production of fiber (or leather) implements, as stone. Another route of reasoning would go by comparison with the animal arts. A bird nest is a highly evolved material technology, even if that is rarely acknowledged as such. By copying the patterns of weaver birds, early man would have been able to derive his (or her) earliest arts and crafts directly by imitating nature.

---

[83] It is also likely that the origin of fiber arts belongs to the female side of human history: the oldest "cultural implement" of mankind may turn out to have been the baby carrying sling, not a stone. (Taylor 1997: 39). Perhaps the current greenhouse warming effect will eventually help us. As more mountain glaciers and Siberian permafrost sheets melt, there may eventually be a find of the mentioned one-million year old rope and braid proving the hypothesis.

Leaves

Palm leaves were used for writing in India and other South Asian countries (Khing 1983). Because this material is quite brittle and stiff, it is otherwise not very suitable as writing surface. In the humid climate of South Asia, its resistance against tropical influences makes up for some of its other material deficits. Staal (1986: 278).

Rope, Knot and braid patterns

Neuburger (1919: 185-189). Probably the oldest fiber CMM are knot and braid patterns (also: baskets, below). Sailors have cultivated knot art until modern times, to the end of the era of sailing ships, and there are yarn pattern games in many cultures. The celtic knotwork patterns of the Book of Kells show the transition of the knot system into a more modern medium, and even a (short-lived) attempt of coexistence of these two entirely polar types of CMM. Bain (1973), Merne (1974), Illich 1988: 29-30). Bachofen (1925: 308-315) has shown the ancient mythological connections of the fiber arts in "Oknos der Seilflechter".

@:ROSARY

This mythological connection survives to the present day in the rosary culture of all the major religions as a meditation device (Christian, Hindu, Buddhist, Islam) (Encarta: rosary).

@:QUIPU

A wide application of knots is for record keeping. Ascher (1981), Haarmann (1990: 56-60), Haarmann (1997: 677), Ifrah (1991: 16, 33, 47, 114, 121-128), Scharlau (1986: 80-93), Boone (1994: 198-199, 234-239, 241, 259, 284, 295, 299), (Encarta: Inca). This has been found on all continents, for example a wide use in China. (Scharlau 1986: 81), (Ifrah 1991). Most remarkable is its use in the Inca quipu system, since here is a case of a civilization which didn't use writing[84] but used this notation system as main tool for the administration of a very large territory measuring 4000 km in its longest extent, with the additional difficulty of mountainous terrain, and no horses or other animals for quick transportation available. The solution for a fast long range communication and transportation system to exclusive imperial use, was the relay courier system. A human long range runner cannot carry a heavy load, and therefore a very lightweight but durable CMM was needed. It is generally assumed that only specific types of numerical data were encoded with an intricate system of colored knots in a many-stranded rope. Scharlau (1986: 87-89), citing Ascher (1981). An investigation of a quipu containing astronomical information is in Zuidema (1986: 341-351). Some accounts indicate that it was possible to encode complete narratives into the quipu. Menninger (1957/58: II,62): "Bericht von Garcilasso de la Vega, der Sohn einer Inkaprinzessin und eines Spaniers." Scharlau (1986: 263<79>). See also the discussion in Scharlau (1986: 80-93). Further discussion under:

Baskets, plait, wicker, thatchwork

(Chambers 1968: Baskets): The uses of basketry are extremely varied, especially among peoples of lower culture. Basketry provides clothing and ornament, houses and furniture, cooking and water vessels, sieves, platters and trays, besides the receptacles for collecting and storing food or treasures. Protective armour, musical instruments, and children's toys may also be of basketry, as well as weirs for fish and traps for game. For ornament we have abundant examples in the girdles, armlets and leglets common in Africa, America and the Pacific islands... They vary from the simplest type... to examples so intricate as to defy analysis or imitation. For this the hexagonal *anyam gila* or 'mad weave' of the Malays gives the best example, so called because the complications drive learners mad.

---

[84] overlooking the use of the *quillca* system as described in the work of Barthel (1971) and Silverman (1991) for the moment. These woven patterns are very time-consuming to produce and therefore not suited for short-term and ad-hoc usages.

Baskets are a highly evolved material technology. (Whose precursors are to be found in non-human implements. Bird's nests are also a (somewhat more chaotic) basket technique.) (Encarta: Weaverbird, Bowerbird). As contradistinct to pottery, baskets are very adapted to nomadic lifestyle patterns. One can even state that baskets have the same significance as cultural implements for nomads as pottery has for sedentari. Because no remains of baskets usually show up in the archeological record, the importance and variation of their usage in prehistoric cultures must remain in the dark. The CM significance is accentuated by the intricacy of their patterns whose construction needs to be learned in an arduous process of cultural transmission in a master-apprentice setting in direct personal contact. A written description may be either too complicated to understand, or useless as instruction for reproducing them (Chambers 1968: Baskets, above). Ribeiro (1987: p. 57-68) as example in South Amerind societies.

Ribeiro (1987: p. 57): The subject of this article is the symbolic meaning of geometrical designs sketched out on basketwork of tribes from Haut Xingu, State of Mato Grosso, Brazil. These designs, apparently non figurative, show, according to their designation, representations of animals who play an important part in the economy and mythical corpus of these tribes. At the same time, repetition of these motifs is found in the decoration of other objects, through designs done by hand on paper and in body painting. Three general characteristics are found in the Haut Xingu art. First, its tendency to graphic metonymy; second, the variety of interpretations for the same pattern given by different tribes - or even individuals - contrasting with the momogeneity of the representation; third, the "stylistic code" nature which gives a "visual harmony" and an ideological unity to the Xinguanian cultural world.

Papyrus

@:PAPYRUS

Neuburger (1919: 245, 486), (Encarta: Papyrus / Egypt / Nile), Innis (1972: 16).

(Encarta: Papyrus): Papyrus, also paper reed, common name for a plant of the sedge family. The plant grows about 1 to 3 m (about 3 to 10 ft) high and has a woody, aromatic, creeping rhizome. The leaves are long and sharp-keeled, and the upright flowering stems are naked, soft, and triangular in shape. The lower part of the stem is as thick as a human arm, and at the top is a compound umbel of numerous drooping spikelets, with a whorl of eight leaves. Papyrus grows in Egypt, in Ethiopia, in the Jordan River valley, and in Sicily.

Various parts of the papyrus were used in antiquity for both ornamental and useful purposes, including wreaths for the head, sandals, boxes, boats, and rope. The roots were dried and used for fuel. The pith of the stem was boiled and eaten, but it was used mainly in making papyrus, the sort of paper that was the primary writing material of classical antiquity.

The papyrus of the Egyptians was made of slices of the cellular pith laid lengthwise, with other layers laid crosswise on it. The whole was then moistened with water, pressed and dried, and rubbed smooth with ivory or a smooth shell. The sheets of papyrus, varying from about 12.5 by 22.5 cm (about 5 by 9 in) to about 22.5 by 37.5 cm (about 9 by 15 in), were made into rolls, probably some 6 to 9 m (about 20 to 30 ft) in length. The Egyptians wrote on papyrus in regular columns, which in literary prose rarely exceeded 7.6 cm (3 in) in width; in poetry the columns were often wider in order to accommodate the length of the verse.

The Greeks seem to have known papyrus as early as the beginning of the 5th century BC, but the earliest extant Greek papyrus is believed to be the Persae of the poet Timotheus, who lived during the 5th and early 4th century BC. The use of papyrus for literary works continued among the Greeks and the Romans to the 4th century AD, when it was superseded by parchment. It was still used for official and private documents until the 8th or 9th century.

Scientific classification: Papyrus belongs to the family Cyperaceae. It is classified as Cyperus papyrus.

Felt and paper

(Encarta: Felt): Felt is a fabric built up by the interlocking of unspun wool fibers occasionally blended with small quantities of vegetable and synthetic fibers. True felt can only be made of fibers that are covered with minute, flexible, barblike scales, which allow the fibers to interlock when felted. Wool fibers, such as most sheep's fleece, are covered with well-defined scale structures; hair with poor scale definition, such as human hair, is not likely to felt... Felt making is one of the primitive arts,

antedating weaving... The resilience of felt makes it the only substance suitable for dampers on pianos and other musical instruments.

Felt is a very durable material, because of its chaotic construction. When a thread in a woven textile breaks, this will soon lead to the destruction of the whole fabric, if it is not mended. The chaotic construction principle of felt gives a factor of redundancy, whereas the construction of a woven textile is non-redundant. In felt, the breaking of many fibers has no effect on the overall stability of the whole fabric. It is one of the most durable flexible materials, also among the oldest. Its durability made it ideal for lightweight flexible body armor, a one-centimeter layer of felt will safely protect against arrows and knives. Animal felt is watertight, if prepared appropriately. A material drawback is its low tensile strength. The very nature of felt makes it unpractical for embedding fine patterns *into* the material, but it is well suited for producing patterns *onto*.

Paper is a felt material of specific flax type vegetal fibers. The prime importance of paper as CMM is well known. A thorough discussion is in Sandermann (1997).

(Encarta: Paper): Paper, material in the form of thin sheets, manufactured by the webbing of vegetable cellulose fibers... The basic process of making paper has not changed in more than 2000 years. It involves two stages: the breaking up of raw material in water to form a suspension of individual fibers and the formation of felted sheets by spreading this suspension on a suitable porous surface, through which excess water can drain.

Spinning and weaving

@:WEAVING

(Encarta: Textiles / Weaving / Loom / Spinning Wheel), Neuburger (1919: 169-199). Gimbutas (1995: 29, 67-68) dates the technology from -6000 onwards.

Spinning and weaving are among the oldest and most important neolithic technologies. If we admit spiders and silkworms to the account, spinning technology is even much older than the neolithic by millions of years. (Encarta: Spider / Silk). Arachne, the lydian mythological heroine of weaving, gave this animal phylum the name. (Encarta: Arachne), Bachofen (1925: 309, 310).

Spinning and weaving has mostly been woman's work throughout the ages. An example is given in Illias 1, 31: *histon epoichomenaen kai emon lechos antiosan* - that she may serve me as weaver and consort for my bed. Homer (1994: I, 4). This is also reflected by many worldwide examples of mythologies of spinning women. Bachofen (1925: 309-315). The spinning and the weaving are often connected with highly fateful woman magic and sexual symbolism. In German and English we can find an association in the similarity of the word sounds *Weben*, *Weib*, *wife*, and *weaving*.

Bachofen (1925: 309-310): Unter dem Bilde des Spinnens iund Webens ist die Thätigkeit der bildenden, formenden Naturkraft dargestellt. Die Arbeit der großen stofflichen Urmütter wird dem kunstreichen Flechten und Wirken verglichen, das dem rohen Stoffe Gliederung, symmetrische Form, und Feinheit verleiht. Vollendet treten die Organismen aus dem Scho.öße der Erde hervor. Von der Mutter haben sie das kunstreiche Gewebe des Leibes... Darum verdient Terra vor allem die Bezeichnung daedala ... maetaer plastaenae...[85]

Bachofen (1925: 311): Die Durchkreuzung der Fäden, ihr abwechselndes Hervortreten und Verschwinden, schien ein vollkommen entsprechendes Bild der ewig fortgehenden Arbeit des Naturlebens darzubieten.. so zeigt sich .. aufs klarste, welche erotische Bedeutung der Webarbeit und

---

[85] The forming power of *physis* is expressed in the *phyein*.

dem gekreuzten Ineinanderschlagen der Fäden zukommt. Als Kreuzung wird ... die Begegnung der beiden Geschlechter gedacht... und durch die Hieroglyphe des Kreuzes die geschlechtliche Mischung ... dargestellt...

Barthel (1996: 280): Ethnographische Beobachtungen bezeugen das Fortdauern der sexuellen Symbolik des Spinnens und Webens bei den Tzotzil in Chiapas... der breitgefächerten, dominierenden Rolle der Tlazolteotl als Große Göttin, Erzeugerin und Göttermutter... Alle Tlazolteotl-Formen, die im Codex Borgia mit dem Spindelattribut auftreten (Codex Borgia 12, 16, 23, 50, 55, 63, 74+59), lassen sich auf Phasen des weiblichen generativen Zyklus beziehen. Weiter können, wie Barthel (1976-86) gezeigt hat, mit den respektiven Seiten- (und Kapitel-) Zahlensummen bedeutungsvolle lunare Größen und ein "schematischer Schwangerschaftskalender" errechnet werden...

Barthel (1996: 289): Die Spindel als Zeitgröße wird in sinnvolle Perioden geordnet. Das Herstellen und Abmessen der "Tage" erfolgt durch die spinnende Große Göttin. Was mesoamerikanische Priester-Wissenschaftler hier gestaltet haben, besteht den Vergleich mit den spinnenden Schicksalsgöttinnen der Antike.

@:MOIRAE

A prime mythological example are the greek fate goddesses, the Moirae: Klotho, Lachesis, and Atropos, and their nordic pendant, the Nornes: Urda, Verdani, and Skuld.

Hamilton, (1942: 43): Klotho, the Spinner, who spun the thread of life, Lachesis, the Disposer of Lots, who assigned to each man his destiny; Atropos, she who could not be turned, who carried "the abhorred shears" and cut the thread at death.
(Hamilton 1942: 313): Beside the root of YGGDRASIL was a well of white water, URDA'S WELL, so holy that none might drink of it. The three Norns guarded it, who: *allot their lives to the sons of men / and assign to them their fate.* The three were URDA (the Past), VERDANI (the Present), and SKULD (the Future). Here each day the gods came, passing over the quivering rainbow bridge to sit beside the well and pass judgement on the deeds of men.

Platon makes note of this highly mythological connection in mentioning *the spindle of necessity* in his Republic, as related by Marius Schneider (1990: 30)[86]:
Schneider (1990: 30): Versuche... die Klänge der Sphärenmusik mit bestimmten Tönen zu identifizie-ren... die Stelle in Platons "Staat" (617 B)... mit der zentralen Idee der "Spindel der Notwendigkeit" verbunden ist: Diese Art von Poesie bildet in der alten Welt die mythologische Einkleidung eines durchaus ernst zu nehmenden philosophischen Hintergrundes... das Klingen der Sphären... Platon... schreibt: "Auf jedem Kreise (= Sphäre, die sich um die Spindel der Notwendigkeit zieht) saß eine Sirene, die sich mit ihm drehte und ihren Eigenton hören ließ, derart, daß alle 8 Stimmen einen großen Zusammenklang bildeten" Ferner heißt es, daß drei andere Frauen, jede auf einem Thron, in gleichen Abständen auf einem besonderen Kreis saßen. Es waren die Töchter der Notwendigkeit, Lachesis, Klotho und Atropos, die zusammen mit den Sirenen die Vergangenheit, die Gegenwart und die Zukunft sangen. Klotho (Gegenwart) bewegte zeitweise mit der rechten Hand den Außenkreis, Atropos (Zukunft) ergriff mit der Linken <30> die inneren Kreise, und Lachesis (Vergangenheit) packte mit beiden Händen abwechselnd bald die inneren, bald die äußeren Kreise an.

Textiles often serve a double role as functional elements of culture, providing for basic life support needs, and being at the same time a very suitable CMM. The patterns are very durable, as long as the textile will last. (This is, depending on wear and tear: 1 year to about 100. Permafrost and extremely dry climates have preserved specimens over several millennia, like in Inka and Egyptian graves). (Encarta: Inca / Egypt / Embalming).

There are three different ways to create markings {in / on} textiles:
1) Painting / printing onto the finished material. This is for example used in Batik (Encarta: Batik). This is the fastest technique, but less durable than the others.

---

[86] ->:GIMBUTAS_WHORL, p. 177

2) Embroidery is a method to incorporate patterns after the basic fabric has been created. For example: Shipibo embroidery as described by Gebhart-Sayer (1987: 268-275), and her exhibition of Shipibo specimens that can be visited in the Univ. of Tübingen ethnological collection.

3) Weaving by using differently colored yarns.

Typical examples of textile CMS are the andean weaving patterns as described by Silverman (1991), Boone (1994), Barthel (1971), Scharlau (1986). The Anatolian kelims have gained a measure of prominence since Mellaart claimed that their patterns are identical to those found in Chatal Hüyük, thus implying an unbroken tradition of about 8,000 to 10,000 years, transmitted exclusively in a female lineage (Mellaart 1989: II,63-68, IV,1-15).

The technical process of introducing patterns into the material is typically slower for type 2) and 3), and therefore not very practical for administrative use (space oriented according to Innis), but rather for long-time traditions, as the example of Mellaart emphasizes.

Rugs, Carpets

(Encarta: Rugs and Carpets). Introductory material, Ford (1997). Rugs and Carpets combine weaving and knot systems. This results in extremely durable and wear-resistant fabrics. The oldest well preserved Pazyryk carpet is 2400 years old, but there are earlier literature references, like in Homer. Ford (1997: 13, 33, 35). Oriental carpets are prime examples of the use for CM. This field has been widely covered, so that an extensive study would explode the present project. Hofmacher (xxxx) is an upcoming dissertation devoted to the subject[87]. Alfred Schinz relates from a personal visit to an Iraq carpet workshop that the girls there were producing the patterns after a song that a work leader sang to them (personal communication).

14.3.3. Composite CMM materials

From many societies are known composite constructions using organic and non-organic elements. Most conspicuous are (colored) beads of glass or (precious) stone or certain conch seashells (cowrie) that are stringed or mounted on threads or basketwork. These are usually classed as ornament or art, but it since their production is a craft that needs to be learned and is passed down in the generations, it is also part of the CMS. There are well known cases of their CMT use, like the ingenious Melanesian stick charts used by navigators of the South Pacific "that represent a complex communication scheme that is as different from Western writing as one can imagine." (Aveni 1986: 261-266). These devices were used to map ocean wave refraction and reflection patterns that originated from chains of islands as they are typical for the South Pacific, and correlate these patterns with star positions.

15. Example cases of CMM applications

@:EXAMPLE_CASES

15.1. The use of clay for CMM in ancient Mesopotamia

@:ANCIENT_MESOPOT

Herrmann (1977: 55-58, 94-100, 111-128), Neuburger (1919: 133-154, 316, 399-410, 441-443), Michalowski (1996: 39), Sandermann (1997: 12-13), Sirat (1988: 189-192), Skoyles (1988: 372).

The use of clay for CMM in ancient Mesopotamia is an instructive case. The material situation was characterized by a shortage of the essential construction materials wood and

---

[87] Dissertation in progress 1997. (Inst. f. historische Ethnologie, Frankfurt, Prof. Dr. Christian F. Feest, Tel. 069 798 22120.)

stone. Most construction was done with sun dried clay bricks, and composite construction in daub and whattle, i.e. a reed and clay composite material. Clay was used for all imaginable objects of daily use, even furniture and doors. Wooden doors were rare prestigious objects which were handed down as heirloom and dowry, bequeathed in wills, and were regarded as family treasures (Vajda 1995: 23). Since one needs wood to fire clay (but that was not available), fired and glazed tiles were reserved for the most prestigious state buildings, like the Ishtar gate in Bablyon. (Personal communication: Dr. Alfred Schinz.)

Because of this unique situation, the discussion of the CMM information processing tradeoff factors shows an entirely different balance than, for example, the ancient Egyptian case.

As was noted above, the economic advantage of clay is that it is abundant and cheap to procure, easy to inscribe, and best of all, very durable when baked, but because of the shortage of firewood, most of the clay for recordkeeping was just sun-dried. The information- density-/ stability- / durability / -weight tradeoffs of clay are this: It can only be handled in small bricks (because larger ones would break and/or be too heavy to handle). The maximum size of a clay tablet that can be handled by a person is about 30*30 cm [88]. Information density is similar to Egyptian writing with about 3 chars per cm^2 , giving roughly 1000 chars on a 20*20 slate. A 10*10 slate, which is about the optimum size for handling in wet form, contains only about 300 chars. So while the information density per unit of storage may not seem to compare too badly to the Egyptian information technology, the information/weight ratio is dismal: about 1/5 to 1 kg per 1000 chars, compared to about 10 to 50 gr. for the papyrus. The material stability and handling properties are, overall, not too advantageous, either: to transport the equivalent of a book (1000 slates = 200 to 1000 kg), one needed a sizeable oxcart or two of them. And one better didn't move the clay tablets at all, for danger of breaking them or getting them in disorder. The mechanical clumsiness of clay bricks severely restricted the collation of larger volumes of clay inscribed tablets to books. One clay "book" needed a whole storage rack, built quite solidly (of the very scarce wood), which would otherwise hold a whole library of papyrus rolls. Compared with an Egyptian papyrus scroll library,[89] in clay tablets, would need several large rooms instead of just one. But, as already mentioned, clay has advantages that make it specifically useful for purposes of which the erstwhile babylonian writers and administrators would have been hard put to think of: The fact that the Ashurbanipal library was burned luckily preserved the originally unbaked clay tablets for eternity. This effect was quite contrary to what happened to the Alexandria library. By this quirk of antique information technology, was it possible at all for modern archeology, to find out so much about the ancient cultures of Mesopotamia and other places of the Near East, who also used clay tablets, like Ugarit and Mycenean Greece, and which were also gutted by fire.

Besides clay, the Mesopotamians used waxed wood for short and medium time record keeping. Since Assyrian times, papyrus was also used, since Assur had invaded and conquered Egypt, thus opening up the papyrus trade. Because of the particularities of the writing technique, the cuneiform writing system can only be used with soft malleable surfaces. It is unsuitable for papyrus and ink writing. For this reason, the scribes in Assyruan and Persian services also used the Aramaic language and Aramaic characters (Kerckhove 1988).

---

[88] The size of modern roof tiles indicates the optimal size/weight/stability distribution that can be achieved with high quality oven fired clay. Ancient Mesopotamian technology (where clay was mainly used for writing) was in no position to supply such a consistent material engineering standard, mainly because of energy scarcity. One had to burn whatever organic matter was available, like cow dung in contemporary India. This doesn't yield the high temperatures to harden the clay completely.

[89] ->:PAPYRUS_LIB, p. 170

15.2. Papyrus use as CMM in Antiquity

@:PAPYRUS_CMM

Kerckhove (1988), (Sandermann 1997: 25-41), Sirat (1988: 173-201), Skoyles (1988: 362-380), König (1997,I: 157-160, 312-313). Material durability or the lack of it, is an important factor for the record keeping materials of a society. It affects the endurance of the culture itself to the most grave consequences. This is especially the case once a culture comes to rely heavily on one specific type of CMM that is dependent on a specific historical and ecological configuration.

Papyrus as material for CMM is a historically unique case, as it is native to the Nile river (only later was it transferred to other regions), and the combination of the Nile swamps as the habitat of the plant, and the very dry surrounding climate of Egypt provided a singular situation that allowed the development and use of that otherwise very perishable vegetable fiber substance for writing material. Papyrus would deteriorate quickly in moist climates, like for example India. Moreover, the ecological situation of ancient Egypt gives another singularity, since a dry climate usually cannot support a high population density (and support a level of cultural organization that gives the incentive to develop a writing system) such as was possible in Egypt without much effort through the Nile floodings. The other historical case of early civilization, Mesopotamia, achieved that end only through the application of mass labor for vast irrigation systems.

Papyrus was the standard record keeping material in ancient Egypt, and later hellenistic Greece and Rome. But even in a dry climate, papyrus ages and needs to be replaced, the contents of a roll needs to be copied onto a new roll. The information-technical infrastructure and requirements for the upkeep of a papyrus library is sketched under the header: "A model papyrus scroll library", p. 170. Its later use in the different climates of Greece and the Roman empire suffered from its low durability in humid conditions. Later, the much more durable parchment was substituted, but parchment is so much more expensive, giving rise to other information problems, as discussed by Innis (1972: 85-140).

A library of about 10,000 scrolls could be called representative for a large regional administrative center or temple in the late Egyptian / Hellenistic world. About 20 scribes would be the personnel necessary for the upkeep and maintenance of the library. As theoretical maximum, one scribe can copy at most two scrolls per day, so that the whole library could be recycled in about 15 years by one person. But the practical situation would be much less efficient. The repeated copying of papyri allowed the transmission of the records through three millennia.

The end of the dominant role of the Papyrus CMM is marked by the destruction of the Alexandria Library, which also marked the fall of the whole of antique culture. Canfora (1988). Fire was the deadly enemy of this CMM (same as paper), and before the adaptation of fire-resistant buildings, fire extinguishing technology and the fire brigade, the paper/payrus based CMM were extremely vulnerable to physical destruction, leading to an extreme fragility of writing based civilization. Platon's criticism of writing in *Phaidros* (274c)[90] had indirectly hinted at some of these problem factors: the relegation to writing makes the CMM prone to accidental loss and vulnerable to accidental destruction. Oral memory is protected by the self-preservation instinct of its bearer. Also, most oral material is stored redundantly, because in the oral traditions, everything that is memorized is recited aloud, usually in front of an audience, and many times. The natural tendency of humans to tell, and listen to interesting

---

[90] ->:PLATO_PHAIDROS, p. 201

stories, is the life blood (or the driving machinery) of oral tradition. Ong (1977: 30-77). This insured that many people of a society had heard at least some part of the story, and could retrieve it out of their own memory storage, even if the Aoide died without a successor. The collating of many distributed pieces of collective memory is probably how the "Homeric" epics as we know them came into written existence. Illich (1988: 15-21), (Powell 1991), Ong (1982: 58-61). Only when book printing made the physical destruction of all existing exemplars of a text less likely, could writing based civilization really take hold. Goody (1977), (1986), (1987), Ong (1977), (1982), Scharlau (1986).

In Antiquity, the connection of papyrus to the large scale bureaucratic record keeping requirements of the ancient empires was a decisive factor, as Innis has noted (1972). The Roman Empire needed a constant supply of papyrus for its bureaucracy, and its lack contributed to the collapse. McLuhan (1972: 61).[91] Indigenous cultures did not only resist the adaptation of writing out of sheer primitivity, but also because writing enforces a certain cost factor, its insidious main problem being that what is stored on paper (or other materials) will tend to vanish from human memory, as Platon had duly noted in Phaidros. The huge knowledge loss after the breakdown of the ancient civilizations was inevitable because of lack of skilled manpower to maintain the libraries, since papyrus has a half-life time of about 100 years in a humid climate like the northern Mediterranean areas, and would simply rot away, even if the libraries had not been burned. To keep a library operative, a constant expenditure in man-power was needed for the re-copying of scrolls. In ancient times, this work was mostly done by slaves. This highly trained slave manpower was not available any more after the breakdown of the Roman empire, so nothing could be done to prevent the massive information loss. Finally, the medieval church reconstructed the manpower -training and -copying infrastructure based on the parchment and on the monastery system to revive writing culture. The only place where papyrus naturally survives for long periods, without recopying, is in fact Egypt, because of the extreme dryness of the country.

15.3. A model papyrus scroll library

@:PAPYRUS_LIB

This is a calculation of the information infrastructure requirements for papyrus libraries. For lack of original sources, the comparable figures of a medieval monastery library are taken as base. Illich (1988: 37-42). The largest known ancient library was that of Alexandria in Hellenistic times, it had 500,000 or more scrolls (Canfora 1988). An average regional center in Hellenistic or Roman times may hold a library consisting of about 10,000 scrolls[92]. The papyrus scrolls came in different sizes: from 10 cm to 30 cm in width, and 3 m to 9 m in length. The optimum size is determined by material properties and the conditions of writing: scribes squatted down on the ground, and the skirt of the scribe served as writing table substitute. An extensive discussion of the psychological and physiological factors of writing is in Kerckhove (1988): "The Alphabet and the Brain". Main references there: Sirat (1988: 173-201), Skoyles (1988: 362-380). A scroll 9 m in length is about the maximum that can be handled with relative ease, although much longer ceremonial or burial scrolls are known that were not intended for daily use. A long scroll is impractical for text that must be referenced often, because of material wear.

To facilitate the informational calculation, we will commit a little anachronism and apply the DIN norm to ancient Egypt. On the average, a scroll would be 3 m in length and 30 cm in

---

[91] ->:TECHNO_FACTOR, p. 155

[92] For ancient Egypt, the figures are even much lower, and calculate about 1000 rolls in an average temple. (Personal communication of Jan Assmann. Also Georges Posener: Leçon inaugural au college de France: The output of a scribe's office in one year was about 120 m of papyrus.)

width, which is about the equivalent of 15 pages DIN A4 paper per scroll. Let us calculate 10 min. scribe time per A4 page, at a yield of 1000 chars per page. This gives us 15,000 chars per scroll, needing 150 min. or roughly 3 hours (with a break) to copy a scroll. A modern book with 300 pages and the higher printing density of about 3000 chars per page contains about 1,000,000 chars, ie. the equivalent of 60 papyrus scrolls. If we have 10,000 scrolls in our egyptian model library, this would contain in total 15,000 * 10,000 = 150 million (mega) chars, or 150 books. This is about what an ordinary literate citizen in our contemporary society may have sitting on her private bookshelf (requiring 3 cm shelfspace per book, totalling 450 cm, i.e. a shelf with 5 boards of 1 m length), and even if she doesn't keep them around her apartment, this is a good measure of what amount of reading material someone who does very little reading, will process in a whole life - if it is not books, then it will be newspapers and magazines. For a modern literate worker, 150 books or 150 mega chars may be a measure of what is routinely processed (read or scanned and excerpted) in about one year, for a research project, or a dissertation.

To return to our ancient model library: To write one scroll, we need about 3 hours. To write 10,000, we need 30,000 hours. There is considerable overhead for handling the scrolls, and doing supportive tasks for the writing process. Because of the low information density, scroll handling is expensive. One scroll, when rolled up, is a cylinder of about 5 cm diameter and 30 cm length. A rack to orderly store single scrolls would need a "pigeonhole" construction of about 10 cm squares when done in wood. For human access, we limit rack height to 1.5 m or 15 stack spaces in height. That amounts to 667 stack spaces in width, or about 66 m, to store 10,000 of them. Compared to our book library, that is a large size storage for the amount of information stored. To house it, we need a room of about 20 m length and 6 m width, with two double racks. Since one would more likely keep the scrolls in batches of 10 to 20 in a 20*20 cm cubicle, the rack length required would be less, about 15 to 25 m. Still there is some footwork to do to retrieve the scrolls from the racks. Scrolls need to be flattened out to read. The flattening procedure adds another cost factor into egyptian information processing: This becomes clear when compared to a book. The book binding allows a relatively sturdy back material to hold together the soft and thin pages. When reading one page, one doesn't need to disturb the pages lying in front or back. In order to read through a scroll, there will be mechanical wear and tear on the text portions that have to be unrolled before reading the one that is looked for. This adds another factor shortening the life of a scroll. König (1997,I: 158-159, 312-313).

Writing material needs to be prepared, there is no factory made pen and ink available, which severely limits writing speed when you have to prepare your own ink and chew a reed stick that you call your 'pen' every few minutes. Let us calculate six hours per roll including support work and breaks, that gives 2 scrolls per working day of 12 hours. Let us assume 300 working days per year per scribe. To copy the whole library of 10,000 rolls, he needs about 15 years. Because after 15 years, the rolls which he had copied at the start of his career, would have worn out and need to be replaced by now, so he could start afresh copying his library. Now actual turnover and wear and tear of papyrus is probably higher in constant use, so that we should multiply the man- (scribe-) power requirements of ancient Egyptian word processing by a factor of ten. Ten scribes to support just the permanent data base. How many more for day-to-day and record keeping tasks that the organization requires? The libraries resided in the temples. These were also the center of all the accounting and bookkeping of the whole region, starting with the regular work of keeping track of fields between the Nile floods, the inflow and outflow of seed and foodstuffs in granaries and storehouses to support the local economy, and the tributes paid to the higher centers: the central temples, the pharaonic tributes. Then add the long term requirements for building and transport and irrigation infrastructure

construction and maintenance, waterways, channels, flood gates, etc. The number of scribes required is hard to calculate, but we have figures that are from much more recent times, the european monastery system. It needs to be remembered that up to Gutenberg's time, 1450, the information processing situation all over the world was not very different from the Egyptian scenario. A given region may be able to support a monastery housing 100 monks, and when there are 20 to 30 specialist scribes among them, this will be a fairly accurate figure. Illich (1988: 37), (p. 39-40) for the problems of indexing and retrieval of scripts.

15.4. Cultural memory, civilization, and climate

@:CMM_CLIMATE

(Innis 1972: 139): Limited supplies of satisfactory writing material in India strengthened the monopoly of the oral traditions held by the Brahmans, emphasized the importance of the concept of time... India had no god of writing but a goddess of knowledge, learning, and eloquence.

In a hot humid climate like India, the durability problems of materials like papyrus are considerable, especially in the monsoon time. (Sandermann 1997: 232-234, and personal experience). The monsoon wet rot and insect appetites would have considerably shortened the half-life of papyrus scrolls und made it difficult to impossible to keep large papyrus libraries in airy wooden buildings open to the insects. Here, the first papyri would have rotten away before the scribes had been through copying the last one[93]. It is likely that this was a very practical reason why the Indian Brahmin culture preserved its oral memory aspect so much more dilligently than the ancient near-eastern cultures in their drier climates.

In hot and humid climates, the long-time storage of large-volume papyrus or paper libraries needs buildings of stone or brick construction. This is again a matter of social investment for the necessary buildings. Stone construction is more expensive than wood, and brick has become more widely available in modern times only. To bake bricks, even though the clay source material may be abundant, needs a lot of thermal energy. From the wood needed to fire the bricks for one building, many houses could be constructed. The availability of wood (or the scarcity thereof) was a serious limiting factor. In rural India, the prime heating material for cooking was/is cow dung, which doesn't yield enough energy density for brick firing. Harris (1989: 309-313). Before the advent of coal mining, the energy cost of bricks was therefore prohibitively high. Even in mud-rich mesopotamia, most of the construction was done with sun-dried bricks, and only a few glazed tiles like they have been preserved in the outer covering of monumental buildings.

15.5. Color as coding dimension

@:COLOR_CODING

The studies on indigenous use of color in CMM, Silverman (1991), Barthel (1971), of *quipus* and Andean weaving patterns, *quillcas*, indicate that the informational dimension of color was utilized in more depth and detail than in the European CMT. European {writing / printing} is largely color insensitive (black / white) because of technology. Since color printing is more expensive than black and white, this informational dimension tends to be used less in the western CMT after the printing revolution. Illich (1988: 50) notes that color was widely used in earlier European manuscripts[94] and even more so in Arabic writing. A notable case of extenxive color use in Western CMT is of course art, and the craft of map making. Tufte

---

[93] See also: leaves. In olden times, palm leaves have been used for writing in India. These are more durable in a humid climate than papyrus, but also more fragile, leading to a mechanical problem. They must be collated as single leaves with strings and cannot be bound like paper, leading to considerable overhead for storage and handling.

[94] The book of Kells as a good example.

(1990), (1992) gives ample information on the informational usage of color, especially where it can convey information "at a glance" extremely quickly, through judicious usage of the eye's vast capacity of color processing, that is entirely cut out in the black/white alphabetic technology. With modern multimedia computer technology, color begins to be used on a wider scale, but there is little knowledge how to apply it wisely. Tufte (1990: 82, 88) describes some of the garish misuse of color by aesthetically untrained software designers who have suddenly the color palettes of computer video available, but don't quite know how to use them.

15.6. Quipu mnemotechnics

@:QUIPU_MNEMOTECH

When the European and South American cultures clashed in the conquista, there arose many issues of cultural domination. Besides the brute dominance factor of "guns, germs and steel" (Diamond 1997: 67-82), an important question is whether the Inca quipu system could be shown to have qualities that the European writing system lacked. This (so far hypothetical) factor is here called the *quipucamayoc mnemotechnics*. The further question to ask is, if the prior discussions in the anthropological literature of the quipu *may have systematically omitted relevant material*.[95] The prior interpretations focus on the aspect that *quipu* may be limited in its *semantic* expressibility because it cannot encode language. Scharlau (1986: 89): "... Grenzen. All das was nicht in irgendeiner Weise quantifizierbar ist, kann offenbar nicht dadurch festgehalten werden." This may contain a misconception that could have been created as consequence of the specific attention that the Spaniards (as the *not-so-objective-and-impartial* documentors of the last remaining traces of quipu mnemotechnics) concentrated on the numeric statistical value of the *quipu* as devices to extract tribute and taxes from the population. It is easy to understand that the Spaniards, after destroying all the quipus they could locate (and probably killing all the *quipucamayoc* they found as well), (Scharlau 1986: 84), then belatedly noticed that after they had carried off all the booty and loot from their conquista, that the administration of their newly acquired territories suffered terribly from lack of statistical information, and then they were told by the natives that this had worked perfectly well with the quipu system that the conquistadores had just destroyed so diligently. So the Spaniards tried to preserve the last bits of the knowledge that was encoded in them for the purpose of extorting the tributes like the Inca rulers had done so expertly before them. Engl (1991: 156, 203-204, 359-370, 400-406), Scharlau (1986: 89-90).

We will now ask the converse question: what could have been the special advantage of the *quipu mnemotechnics*, which the *quipucamayoc* used, and could this have been something beyond the expressive range of alphabetic writing? Scharlau makes reference to Guaman Poma de Ayala, who attempts to describe in his work the old quipu-order with the new medium of alphabetic writing (1986: 92). Of course, Guaman as a member of the conquered society was obviously not able to stand up and declare that the *categorical ordering system* developed by the *quipucamayoc* that was embodied in their *mental operation modes*, (or their CMA in the present context), was *superior* to anything that the Spaniards could use, and was unparalleled in all symbolic productions of humanity, until the 20th century, when structural formal grammars were invented and employed in computer software technology. The strands of the quipu could be used for categorical ordering systems that are described with technical formal grammars. See Bauer (1971,II: 100-144), Brauer (1968: 108-115). It can only be inferred indirectly that the *quipu* may have been *the ideal medium for a structural categorical notation* and (perhaps) it could have been developed further in this direction towards a

---

[95] ->:QUIPU, p. 163, ->:CONCEPT_IMMUNIZE, p. 198

superior structural categorical mentality, had the Spaniards not cut the whole culture short. Scharlau (1986: 84).

Since the Spaniards had so diligently destroyed all the data material and all the memory carriers of the Inca society, there is probably no way to get positive evidence for such a hypothesis. All that is possible here, is to present an indirect analogy in form of a structural grammar system of ritual as is described in detail by Staal (1982), (1986), (1989), in his description of the *science of ritual.* See also:

>:RITUAL_PATTERN, p. 224, ->:STAAL_RITUAL, p. 225.

15.6.1. The tactile aspect of quipu production and reading

Another possibly decisive mnemonic aspect of the quipu that has not been found in the alphabetic literature, is the *tactile aspect of quipu production and reading*. It is mentioned in the respective section that western cultures tend to repress the tactile dimension. The example case that demonstrates this glaringly, may be that the most conspicuous use of knotted cords in the Eurasian civilizations was for flagellation.[96] This aspect of the tactile dimension, because it has not been found in any literature, cannot be discussed directly, but some indirect reasoning may be allowed. The tactile dimension of quipu reading gave it a great difference over the visual alphabetic technique, that has been described as an *excarnated* CMT.[97] The possible effect of a much more efficient enhancement of the personal memory recollection by the *multi-medial*, *poly-aisthetic* effect of something that is felt simultaneously when it is seen as form and as color, and recited aloud, while memorizing it, can only be hinted at with the observation of Schärli and the work of the Polyaisthesis school. Schärli (1996: 29), Roscher (1997) and Platon's famous passage in Phaidros. The important mnemonic effect of the touching is again evidenced by the universal usage of the rosary.

>:ROSARY, p. 163, ->:SIDE_EFFECTS, p. 200, ->:PLATO_PHAIDROS, p. 201

---

[96] ->:TACTILE, p. 147, ->:TOUCHING_PAIN, p. 148, ->:PANETICS, p. 233

[97] Discounting for the moment that before the printing age, reading consisted also in vocal reproduction, which gave writing some measure of incarnation. Illich (1988: 42).

>:IN_EXCARNATION, p. 199

16. Writing: History, and Typology

@:WRITING

In this section, the theory and historical development of writing systems, as described from the viewpoint of western academic tradition, will be reviewed. The main sources are Daniels (1996), (Encarta: writing, alphabet), Haarmann (1992a). Secondary sources referenced are: Noeth (1985: 256-273), Amiet (1966), Cohen (1958), Diringer (1948) (1953), Driver (1948), Gehlen (1964), Gelb (1952), Kyriatsoulis (1996), Lambert (1966), Schmandt-Besserat (1978, 1992), Schlott (1989). Daniels (1996) gives a recent and comprehensive overview of all writing systems that were or are in use, and can be said to reflect the latest academic consensus on the matter. For matters of convenience, the often-cited source Haarmann (1992a) is abbreviated with HA in this section. Some statements contradicting the western academic mainstream are given under:

>:WRITING_CRIT, p. 193

Humankind is defined by language; but civilization is defined by writing.

Daniels (1996: 1)

Writing systems are used to convey and preserve language across time and space...

O'Connor (1996: 787)

16.1. Prehistory of writing, earliest traces of cultural memory technology

Literature referenced: Lock (1996), Anati (1991), Daniels (1996: 19-24), Dechend (1977), (1993), (1997), (and personal communications), Gimbutas (1974), HA (Haarmann 1992a) (50-56, 69-81), Haarmann (1997), Leroi-Gourhan (1982), (1984), Meister (1997), Mellaart (1989, I-IV), Marshack (1972), Semiotica (1994). Lock (1996) is the most comprehensive and most recent source for all evolutionary aspects of the history of symbolization.

The interpretation of the archeological record poses a set of specific problems, when we want to reconstruct the thoughts and habits of ancient people by those traces that have been preserved throughout the millennia by all kinds of fortuitous conditions. In his article, "On the scientific study of paleoart", Bednarik (1994) presents a short and concise summary of the problem cases that apply equally well to the study of the pre-history of writing.[98] In a similar vein the statement of Hertha v. Dechend:

Dechend (1997: 9): Raising the question about the nature of those clues and traces which might enable us to reconstruct at least some thoughts of early homines sapientes sapientes, we have to state first, that next to no phenomenon should be accepted as "suggesting itself", and "obvious", no instrument, no technique, no rite, no game, no dance. The more fundamental, and the more apparently self-suggesting a technique, the more ingenious the brain that hatched it.

16.1.1. Oldest symbolic representations

The oldest known (homo erectus-) man-made notches are on a bear-skull from the lower Acheulian period, dated to about 430,000 years ago (Haarmann 1997: 674). As to the interpretation, it is quite debatable whether these notches "seem to be related to some religious ideas of the Azykh people" (ibid.), ie. if they are records of symbol usage. There are also indications of symbolic capacity of the Neanderthal people 150-200,000 years ago (Haarmann 1997: 675), the available specimen showing "... an example of archaic man's sense of abstraction and symmetry" (ibid.).

---

[98] >:BEDNARIK, p. 195

(ibid.): With the appearance of modern man, the impact on symbol-making becomes more dynamic... Among the outstanding genres of artistic activities are sculpturing and painting. The oldest evidence for these activities dates back to the Aurignacian period...
There are two facets by which early cave art distinguishes itself. One is the compositional technique of combining two categories of symbols, namely naturalistic or sub-naturalistic motifs with abstract symbols, linear and stylized. If man's general capacity of using symbols is the key to culture, then the capacity of distinguishing between iconicity and abstractness as two cognitive procedures is man's practical approach to symbol-making.

From the viewpoint of the modern observer, the naturalistic pictorial representations are easier to interpret than abstract patterns. (Even if it is not possible to establish what the "meaning" of the pictures of animals in caves like Altamira or Lascaux was for the ancient people, and if there had been cave rituals, in which these might have played a role). (Haarmann 1997: 676). The abstract patterns are harder to classify than pictures: for example the dot patterns that appear in between the animal paintings in the cave paintings of Lascaux (HA 51-52). Whatever those "meanings" were, any interpretations will remain open to argument. One example is the pattern of the "baton de command" found in Cueto de la Mina in Asturias, minimum age 12,000 years. The (very controversial) interpretation cited in (HA 54-57) and Marshack (1972: 213 pp.) sees it as a codification of lunar phases. More examples for interpretations of abstract symbols are given in Haarmann (1997: 676).

16.1.2. Technological and social constraints for ancient cultural memory technology

An important consideration for the interpretation of possible cases of para-writing[99] are the technological and social constraints for ancient cultural memory technology (CMT). Writing is a CMT typical for agricultural people with a sedentary lifestyle. Goody (1987: 300), Diamond (1997: 215-238). We should consider the Cro Magnon prehistoric *homines sapientes sapientes* as intellectually equal to ourselves (Dechend, 1997: above), but they had a lifestyle quite different from ours: they were nomadic people, following the animal herds in their wanderings. They couldn't carry very many things along with them. (Sahlins 1976: 33-34). For this reason, if they chose to make recordings, they could record only the most important, most critical information relevant to them. Probably, calendaric and astronomic information is very high on the priority list. (Marshack 1972, Dechend 1993, Aveni 1986). And as nomads with few moveable belongings, they also had little use for accounting methods for foodstocks and possessions, as the later Mesopotamians did (Lambert 1966). It is therefore more likely that nomadic peoples will develop quite different ways to transmit their cultural memory than sedentary ones, because their constraints are so much different. The Aborigines of Australia present us with a lifestyle and habits that may be quite similar to such pre-historic hunter-gatherers, and inferences can be drawn from their example. Strehlow (1971), Munn (1973).

16.1.3. Some borderline cases of prehistoric para-writing

The archeological record presents us with many borderline cases of what can be called *para-writing*, systems of patterns or "ornamental" systems whose language encoding character cannot be established, and that cannot therefore be properly classified as writing. It is largely a matter of informed speculation to deduce from these remains what forms the forerunners of writing systems had and how they were used.

@:OLD_EUROPE

A typical borderline case of para-writing are the markings used by the cultures of Old Europe from around -5000, Belgrad area. Some researchers consider them as writing, with specific meanings attributed to the markings, the majority classes them as pure ornament. Literature:

---

[99] ->:PRELIMINARY_DEF, p. 103

Gimbutas (1974: 17), (1995), Haarmann (1992: 70-81), Haarmann (1997: 677-679), and the discussion in Daniels (1996: 21-22). This case gives rise to the question whether there are alternative coding systems that we can hypostasize for ancient cultures that are of entirely different type than for encoding language constructs. The astronomical and mathematical possibilities may still have room for further exploration, and further interdisciplinary research could yield more material. See also: Dechend (1997: 1, 15), (1993), Aveni (1986).

@:GIMBUTAS_WHORL

One particularly interesting possibility for a hitherto unexplored mode of encoding are the zigzag patterns on spinning whorls depicted in Gimbutas (1995: 67). None of the researchers in the literature[100] makes any reference to the obvious fact that whorls revolve in normal usage, and so it is possible that these patterns indicate encodings of a cyclical characteristic, or the possibility that these patterns could only be "read" when the whorls were spinning. With the presently available insufficient data material, a further enquiry in this possibility is outside the scope of this study but it could be the subject of a consecutive work. See also:

The widely publicized theories of Schmandt-Besserat (1978, 1992) about clay tokens being the precursors of writing in Mesopotamia have received increasingly critical reviews (Daniels 1996: 22-23) and so, the pre-history of writing continues to remain in the dark.

16.1.4. Earliest writing

The oldest writing system was found in Uruk, Mesopotamia, dating around -3200 (Lambert 1966), and a little later the most ancient hieroglyphs in Egypt. The academic consensus is today that the *idea* of writing came from the Sumerians to the Egyptians. (Daniels 1996: 24, 33). Chinese writing was probably invented independently.

16.2. Typology of writing systems

@:WRITING_TYPOLOGY

This section contains a typology and overview of the historical development of writing systems. The main sources are Daniels (1996) and Haarmann (1992a). The source Haarmann (1992a) is abbreviated with HA in this section. Typology adapted from: (HA 147). The abbreviation CS (*character system*) is used as more general expression for *writing system* to cover abstract-logographic types.

Logographic: one char encodes one concept or one word
      Pictographic
      Ideographic
      Abstract-Logographic

Phonographic: encoding of sound sequences by chars
      Segmental   chars for consonant patterns
      Syllabic   chars for syllables
      Abjad   chars for single consonants
      Alphabetic   chars for consonants and vowels

---

[100] Barthel, Gimbutas, Haarmann.

16.2.1. Logographic

Examples of pictographic CS

Ancient Sumerian from -3200 to -2550 (HA 94-100,152-153)
Ancient Egyptian before -2750 (HA 101-105,128-133, 212-214)
Aztec pictograms (HA 201-206)
These early writing systems derive from pictorial representations, i.e. the picture of a hand is used as the symbol for the concept "hand" etc. A further development into abstraction and generalization towards a logographic system occurs when the picture of a foot is used for the concept of "to walk, to go".

Abstract-Logographic

From (HA 148, 207-210)
Mathematical symbols
Dance notation systems
Musical notation
Professional technical coding systems, like chemistry, electrical symbols
Computer codes
Typographical symbols like "&", %, #, and @

Ideographic-Morphemic Chinese CS

China and Japan are the main great civilizations using the Chinese writing system (Korea is still partly using it besides their Hangul system). It probably originated entirely independently of the western Eurasian writing systems. (Daniels 1996: 189-190). It incorporates within its CS four different kinds of categories of representation (HA 171-187). Category 1: Its oldest chars are derived from pictorial representations which still constitute a small part of the CS, called *hsiang hsing* (HA 179). Category 2: there are single char ideograms called *chih-shih*, (HA 180). Category 3: compound ideograms of several chars are called *hui-i*, (HA 180). Category 4: compound chars with a morphemic element are called *hsing-sheng* (HA 181). This character formation pattern makes for about 90% of all current Chinese chars. It constructs a character from two root symbols: the semantic *determinator* and the phonographic *indicator*. There are two more categories of lesser importance: *chuan-chu* (HA 181) and *chia-chieh* (HA 181). For further discussion of Chinese writing:

16.2.2. Phonographic

Phonographic CS are encodings of sound structures. They are descendants of older Logographic CS (HA 211). The best recorded instance of this development is in the history of Mesopotamian CS.

Segmental

Egyptian Hieroglyphic, Hieratic, Demotic from -3000 to about -100 (HA 213-223).
This CS encodes only consonant structures consisting of 1, 2, or 3 consonants. Since vowels are omitted these are called segments, to distinguish from syllables which are vowel-consonant patterns. There are numerous remnants of the older egyptian logographic structures (HA 218). The writing direction was variable. Hieroglyphs could be faced any of the four directions, so that the writing could mimic a dialogue between persons who faced each other - like speech bubbles in cartoons (HA 221, Schlott 1989, 162, 163).

Syllabic

Later Sumer cuneiform from -2400 (HA 223). In Sumerian use, writing always kept a strong logographic component. The descendant cuneiform writings of the following peoples kept the shape and the techniques of character production, but adopted the system to a different language model, the semitic languages of Akkad (-2300), Babylon (-2000), Assur (-1500 to -700). They evolved more and more into phonographic systems (HA 225-242). The cuneiform script remained in use in astrological schools in Babylon until the Roman era, 50 CE. (Sandermann 1997, 14).

The Japanese writing systems of Hiragana and Katakana encode syllabic structures. This is an efficient method, because Japanese language has a simple syllabic structure of about 100 consonant-vowel (CV) morphemes. Coulmas (1981: 59), (Smith 1996: 210-212). Maya writing is a mixed logographic / syllabic CS (Macri 1996: 175).

Semitic Character Systems: Abjad / Aleph-Bayt

The exact descendance of the Semitic script, whether from an Egyptian or Mesopotamian script, is still a matter of debate. (Daniels 1996: 24-25). Somewhere on the Levant, a West Semitic (Canaanite) language-speaking people first developed an encoding standard for single consonants (abjad) between -2000 and -1500 (O'Connor 1996: 88-90). It writes from right to left. A family tree of ancient Semitic scripts is given in O'Connor (1996: 89). The northern branch gave rise to Ugarit cuneiform around -1500 (HA 267, 380) and Phoenician -1600 (HA 268 ff.). From this were derived the Aramaic (-800 to -400), and Hebrew (-500). The first characters of these scripts are called Aleph (Alep), Beth (Bayt), and Ghimel, Dallet. This naming was later adopted by the Greeks as Alpha, Beta, Gamma, Delta. From the South Canaanite branch arose the Arabic scripts. At later times, a dot notation was introduced for vowels in Hebrew and Arabic.

A minority opinion sees an influence of the Minoan writing systems Linear A and B on the Phoenician alphabet. There is some indication of cross cultural influences between the Minoan civilization and the Phoenicians who took over the mediterranean trade from the Minoans after their civilization collapsed around -1400. Haarmann believes that an Old European CS influenced the Minoan CS which in turn influenced the Phoenician (HA 70-94, 267, 283). A discussion and critique of this view is found in Daniels (1996: 21-22, 24-25).

Diffusion of the Canaanite system: Hebrew / Arabian / Indian, and East Asian

The presently used writing systems of most of civilizations on this planet are derived from the common semitic Canaanite source (O'Connor 1996: 89). (With the exception of Chinese-derived writing, which originated independently). These are the Arabic and Hebrew scripts, and the various Indian systems derived from Brahmi script (Devanagari and many others), see (Daniels 1996: 371-442), (HA 364), and Bright (1996: 384), and the South East Asian scripts, like Burmese, Khmer, Thai, etc. (Daniels 1996: 443-484).

Development of the Western Alphabet

The Greeks adopted Phoenician writing and added signs for vowels around -800. The writing direction was changed, first to the boustrophedon (as the ox plows) manner, then going from left to right (HA 282-288). The Greek alphabet was standardized in -403 by Archinos (HA 289). It diffused in all directions and gave rise to the Roman alphabet by the bridge of Etruscian and Tyrrhenian alphabets (HA 290-294). Other important derivations from the Greek CS are Cyrillic and Armenian CS. A dissenting opinion on the origin of the alphabet is voiced by Bernal (1987, 1990, 1991), who assumes a continuity of development between the

cultures of ancient Egypt and the Levant and ancient Greece, and a strong Phoenician presence in ancient Greece. His theories are discussed in Daniels (1996: 23, 267).

16.2.3. Korean Hangul: the most refined implementation of the alphabetic principle

@:HANGUL

There is one writing system in wide usage that is perhaps a more perfect implementation of the alphabetic principle than the Greek-derived western alphabet: the Korean *hangul.* Haarmann (1990: 355-360), Haarmann (1997: 677), King (1996: 219-227).

16.2.4. Writing (Encarta)

@:ENCARTA_WR

The following articles from Microsoft Encarta give a comprehensive introduction to the different forms of writing and its history.

Writing, method of human intercommunication by means of arbitrary visual marks forming a system. Writing can be achieved in either limited or full systems, a full system being one that is capable of expressing unambiguously any concept that can be formulated in language.

Limited Writing Systems
Limited writing systems are generally used for purposes such as keeping accounts or as mnemonic devices for recalling significant facts or conveying general meanings. Also called subwriting, limited systems of writing include picture writing (or pictography), ideography, and the use of marked or unmarked objects as mnemonic devices. Such systems are characterized by a high degree of ambiguity because there is no fixed correspondence between the signs of the writing system and the language represented. For this reason interpretation of a limited system is usually independent of language. The purpose of the pictogram, ideogram, or object is to call to mind an image or impression that is subsequently expressed in language. This is clearly the procedure involved in the Native American picture writing that can be "read" easily by practically anyone with no knowledge whatever of Native American languages. On the other hand, if interpretation of limited writing systems is attempted without a knowledge of the cultural background of the writer, the image or impression called to mind by the writing will be meaningless or misunderstood.

Full Writing Systems
A full writing system is capable of expressing any concept that can be formulated in language. Therefore, full writing systems are characterized by a more or less fixed correspondence between the signs of the writing system and elements of the language the writing represents. The elements of language represented, then, can be words, syllables, or phonemes (the smallest units of speech that distinguish two different utterances in a language). Thus, writing systems can be categorized as word (or logographic), syllabic, or alphabetic. Because full writing systems represent elements of language, knowledge of the language written is required to understand the meaning intended by the writer. This does not mean that a writing system is tied to one language. In fact, writing systems are rather easily transferred from one language to another. This means only that, unlike a pictographic system, a full system conveys no meaning to the reader without a knowledge of the underlying language.

Word (or Logogram) Systems
Word writing systems are characterized by many signs called logograms which represent complete words. Such signs frequently represent a series of related words, and in many cases, one sign represents several separate and distinct words. In purely logographic writing, such distinctions usually remain unresolved and the writing is ambiguous. Certain types of signs, however, can be used to resolve the ambiguity and assure correct reading of the logogram. These signs are used as semantic and phonetic indicators and are often called determinatives and phonetic complements. Determinatives are signs used to indicate the class or category to which the word represented by the logogram belongs. Determinatives are logograms themselves and are not read but serve only to indicate the semantic group, such as gods, countries, birds, fish, verbs of motion, verbs of building, objects made of wood, objects made of stone, and so on, to which the logogram belongs. Phonetic complements are similar in use but more specific in that they show part or all of the pronunciation of the word that the logogram represents. In modern alphabetic writing in English, for example, the logogram "2" is read "two." When the ordinal number is referred to, however, the phonetic complement "d" is attached and the logogram, plus complement "2nd," is read "second." In this example, for the first time, signs are used for purely phonetic (or nonlogographic) purposes. In other words, the sign functions not to call to mind an idea and the word associated with it, but to recall a sound which is part of the word that the logogram being read represents. Originally, phonetic indicators were chosen from the logograms that have a meaning corresponding to the desired sound. This device is known as phonetic transfer or, more commonly, rebus writing. Like determinatives, phonetic indicators are not to be read but serve only to facilitate the reading of the basic logogram.
Thus far, elements of language are expressed only by logograms. Such representation is adequate for most nouns and simple verbs, but not adequate for most adjectives and adverbs, and especially for pronouns and proper nouns such as personal names. It cannot express all the nuances of case

endings and verbal inflection. A full system of writing, as defined above, must be capable of expressing all these if they exist in the language. Without this capability, a purely logographic writing system cannot be classified as a full system even if it makes use of semantic and phonetic indicators.

Syllabic Systems

The principle of phonetic transfer was used to overcome the limitations of logographic writings. By using signs to represent sounds, in this case, syllables, words that had no logographic representation could be expressed. In addition, morphemes, or case endings and verbal inflection, could be expressed by attaching the signs representing their sounds to the root logogram. It should be noted that, unlike phonetic indicators, such signs are to be read and interpreted as elements of the language being written.

The combined logo-syllabic system represents the first system of full writing. Once a system has reached a full capability of expression, the conflict in its development is between economy of writing (number of signs required to write a given utterance), and reduction of ambiguity. The major disadvantage of a logo-syllabic system is that it requires a very large number of signs because the number of words in a language is quite large. Grouping all words with similar meanings under one logogram, or using the same sign for different words, reduces the number of signs required, but such a system still needs at least 500 or 600 signs. Furthermore, ambiguity is very likely unless indicators are used, which means sacrificing the main advantage of having to use fewer signs per utterance. On the other hand, the number of signs needed for a purely syllabic system can be less than 100 and is seldom more than 200. The use of syllabic writing has the further advantage that the logograms do not have to be interpreted by the reader because the words are written out unambiguously in the phonetic script. The disadvantage of syllabic writing is that the system requires, on the average, more signs to write a given utterance. In its simplest form, a syllabic system consists only of consonant and vowel signs and signs for simple vowels.

The next step is the reduction of the syllabary, or the list of syllables, to only consonant and vowel signs, with the vowels undifferentiated. This reduces the number of signs required to the number of consonant sounds in the language, but increases the ambiguity in that the correct vowel sounds have to be supplied by the reader. Because this is syllabic writing the number of signs required to write a given utterance is the same as that for the simple syllabic system that expresses each vowel fully. The reduced syllabic system requires many fewer signs; therefore, each sign can be simpler. Although this type of writing is considered alphabetic by many people, it is more accurately called semialphabetic, as it does not indicate each phoneme of the language separately and unambiguously.

Alphabetic Systems

The final step toward fully alphabetic writing is the separation of the consonant sounds from the vowel sounds, and the separate writing of each. This requires a few more signs but eliminates the ambiguity of having the reader supply the vowels. Alphabetic writing requires the greatest number of signs for a given utterance, but the number of signs required for the system is small enough so that the signs can still be very simple. Because each sign represents a phoneme, the word that is intended by the writer is spelled out explicitly, and no sounds are required to be supplied by the reader. See ALPHABET.

These systems outline the theory and methods of writing, but in actual fact writing systems do not exist in these pure forms. Elements from one type of system are almost always found incorporated in another; an example is the number of logograms used with the modern alphabetic writing system.

History of Writing

Writing systems always tended to be conservative, their origins often being attributed to divine sources. Any change or modification was met with great hesitation, and even today, attempts to reform spelling or eliminate inconsistencies in writing conventions meet with strong resistance. Because of this conservatism major innovations in the structure of a writing system usually occurred when one people borrowed a system from another people. The Akkadians, for example, adapted the syllabic portion of the Sumerian logo-syllabic system to their own language, but retained the logograms, and used them regularly as a type of shorthand (see SUMERIAN LANGUAGE). When the Hittites borrowed the system from the Akkadians for their own language, they eliminated most of the polyphonous and homophonous syllabic signs and many of the Sumerian logograms, but used a number of Akkadian syllabic spellings as logograms (see HITTITE LANGUAGE).

The earliest known writing dates from shortly before 3000 BC, and is attributed to the Sumerians of Mesopotamia. Because this earliest writing is logographic, it can be read only in vague terms, but the principle of phonetic transfer is apparent and was well on its way to becoming logo-syllabic. Egyptian hieroglyphic writing is known from about 100 years later, and it is also the earliest authentication of

the principle of phonetic transfer (see EGYPTIAN LANGUAGE; HIEROGLYPHS). It is possible that the development of Egyptian writing came as a result of Sumerian stimulus.

At about the same time, so-called Proto-Elamite writing developed in Elam. This system has yet to be deciphered, and nothing can be said of its nature at the present time except that, from the number of signs used, it is logo-syllabic. Logo-syllabic systems of writing also developed, at a later date, in the Aegean, in Anatolia, in the Indus Valley, and in China (see CHINESE LANGUAGE). From these logo-syllabic systems, syllabaries were borrowed by other peoples to write their own languages. The syllabary in its simplest and most reduced form (that is, signs for consonant plus any vowel) was borrowed by the Semitic peoples of Palestine and Syria from the Egyptians, leaving behind the logograms and more complex syllables of the Egyptian system, during the last half of the 2nd millennium BC (see SEMITIC LANGUAGES). This syllabary was almost ready-made because Egyptian writing had never expressed vowels. The earliest such semialphabetic writing is found in the so-called Proto-Sinaitic inscriptions, which date back to about 1500 BC. Another such system, dated to about 1300 BC, was found at Ugarit on the northern Syrian coast, but in this case the writing was inscribed on clay in the manner of Mesopotamian cuneiform. Similar writing systems were developed by the other peoples of this region, and it was from the Phoenicians that the Greeks borrowed their writing system. The Greeks took the final step of separating the consonants from the vowels and writing each separately, thus arriving at full alphabetic writing about 800 BC (see GREEK LANGUAGE). Alphabetic writing has yet to be improved upon in terms of the definition of a full writing system. See also separate articles on all the individual letters of the English alphabet.

Contributed by: R. M. Whiting, Ignace Jay Gelb
"Writing," Microsoft (R) Encarta.

16.2.5. Semitic Languages (Encarta)

Semitic Languages, one of the five subfamilies or branches of the Hamito-Semitic or Afro-Asiatic language family (see HAMITO.SEMITIC LANGUAGES). Of the Semitic languages, Arabic was carried beyond its original home in the Arab Peninsula throughout the Arab Empire and is spoken across North Africa to the Atlantic coast, and Arabic and Hebrew are used by Muslims and Jews in other parts of the world. The other Semitic languages are centered in a region bounded on the west by Ethiopia and on the north by Syria and extending southeast through Iraq and the Arab Peninsula, with some "islands" of Semitic speech farther east in Iran.

Linguistic Groups
Linguists divide the Semitic languages into four groups. The North Peripheral group is represented by the Assyro-Babylonian language, or Akkadian. The oldest attested Semitic language, with the oldest Semitic literature, Akkadian was spoken in Mesopotamia between about 3000 BC and 600-400 BC and used as a literary language until the 1st century AD.
The North Central group includes the ancient and modern Hebrew language; ancient tongues such as Ugaritic and Phoenician; and the Aramaic language, including Syriac, or Christian Aramaic.
The South Central group consists of literary or Standard Arabic and the modern spoken Arabic dialects (see ARABIC LANGUAGE). Maltese, an offshoot of Arabic, is spoken on the island of Malta and, because of its location, has been heavily influenced by Italian.
The South Peripheral group consists of the South Arabic dialects, now spoken in parts of the southern Arab Peninsula (and in ancient times by peoples such as the Minaeans and Sabaeans); and the languages of Ethiopia. The latter include Gecez, or classical Ethiopic, now surviving only as a literary and liturgical language; Amharic, the official language of Ethiopia; and regional Ethiopian languages such as Tigré, Tigrinya, and Gurage.

Characteristics
In Semitic languages, words are typically based on a series of three consonants; this series, called the root, carries the basic meaning. Superimposed on the root is a pattern of vowels (or vowels and consonants) that signifies variations in the basic meaning or that serves as an inflection (such as for verb tense and number).For example, in Arabic the root ktb refers to writing, and the vowel pattern -a-i- implies "one who does something"; thus, katib means "one who writes." Other derivatives of the same root include kitab, "book"; maktub, "letter"; and kataba, "he wrote." The close relationship of the Semitic languages to one another can be seen in the persistence of the same roots from one language to another (slm, for example, means "peace" in Assyro-Babylonian, Hebrew, Aramaic, Arabic, and other languages). In Semitic languages, related consonants typically fall into three

subtypes: voiced, unvoiced, and emphatic; an example is the series transliterated g, k, and q from Arabic and Hebrew (the q is pronounced farther back in the throat than k).

Writing
Except for two undeciphered scripts used by the ancient Canaanites, and the Latin alphabet as used for Maltese, Semitic languages have historically been written in three scripts. Assyro-Babylonian was written in cuneiform signs, and Ugaritic used a cuneiform alphabet. North Semitic, the early Semitic script, was an alphabetic script; one of its earliest examples is inscribed on the Moabite stone (9th century BC, discovered in 1868 and now in the Louvre, Paris). From the Aramaic variant of North Semitic, the modern Arabic and square Hebrew alphabets developed; North Semitic also gave rise to the Greek alphabet. Like ancient North Semitic, the Hebrew and Arabic scripts are alphabets of consonants only; special marks for vowels apparently came into use in about the 8th century AD. The third script, South Semitic or South Arabic, may or may not have been another variant of early North Semitic script. Also a consonantal alphabet, it was taken to Ethiopia in the 1st millennium BC and gave rise to the syllabic scripts used for modern Ethiopian languages.
See also ALPHABET.
"Semitic Languages," Microsoft (R) Encarta.

16.2.6. Alphabet (Encarta)

@:ENCARTA_ABC

The Encarta definition of *Alphabet* differs from the one used in this study. In the strict definition, as used in the present study, the "North Semitic *Alphabet"* and "Arabic *Alphabet*" would have to mean *Abjad*.

Alphabet (from alpha and beta, the first two letters of the Greek alphabet), set of written symbols, each representing a given sound or sounds, which can be variously combined to form all the words of a language.
An alphabet attempts ideally to indicate each separate sound by a separate symbol, although this end is seldom attained, except in the Korean alphabet (the most perfect phonetic system known) and, to a lesser degree, in the Japanese syllabaries. Alphabets are distinguished from syllabaries and from pictographic and ideographic systems. A syllabary represents each separate syllable (usually a sequence of from one to four spoken sounds pronounced as an uninterrupted unit) by a single symbol. Japanese, for example, has two complete syllabaries—the hiragana and the katakana—devised to supplement the characters originally taken over from Chinese. A pictographic system represents picturable objects, for example, a drawing of the sun stands for the spoken word sun. An ideographic system combines various pictographs for the purpose of indicating nonpicturable ideas. Thus, the Chinese pictographs for sun and tree are combined to represent the Chinese spoken word for east.
Early systems of writing were of the pictographic-ideographic variety; among them are the cuneiform of the ancient Babylonians and Assyrians, Egyptian hieroglyphs, the written symbols still used by the Chinese and Japanese (see CHINESE LANGUAGE; JAPANESE LANGUAGE), and Mayan picture writing (see NATIVE AMERICAN LANGUAGES; MAYA). What converts such a system into an alphabet or syllabary is the use of a pictograph or ideograph to represent a sound rather than an object or an idea. The sound is usually the initial sound of the spoken word denoted by the original pictograph. Thus, in early Semitic, a pictograph representing a house, for which the Semitic spoken word was beth, eventually came to symbolize the initial b sound of beth. This Semitic symbol, standing originally for the entire word beth and later for the sound of b, ultimately became the b of the English alphabet.

North Semitic Alphabet
The general supposition is that the first known alphabet developed along the eastern Mediterranean littoral between 1700 and 1500 BC. This alphabet, known as North Semitic, evolved from a combination of cuneiform and hieroglyphic symbols; some symbols might have been taken from kindred systems, such as the Cretan and Hittite. The North Semitic alphabet consisted exclusively of consonants. The vowel sounds of a word had to be supplied by the speaker or reader. The present-day Hebrew and Arabic alphabets still consist of consonantal letters only, the former having 22 and the latter 28. Some of these, however, may be used to represent long vowels, and vowels may also be indicated in writing by optional vowel points and dashes placed below, above, or to the side of the consonant. Writing is from the right to the left. See ARABIC LANGUAGE; SEMITIC LANGUAGES.

Many scholars believe that about 1000 BC four branches developed from the original Semitic alphabet: South Semitic, Canaanite, Aramaic, and Greek. (Other scholars, however, believe that South Semitic developed independently from North Semitic or that both developed from a common ancestor.) The South Semitic branch was the ancestor of the alphabets of extinct languages used in the Arabian Peninsula and in the modern languages of Ethiopia. Canaanite was subdivided into Early Hebrew and Phoenician, and the extremely important Aramaic branch became the basis of Semitic and non-Semitic scripts throughout western Asia. The non-Semitic group was the basis of the alphabets of nearly all Indian scripts; the Semitic subbranch includes Square Hebrew, which superseded Early Hebrew to become the prototype of modern Hebrew writing.

Greek and Roman Alphabets
The Greeks adapted the Phoenician variant of the Semitic alphabet, expanding its 22 consonant symbols to 24 (even more in some dialects), and setting apart some of the original consonant symbols to serve exclusively as vowels (see GREEK LANGUAGE). After about 500 BC, Greek was regularly written from left to right. The Greek alphabet spread throughout the Mediterranean world, giving rise to various modified forms, including the Etruscan, Oscan, Umbrian, and Roman alphabets. Because of Roman conquests and the spread of the Latin language, that language's Roman alphabet became the basic alphabet of all the languages of western Europe.

Cyrillic Alphabet
About AD 860 Greek missionaries from Constantinople converted the Slavs to Christianity and devised for them a system of writing known as Cyrillic (see CYRILLIC ALPHABET) from the name of one of its inventors, the apostle to the South Slavs, Saint Cyril. The Cyrillic alphabet, like the Roman, stems from the Greek; it is based on a 9th-century writing style. Additional characters, however, were devised to represent Slavic sounds that had no Greek equivalents. The Cyrillic alphabet, in various forms, is used currently in Russian, Ukrainian, Serbian, and Bulgarian, but not in Polish, Czech, Slovak, or Slovenian, which are written in modified Roman alphabets. An interesting division exists in the Balkans, where the Roman Catholic Croats use the Roman alphabet, but the Greek Orthodox Serbs employ Cyrillic for the same language.

Arabic Alphabet
The Arabic alphabet, another offshoot of the early Semitic one, probably originated about the 4th century AD. It has spread to such languages as Persian and Urdu and is generally used by the Islamic world: throughout the Near and Middle East, in parts of Asia and Africa, and in southern Europe. Arabic is written in either of two forms: Kufic, a heavy, bold, formal script, was devised at the end of the 7th century; Naskhi, a cursive form, is the parent of modern Arabic writing. The question arises whether the various alphabets of India and Southeast Asia are indigenous developments or offshoots of early Semitic. One of the most important Indian alphabets, the Devanagari alphabet used in the Sanskrit language (See also INDIAN LANGUAGES), is an ingenious combination of syllabic and true alphabetic principles. The progenitors, whether Semitic or Indian, of the Devanagari alphabet seem also to have given rise to the written alphabets of Bengali, Tamil, Telugu, Sinhalese, Burmese, and Siamese, or Thai.

Artificial Alphabets
Most of the alphabets considered in this article evolved gradually or were adapted from older prototypes. Some alphabets, however, have been created artificially for peoples previously illiterate, or for nations hitherto using alphabets of foreign origin. An outstanding example is the Armenian alphabet invented by Saint Mesrob in 405 and still in use today. Also of great interest is the Mongolian hP'ags-Pa script (written from top to bottom), invented in China about 1269. In modern times, the Cherokee syllabary was invented soon after 1820 by the Native American leader Sequoya. Later in the 19th century, missionaries and others created syllabaries and alphabets for Native American languages, based on the Roman and, in the northwest, Russian Cyrillic scripts.

Alphabet Modifications
Any alphabet used by peoples speaking different languages undergoes modifications. Such is the case with respect both to the number and form of letters used and to the subscripts and superscripts, or diacritical marks (accents, cedillas, tildes, dots, and others), used with the basic symbols to indicate modifications of sound. The letter c with a cedilla, for instance, appears regularly in French, Portuguese, and Turkish, but rarely, except in borrowed words, in English. The value of ç in French, Portuguese, and English is that of s, but in Turkish it represents the ch sound in church. It used to

represent ts in Spanish, but that sound no longer exists in standard Spanish. So, too, letters have different sound values in different languages. The letter j, for example, as in English jam, has a y sound in German.

Although alphabets develop as attempts to establish a correspondence between sound and symbol, most alphabetically written languages are highly unphonetic, largely because the system of writing remains static while the spoken language evolves. Thus, the spelling of the English word knight reflects the pronunciation of an earlier period of the language, when the initial k was pronounced and the gh represented a sound, since lost, similar to the German ch in Wacht. The divergence between the written and spoken forms of certain languages, particularly English, has prompted movements for spelling reform. See also LANGUAGE; RUNES; SHORTHAND; WRITING and articles on the individual letters and languages.

Contributed by: Mario Pei, David Marshall Lang, "Alphabet," Microsoft (R) Encarta.

16.2.7. Advantage factors of Chinese writing

@:CHINESE_ALTERN

The work of Leibniz on his Characteristica Universalis was influenced by the reports of the Jesuite missionaries on the Chinese writing system. Goppold (1994), Widmaier (1983, 1990). Although his information was rudimentary at best, he realized that the ideographic principle of the writing system made it suitable for unifying a multilingual territory.

Goppold (1994: 278-279), (transl. A.G.): In the present situation of a multi-cultural, multi-lingual Europe, an understanding of the relevance of Chinese writing for the unification of the Chinese empire is of prime importance. Chinese writing is an ideographic symbol system that is independent of the spoken language. Prior to the unification of the Chinese empire the number, variance, and spread of dialects and sublanguages was much higher than today[101]. Therefore a notation system which was based on an ideographic instead of a phonetic base, was advantageous for the formation of a central administrative structure. The writing system didn't put any of the spoken dialects into a preferred position, and avoided the ethnic domination of a particular language group. This was a decisive factor... why China didn't break apart into a patchwork of separate national-language states, as Europe did in the last 2000 years. The language-cultural-ideological dominance tendency lies at the root of european national [and regional] conflicts. And this is an ever-threatening obstacle for a further integration of Europe. Leibniz had recognized this factor in his attempts to overcome the cultural discrepancies in Europe and his Characteristica Universalis was a means for this end.

Goody (1987: 282): Access to past literature and to other peoples was one positive aspect of the use of Latin... A similar advantage has been attributed to the Chinese logographic script; it holds a diverse country together precisely because it does not exclusively represent the sounds of any one specific local dialect or language.

Ong (1977: 33): Chinese is ... in fact a group of mutually unintelligible languages, each with its own subset of dialects... If two persons speaking "dialects" of "Chinese" so different that they cannot understand one another at all.. will only write in Chinese characters what they are saying, each will be able to understand what the writer means...

This situation is destined to be altered drastically when all the speakers of Chinese learn Mandarin Chinese, which is now being taught... as obligatory to everyone in the People's Republic of China...

But Mandarin is not Classical Chinese, wênyen, the learned language...

Ong (1977: 34): Once Mandarin is known to speakers of all varieties of Chinese, the step to alphabetization will be short and, ... inevitable and rapid, however sad and disastrous.

The independence from spoken language is one main advantage factors of Chinese writing over the Alphabet. Although Chinese writing is relatively more complicated than alphabetic writing, this language-independence has served China well for about 3000 years. (And countries like Japan and Korea for a shorter time). Another factor of advantage over the alphabet is the longevity of the cultural memory it conveys. Every contemporary literate

---

[101] See Bodmer (1978: 430-446)

person who was trained in classical Chinese could immediately understand Chinese texts that were written 2000 years ago. Coulmas (1981: 61, 80-108), and personal communication, Prof. Ye.

Prof. Ye, as one of the last members of the pre-war trained Chinese intellectual elite, could convey this essential insight by personal contact to the author. The depth of collective cultural memory that Chinese Writing thus conveys is also very hard to explain to non-Chinese people. The continuity of thought for the Chinese intellectual elite is similar to experiencing the sayings of Confucius in the way one remembers the words of the grandmother. The thinking of the Chinese elite is (or was) governed by this effect to a great extent. Today, the PR China writing reform simplified and therefore changed many signs, and the drive for alphabetization is under way. (See Ong, above)

16.3. Artificial Symbol Systems

16.3.1. The search for the "perfect symbol system" and the "perfect language"

A short desciption and references to this field are given by Noeth (1985: 299-319).

The search for the "perfect symbol system", or "perfect language" is a very old quest[102]. The main source referenced here is Eco (1993), all further references in this paragraph are to this work. This quest looks back to an immensely voluminous production of all sorts of alternatives to languages and writing systems in use and reaches far back into history (15-33). The origin of Christianity occurred in the cultural interchange between the alphabet-based Greek hellenistic world and the Jewish thought system based on the Aramaic / Hebrew language and writing. The Biblical accounts of the Adamic creation of language and the confusion of languages in the Tower of Babylon episod, and the focal emphasis on the *logos* (translated as *the word*) in Joh. 1,1,[103] embedded the idea of an ideal language-/ writing system into Christian western european culture. It surfaced in various guises, for example under the name of Cabbala and considerations of Hebrew as ideal (Adamic) language (p. 38-46, 84-90, 127-134). The Ars Magna of Lullus (65-81) can be called a logical extension and systematization of the alphabetical principle as well as a continuation of the cabbalistic approach (135-142). Giordano Bruno extends the Lullian program by usage of visual images derived from ancient Greek mythology (142-152). A fundamental re-orientation toward non-alphabetical principles was attempted in a revival movement of the Renaissance based on phantastic imaginations of the Egyptian hieroglyphic principle (153-163) that were derived from a manuscript called *Hieroglypica* of *Horapollo* (154). This claimed to derive from ancient Egyptian orign, but is now thought to be late hellenistic (154). The Renaissance humanists (among them) Ficino and Pico della Mirandola, derived from this that the hieroglyphs had been a system of polysemic initiatic symbols, wich refer to an occult, unknown, secret, mysterious knowledge of the ancients (162-163). An extension and elaboration of this work was done by Athanasius Kircher (163-167) who also developed an equally phantastic scheme of the principles of Chinese writing, of which some scant details had just become known in Europe through the Jesuite missionaries at the court of the Chinese emperor (167-174). Later he developed a character system, called *Polygraphia* (206-210). Comenius worked at pictorial principles for understanding and learning (221-224), and between Dalgarno and Wilkins, an English effort was made to develop universal categorical

---

[102] Eco (1993) uses the term "perfect language" in the title in a rather loose sense, such as to include symbol systems of all sorts.

[103] ->:LOGOS, p. 197

schemata with special notation systems (236-266). The work of Leibniz on the Characteristica Universalis is partially based on his projections into Chinese writing and the I Ching with the rudimentary data material he obtained from the Jesuite missionaries in China (276-298). This issue will be dealt with in more depth in the next section. After 1700, the quest for "perfect languages" (and writing systems) largely subsided, and what developments were made, had the aim of creating international lingua franca systems that were alphabet based, like Volapük and Esperanto, (313-341). The Andean language Aymara had been investigated for its potential as interlanguage for computerized translation by Guzman (351).

16.3.2. Bliss symbols

@:BLISS_SYMB

A recent comprehensive approach to the development of a graphical and iconic Artificial Symbol Systems is the *Bliss* system (also called *semantography* by the author), that is not mentioned by Eco. All further references in this subsection are to Bliss (1978). This edition is a reproduction of the original typewritten manuscript of the author from the first edition 1949, with a preface of 62 pages, and the original work starting on page 63. In total, the 1978 edition has 881 pages. In his work, the author makes an attempt at re-drawing, and re-working the whole development of human symbolization with the intent of remediating the deficiencies of spoken natural languages in general, and the course taken by civilizations, the principle of phonetic writing in special. In this he makes a thorough comparison and analysis of the basic differences between verbal, linear, concept organized thought, as is the main intellectual operating mode for the literate people of our civilizations, and he contrasts it with the visual and spatial modes of thinking that are engendered when one uses a graphical and iconic system. He draws heavily on his own experience of living in China to discuss the advantages of Chinese writing in this respect[104]. He presents some popular ideas on the possible origins of speech, a description of the origins of visual symbols in the cave drawings of Altamira, and Lascaux, in France and Spain via the development of writing up to the present (749-777). The ambitiousness of the Bliss project is evidenced in the citations that are given on the cover and on the opening pages of the book (unfortunately without bibliographical references):

(Cover page): I think these thoughts will some day be carried out, so agreeable and natural appears to me this writing for rendering our conceptions more real. Gottfried Wilhelm Leibnitz (1679)[105]

"Bliss' heroic work ... realized the ambition of the great mathematician Leibniz," said Prof. O.L. Reiser (Pittsburgh) in 1951 to the American Association for the Advancement of Science.

(p. 2): "Ideographic writing will surely achieve the final victory over phonetic writing." Prof. Basil Hall Chamberlain (1950)

The Bliss system presents a comprehensive effort at creating a new non-phonetic symbol-system. It consists of a set of base symbols (p. 100-120), and a grammar to construct compound symbols. One main problem of graphical symbol sets is the issue of technical production with tools available in the private household. Since this approach was developed before the advent of computer technology, Bliss had to devise a typewriter method to construct the symbols from graphic elements, which is described on p. 139-141, and 226-229. The high aim and scope of this work nonwithstanding, it seems to have remained unknown except in insider circles. With present-day computer tools, there are many possibilities that Bliss couldn't use, and many of his approaches have been taken up (independently?) in new form with new technology by other workers.

---

[104] Although present-day chinese writing has a strong morphemic element. ->:CHINESE_WRT, p. 178

[105] p. 2. This applies to the Characteristica Universalis. The misspelling of the name of Leibniz is left as in the original quotation.

16.3.3. Artificial languages with computer support tools

The availability of computers has given new impulses for creating new languages and notation systems. One of those is *Loglan* which was originally developed to test the Sapir-Whorf hypothesis (Brown 1989: 31). The main distinction from prior attempts at language construction is the usage of formal grammar principles that make any sentence expressed in that language unambiguously computer parsable (Brown 1989: 42). A principal problem of artificial language design, discussed at length by Bodmer (1985: 409-518), could not be solved by Brown. The obstacle that Loglan shares with all prior approaches for new artificial languages, is that it requires the prospective user to first learn a new vocabulary that bears little resemblance to her original native language. This is the chicken-egg problem of any artificial language, because its practical value is not only determined by how good and logical it is by some abstract criteria, but it depends more on the language community, how many other people speak it. If one can gain an only slightly inferior conversation effect, using plain English, but reaching approximately half the world population, the learning of the new language is too much of an investment in time and energy to justify the effort, and for this reason, most artificially designed languages never gain enough following to create a language community.

But, as outlined in Goppold (1994: 279-282),[106] a computerized language system has properties and potentials that earlier writing technology didn't have: it goes beyond the alphabet, because the symbols used can be names or command sequences of executable programs. Thus the symbols are not silent any more as Platon had remarked in Phaidros,[107] but they can "speak" and "act" for themselves. Computerized systems allow mixed mode text with a separate, artificially designed logic structure for grammar, but using the native vocabularies of the users, thus reducing the learning investment of the user considerably. They can provide on-line grammar disambiguation and automatic translation support for the user. Such computer supported systems are feasible for written communication. One such approach for on-line computer support of an artificial grammar is described in Goppold (1994: 282). Recent advances in computer multimedia tools foster new approaches to implement multimedial notation systems. One example of these is the computer visualization / MUSLI project (Lennon 1994, 1995, Maurer 1992).

16.3.4. The multimedia and information revolution

@:MULTIMEDIA

The present "multimedia and information revolution" is an important factor that will decisively influence all future cultural medialities of humanity. Goppold (1984b), (1984c), (1995c), (1996b), Lévy (1996), Shenk (1997), Stoll (1996), Veltman (1997), (1998). But it will not solve one of the main problems: While the Internet allows us to channel multi-megabytes of data into our computers, our reading facilities to process that data deluge remain at the biblical speed of 50 char/sec. Not much can be done to increase the basic reading speed. So our main problem with the "information revolution" may be that comparable to starving next to a banquet with many tables hugely stacked with the most delicious food.[108] We know it is there, and we can even get it, but our human reading speed will forever lag far behind the ever swelling data deluge. As Stoll (110-119, 227-311) notes, a hasty conversion of card catalogs to computer databases aggravates the problem, since the new databases loose essential information retrieval facilities that the manual methods had. But the new

---

[106] ->:GOPPOLD_CODES, p. 111

[107] ->:PLATO_PHAIDROS, p. 201

[108] In the scholastic tradition also known as the problem of "Buridan's ass". (Hoffmeister 1955: 133).

computerized multimedial forms of information representation may be the only means that our civilizations have as a chance to stem against that flood. Veltman (1986, 1997, 1998).

17. Criticism and defects of writing and language

This section is devoted to possible or actual shortcomings and defects in the presently dominant writing systems of the civilizations, those societal and individual requirements that are not optimally or adequately served by writing in general and the alphabet in specific. Further, the question is asked whether heavy continued use of writing and other static CMM may cause subtle long-term side-effects in societies.

Noeth (1985: 269-273) lists some of the main proponents of criticisms of language and writing: McLuhan, Plato (Phaidros), Derrida, and gives a list of references. Bodmer (1985: 409-518) also gives a discussion of the defects of existant languages and writing systems that have prompted language designers to make alternative designs. Bliss makes an extensive criticism (1978: 422-450, 547-696).[109] The issue of *excarnation* is treated by Aleida Assmann (1993).[110] General works on criticism of civilization also give criticisms of the applications of writing, like Levi-Strauss (1978) and Diamond (1976). A discussion of specific issues, like the problems of the institutional school system, and of self-serving specialist communities, is found in Illich (1976-1988).

The fundamental questions of this section are: What are the *principal limitations*
1) of verbal description?
2) of the indo-European language structure?[111]
3) of static, excarnated representations in general, including, but not limited to verbal encodings (ie. writing)?

Among the themes treated in the following subsections are the factors of:
1) obsolescence, or worn-out-effects
>:OBSOLESCENCE, p. 200
2) grave defects or serious side effects in usage
>:SIDE_EFFECTS, p. 200, ->:BIBLIOSPHERE, p. 195
3) various principal limitations
>:PRINCIPAL_LIMIT, p. 202

A consecutive question would be if it is possible to draw a correlation between:
a) the adoption of the static language representation technology of alphabetic writing by the ancient Greeks and
b) the concurrent dichotomy of issues in ancient Greek philosophy, of the Parmenidean and Platonic concepts of unchanging "eternal realities" (ideas) versus the Heraklitean "eternal flow" views.

As we all know, Greek philosophy followed the Parmenidean / Platonic model and it abandoned the "flow" concepts of Heraklit. The adoption of an eternal God, and an eternal "kingdom of heaven" by Christian philosophy essentially reinforced this preference of static patterns over a fundamental dynamis. The fundamental problem of the stasis of fixed, written material is brought up only by workers in dynamic cultural transmission.[112] Only after Galileo analysed movement, and Newton and Leibniz had put it into the calculus, could western thinking take up the issue of dynamics for serious. Goppold (1998), Young (1976: 1-50). Gotthard Günther has summed the issue up thusly:

---

[109] ->:BLISS_SYMB, p. 188

[110] ->:IN_EXCARNATION, p. 199

[111] Whitehead (1969: vii, 17)

[112] ->:LOGOS, p. 197, ->:DYNAMIC_CMM, p. 203, ->:MOVEMENT_PARADOX, p. 206, ->:GOETHE_FAUST, p. 236

Günther (1976, x): die klassische Metaphysik hat uns in die eisige Gletscherwelt des ewigen unveränderlichen Seins geführt... im Alterswerk Platos sind Ahnungen eines Denkens vorhanden, das über die Grundlagen der klassischen Metaphysik in noch unmeßbare Fernen hinauszufliegen scheint... die Epoche der geistigen Selbstbeschränkung ist heute zuende.

(x - xi) ... um in die Eiswelt des toten Seins einzudringen, war es notwendig, aus ihr das Problem des Werdens, also der Zeit, auszuschließen. Und heute besteht in der kompetenten Naturphilosophie kaum ein Zweifel darüber, daß durch die bisherige abendländische Naturwissenschaft die dominierende Tendenz hindurchgeht, die Zeit aus dem System der Naturgesetze fern zu halten, indem man sie "geometrisiert", wie das Beispiel Einsteins zeigt. Daraus ergab sich eine ganz ungeheure Vereinfachung des physikalischen Weltbildes. Heute aber wissen wir, daß das selbst in der Kosmologie zu einem unbefriedigenden Weltbild führt, nicht zu reden von den sog. Kultur- und Geisteswissenschaften.

17.1. Cultural biases of writing culture

@:CULTURAL_BIAS

The alphabetical book culture exerts a subtle but omnipresent and decisive influence on the thought patterns and working habits of everyone socialized into western alphabetic culture, and especially the academic environment. The statements of Landow (1992: 29), Ruth Benedict, and Bednarik indicate this cultural bias:

Landow (1992: 29): This ... requires that one first recognize the enormous power of the book, for only after we have made ourselves conscious of the ways it has formed and informed our lives can we seek to pry ourselves free from some of its limitations... Claude Levi-Strauss's explanations of preliterate thought in *The Savage Mind* and in his treatises on mythology appear in part as attempts to de-center the culture of the book - to show the confinements of our literature culture by getting outside of it, however tenuously and briefly...

Benedict (1934: 249-250): Appraisal of our own dominant traits has so far waited till the trait in question was no longer a living issue. Religion was not objectively discussed till it was no longer the cultural trait to which our civilization was most deeply committed... It is not yet possible to discuss capitalism... Yet the dominant traits of our civilization need special scrutiny.

Bednarik (1994: 144): The deficiencies of a conceptual model of reality cannot be perceived from within such a model.

The following quotation may serve as an example for many similar statements in the same vein to be found everywhere in the literature, containing a number of biases characteristic of writing culture[113]:

Loren Eiseley[114]: Man[115] without writing[116] cannot long retain his history[117] in his head[118]. His intelligence permits him to grasp some kind of succession of generations; but without writing, the tale

---

[113] This example is not chosen to criticize the author for the bias. The bias is in the language and in the thought systems that we have to use by default, and can hardly be avoided. In fact, it would be very cumbersome and stilted to try to write in a "politically correct" style, for example trying to completely avoid the male bias of terms like "man", and "he", "his" etc.

[114] The source of this citation is: The anthropologist LOREN EISELEY (1907-1977), cited in the prologue of: William H. Calvin (1996b): "The River That Flows Uphill": http://www.WilliamCalvin.com/bk3ch1.html

[115] Male bias.

[116] implicit: alphabetic writing as pinnacle of the evolution of writing.

[117] Male bias: *history* can be literally read as *his-story*.

[118] Mind / cognitive bias. What about the memory of the body? For example the history of the gut feeling? See also the question of *pathos*, posed by Haarmann

of the past rapidly degenerates into fumbling myth and fable[119]. Man's greatest epic, his four long battles with the advancing ice of the great continental glaciers, has vanished from human memory without a trace[120]. Our illiterate[121] fathers disappeared and with them, in a few scant generations, died one of the great stories of all time[122].

17.1.1. Critical statements

@:WRITING_CRIT

Some more statements serve to illuminate fundamental limitations of verbal language and writing and in the cultural transmission:

Staal (1986: 251): Oral transmissions over large stretches of time and space compromise first of all language, which is at the same time the most complex system that is being transmitted, and the medium through which many other transmissions are orally transmitted - including folklore, jokes, stories, laws, myths and epics. Many, but not all: for other features of human knowledge and activity, including music, art design, ritual, technology and science, are transmitted not only without writing but also without language. Examples include not only cutting, digging, aiming or planting, but also at least some of the features of musical scales and melodies, visual patterns, motifs and shapes, dances, stellar constellations, cooking, the construction of ploughs, weapons and altars, and the elements of arithmetic and geometry.

Boone (1994: 10): The notion that spoken language is the only system that allows humans to convey any and all thought fails to consider the full range of human experience. Certainly speech may be the most efficient manner of communicating many things, but it is noticeably deficient in conveying ideas of a musical, mathematical, or visual nature, for example. It is nearly impossible to communicate sound through words; instead, one uses a musical notation that has now beome standard in 'Western cultures'... Dance, too, cannot adequately be described verbally; instead, the subtle details of choreography can be recorded through one of several dance notations (Owen 1986). The notational systems of mathematics and science were also developed precisely because ordinary language could not "express the full import of scientific relationships" as Stillman Drake has explained... Since "structure is generally more efficiently depicted than described," complex structural diagams and even three-dimensional models function instead of words and sentences to convey information. Such diagrams "led to the very complex three-dimensional models required in the solution of the double-helix structure of DNA"... (Drake 1986: 153). As Drake (1986: 147) has summarized: "The pictures we form in science may be ordinary grammatical statements or they may be special notation systems or they may be quite literally pictures drawn to represent structural relations among external objects, actual or hypothetical. Structural relations are frequently perceptible at a glance when they would be very cumbersome to describe in words, and might not be as efficiently conveyed by equational or other mathematical notations. Pictorial notations are often valuable in physics, as for instance in crystallography. They are still more useful in chemistry, which in its beginnings in modern form was faced with problems different in kind from those of early modern physics - problems of structure and combination rather than of motion and force".

Birdwhistell (1970: 188): For the cinesicist, silence is just as golden as are those periods in which the linguistic system is positively operative.

Isadora Duncan, in Staal (1989: 116): If I could tell you what it meant there would be no point in dancing it.

---

[119] implicit ethno- / euro- / alphabet- centric deprecation of oral memory.

[120] There are many traces for the one who knows where to look for them. One may take "Hamlet's Mill", Dechend (1993) as a starting point for developing an outlook to the contrary position.

[121] Il-literate - meaning: non-alphabetically-letterate.

[122] It is rarely described in detail how the memory died, because it died in many cases because of intervening efforts by well meaning invaders, crusaders, conquerors, missionaries, teachers, government officials, and the like, who quite often came from conquering writing cultures. The natives would have continued to keep their stories alive and well for a long time if they had only been left in peace. See the chapter on genocide, in Diamond (1992: 276-309).

Haarmann (1997: 680): As alphabetic writing has, since antiquity, dominated literacy in all parts of civilized Europe, it has exerted a profound impact on European people's mentality, their reasoning about culture and their world view.

Boone (1994: 3): Most of the scholars who think and write about writing consider writing to be alphabetic writing, normally referring to one of the modern alphabetic scripts; this tends to rest as a basic assumption from which their arguments grow. My intent is to confront this common definition of 'writing' and our notions of what constitute writing systems, to explode these assumptions. We have to think more broadly about visual and tactile systems of recording information, to reach a broader definition of writing.

Boone (1994: 4): Jacques Derrida in *Of Grammatology* has argued this position on a much wider and more theoretical level. Acknowledging the fundamental ethnocentrism, the logocentrism, that has controlled the concept of writing, he argues for the invalidity of the traditional definition of writing as a utensil to express speech, noting that "writing no longer relates to language as an exterior or frontier". Instead, he explains that "the concept of writing exceeds and comprehends that of language"; it embraces language but goes beyond it (Derrida 1976: 3, 6-9, 30-52)... Here my intent is... the reformation of a definition of writing that allows us to consider both verbal and nonverbal systems of graphic communication.

->:LOGOCENTRISM, p. 197

Boone (1994: 3): ... there is that tendency to think of writing as visible speech and an evolutionary goal... In indigenous America, visible speech was not often the goal...

Boone (1994: 4-5): We are all aware of the commonly held belief among those scholars and particularly linguists who focus on Europe and Asia that Pre-Columbian cultures did not yet develop 'true writing'. We have heard terms such as illiterate, nonliterate, and preliterate applied to these peoples. Clearly the term 'illiterate', with its meaning of 'uneducated', is simply a pejorative misuse of the word...
We see this in most studies of writing -- from Isaac Taylor ... Leonard Bloomfield... Isaac Gelb... David Diringer... John DeFrancis... These all expound the common view of writing as written language, and they fashion various evolutionary models for the 'development' of writing that culminates in alphabetic script.
Just as people and nations fashion their histories to eventuate in themselves, writing specialists have constructed the history of writing to result in modern alphabetic systems. In these histories, indigenous American systems[123] lie either at the beginning of or outside the developmental sequence.

Boone (1994: 5): Almost all the scholars who have looked seriously at writing systems in their general sense have defined writing as spoken language that is recorded or referenced phonetically by visible marks. Since many of these scholars are linguistis, it would seem natural for them to tie writing to speech... [as do] Archibald Hill, Walter Ong, and anthropologist Jack Goody... historians like Michael Camille and M.T. Clanchy... The Chinese-language specialist John DeFrancis has perhaps been the most adamant on this point. His "central thesis is that all full systems of communication are based on speech. Further, no full system is possible unless so grounded," and he dismisses all nonspeech writing as "Partial/ Limited/ Pseudo/ Non-Writing" (DeFrancis 1989: 7,42)...

Boone (1994: 9): What is most alarming about these statements and view is that they are based on harmfully narrow views of what are *thought* and *knowledge* and what constitutes the expression of these thoughts and this knowledge, and they summarily dismiss the indigenous Western Hemisphere. It is time that we realize that such views are part of a European/Mediterranean bias that has shaped countless conceptions -- such as 'civilization', 'art', and the 'city' -- that were defined according to Old World standards and therefore excluded the non-Western and non-Asian cultures. An expanded epistemological view would, and should, allow all notational systems to be encompassed. If [these] phenomena are to be considered objectively, a broader view is required. It is easy to see the fallacy of the assumptions on which most definitions of writing are based.

---

[123] This can be generalized for the present study to mean: indigenous cultures world-wide.

Bednarik (1994: 141): The term 'prehistoric' refers generally to an ethnocentric whim dividing human history by the advent of writing. This division is offensive to the peoples being studied by the prehistorians; it is based on the application of an alien cultural concept to their cultures and denotes the ethnocentricity of that approach. It involves an implicit but unsupportable assumption that oral transmission of traditional knowledge is less reliable than its written transmission and its interpretation by 'specialists'. Not only is this a non-refutable proposition, but there are valid arguments in favor of the opposite view, and indigenous peoples throughout the world are entitled to disagree with Eurocentric models in 'science'. The Aboriginal people of Australia, for instance, vigorously oppose the ideology implicit in the term 'prehistoric'. It is used here merely to the subjective study of early cultures by members of an alien society who are engaged in creating that society's constructs about early cultures.

Bednarik (1994: 141-142): Science itself exists within an anthropocentric and thus subjective frame of reference. It does not explore reality; usually it augments and reinforces anthropocentricity... art itself is the only humanly accessible phenomenon in the real world that humans can study scientifically. I define art as a medium or vehicle externalizing concepts of reality conveying awareness of perceived reality to the sensory perception of the beholder ... Art, therefore, creates and maintains the common reality of humans.

Bednarik (1994: 143-144): The *ultimate* purpose of 'prehistoric' art studies is to explore the processes that have in some way contributed to the formation of human concepts, and if we were to find means of illuminating the origins of anthropocentricity (the interpretation of reality in terms of the material stimuli experienced by humans) we would be likely also to acquire a new understanding of the limitations it imposes on the human intellect. Such insights may free that intellect from the restrictions imposed by its epistemological limits, in the distant future. The deficiencies of a conceptual model of reality cannot be perceived from within such a model, by the uncritical recourse to the biological intelligence that is its own product ... In an anthropocentric system of reality, ideas or mental constructs must adhere to the system's inherent order not only to be acceptable, but even to be able to be conceived... The processes that led to human models of reality are attributable to the frames of reference created by the early cognitive evolution of hominids.

Dechend (1997: 9): Raising the question about the nature of those clues and traces which might enable us to reconstruct at least some thoughts of early homines sapientes sapientes, we have to state first, that next to no phenomenon should be accepted as "suggesting itself", and "obvious", no instrument, no technique, no rite, no game, no dance. The more fundamental, and the more apparently self-suggesting a technique, the more ingenious the brain that hatched it.

Cosmides (Cited in Pinker 1995: 413): Like fish unaware of the existence of water, anthropologists swim from culture to culture interpreting through universal human metaculture. Metaculture informs every thought... Similarly biologists and artificial intelligence researchers are "anthropologists" who travel to places where minds are far stranger than anywhere any ethnographer has ever gone.

Strecker (1988: 38-39): Anthropologists can indeed learn a lot from the surrealists. Generally speaking they both try to reach the same goal. They both ask the question, 'Who are we?' and embark on a journey to find the answer in terms of 'who we are not'. They differ in that the anthropologist (as ethnographer) journeys in space and his procedure is empirical, while the surrealist travels in the mind and proceeds by ways of the imagination. But both are similarly concerned with overcoming their immediate cultural and social conditions, to see them for what they ultimately are, 'arbitrary systems of control', as the anthropologists might say, or in the more polemical voice of the surrealist, a 'second-rate reality that has been fashioned by centuries of worshipping money, races, fatherlands, gods, and, I might add, art. (Magritte) ... In fact they make transparent the input of that which anthropologists in the field are usually condemned to encounter as output only.

17.1.2. The Bibliosphere

Landow (1992: 29): This ... requires that one first recognize the enormous power of the book, for only after we have made ourselves conscious of the ways it has formed and informed our lives can we

seek to pry ourselves free from some of its limitations... Claude Levi-Strauss's explanations of preliterate thought in *The Savage Mind* and in his treatises on mythology appear in part as attempts to de-center the culture of the book - to show the confinements of our literature culture by getting outside of it, however tenuously and briefly...

A Cheops Pyramid of Books

For the purpose of visualizing the immense weight of the written cultural transmission of civilized humanity, a comparison with an existing monument will be made. The term *bibliosphere* is introduced here as a comprehensive concept of the whole universe of written productions in books, manuscripts, newspapers, magazines, files, shards, inscriptions, murals, etc., that humanity has produced in the last 5000 years of writing civilizations. We can also call this the *collected cultural memory* of our civilizations as it can be put in written form. To a large part this material is in alphabetic script, partly in other scripts, and partly in form of pictures, diagrams, drawings, and symbolisms pertaining to the existant different scientific and artistic notation systems. All of it is conserved as static representations. The existing material is archived mostly in our libraries, museums, government-, and church archives. For the sake of the discussion, we make a very rough guess at the amount of material thus presented, how many different pieces of writing that may exist. Even such a huge library as the US library of Congress contains only a minute fraction of that material. One estimate is several billion ($n*10^9$) different books and writings (Veltman 1997). If we assume that one book has on the average about one million (one mega) chars, each of which can be stored in one byte on a computer, we come to an amount of data in the order of $n*10^{15}$ bytes or $n*1000$ Terabytes. One book may occupy a volume of on the average about 1000 cm^3, that means 1000 books stacked in one m^3, such that for 2.5 billion books, we would need 2,500,000 m^3, and if we look around for a building of comparable volume, the Cheops pyramid would fit in nicely with its 230 m ground width and 147 m apex height amounting to about 2,500,000 m^3 of stone (Chambers: Pyramid).[124] Let us now consider that an average human can read (and understand) about 50 chars/ sec, and one year has 31,536,000 (31 mega) seconds, so that one can read non-stop about 1550 mega chars, or 1550 books in one year, but in real life, one gets an average of about 1/10 of that throughput, i.e. 150 books, in one human reading lifetime of 60 years, this will sum up to about 10,000 books. By this it would take a human being about 6,500,000 years to read one billion of our amassed human biblio-productions. It would be very helpful if there were a device or a method that would allow us to read (and understand) all that mass in a considerably faster way. No such alternative is in view, because of the limitations of the alphabetic principle and the human cognitive system. If we are to search for something that helps us cope with the immense amounts of data that humanity has amassed so far, let alone what will be produced in the future, if technological civilization continues in any way as it did in the last century, then we have to search outside of the alphabetic framework altogether, and this necessitates us to step outside the confinements of our alphabetic literature culture, and the alphabetically framed thought patterns of our civilization, as George Landow indicates in the above quotation.

17.1.3. The 'pathos' factor

@:HAARMANN_PATHOS

Haarmann (1997: 679-682) points out a loss factor in written tradition which he calls the *pathos*. He also shows the tendency of language-oriented nationalistic fracturing to break up into perpetually warring nations:

(p. 680, 682): In the classical Greek context, the alphabet with its arbitrary letters did not develop, as it has been claimed, the sense of abstractness or logical thinking among the Europeans (which had

---

[124] ->:PERSPECTIVE_VIEW, p. 110

originated before the introduction of alphabetical writing), but it may be held responsible for the monopoly of the antique tradition in reasoning based upon abstract thinking which modern Europeans still share and which has been termed "logocentrism" by Derrida (1967). The priority of the categories of the *logos* (thought, reason, logic) over those of the *pathos* (feeling, sensual experience, emotion) may be considered a repercussion of alphabetic abstractness on the human mind. Accordingly writing has been appreciated as one among many features by which a modern culture characterizes itself.

(p. 682): Language-oriented nationalism, particularly geared to the needs of written communication, has been a characteristic facet in the cultural history of Europe since at least the Middle Ages... Another instance of state language nationalism is the monopoly of French as the only official language in France which was achieved via a series of royal language decrees in the fifteenth and sixteenth centuries.

17.1.4. Logocentrism and "Die Hintergehbarkeit der Sprache"

@:LOGOCENTRISM

In the statement above Haarmann also mentions *logocentrism*. In the present context, this will be used with a special meaning: *the tendency to assume that all aspects of this world and of human life can be adequatly verbalized, and consequently also put in writing*. In this view, *logocentrism* and *graphocentrism* occur in combination.[125] It arises through intensive schooling of people, whose world view has been thoroughly "dyed in the wool" by bookish learning: the intellectuals, bureaucrats, and the law-makers / -interpreters / -enforcers of the writing civilizations.

17.1.5. The Logos

@:LOGOS

(Encarta: Logos): "Logos" (Greek: "word," "reason," "ratio"), in ancient and especially in medieval philosophy and theology, the divine reason that acts as the ordering principle of the universe.

The 6th-century BC Greek philosopher Heraclitus was the first to use the term Logos in a metaphysical sense. He asserted that the world is governed by a firelike Logos, a divine force that produces the order and pattern discernible in the flux of nature. He believed that this force is similar to human reason and that his own thought partook of the divine Logos.

The 1st-century AD Jewish-Hellenistic philosopher Philo Judaeus employed the term Logos in his effort to synthesize Jewish tradition and Platonism. According to Philo, the Logos is a mediating principle between God and the world and can be understood as God's Word or the Divine Wisdom, which is immanent in the world.

At the beginning of the Gospel of John, Jesus Christ is identified with the Logos made incarnate, the Greek word logos being translated as "word" in the English Bible: "In the beginning was the Word, and the Word was with God, and the Word was God. ... And the Word became flesh and dwelt among us ..." (John 1:1-3, 14). John's conception of Christ was probably influenced by Old Testament passages as well as by Greek philosophy, but early Christian theologians developed the conception of Christ as the Logos in explicitly Platonic and Neoplatonic terms (see NEOPLATONISM). The Logos, for instance, was identified with the will of God, or with the Ideas (or Platonic Forms) that are in the mind of God. Christ's incarnation was accordingly understood as the incarnation of these divine attributes."

The above quotation from the encyclopedia gives a short genealogy of the *logos* cultural complex in western thought. Its significance as one of the core tenets of western Christian religion and therefore the western cultural fabric is illustrated with the quotation from John 1:1. The standard bible translations, that translate *logos* as "the word", commit, strictly speaking, a translation error. In the original Greek version, the *logos* forms a *complex* of meaning that is much wider than just "a word".[126] This is evident by the Heraklit use of the term and by tracing the greek etymology of *logos*. The *logos* was harnessed to the aims of the religions of the book and bound to the word as it was preserved in writing. Goethe takes up this issue in his Faust.

> ->:GOETHE_FAUST, p. 236, ->:WORLD_FOUNDATIONS, p. 39

---

[125] As opposed to the view of Derrida (1974), who separates them.
[126] Spengler (1980: 732)

17.1.6. Conceptual immunization

@:CONCEPT_IMMUNIZE

Logocentrism can also be called *conceptual immunization*. This means: that the *principle of conceptualization* may *immunize* us against non-conceptual modes of thinking or feeling. And it may be necessary for specific cases, to focus precisely on such non-conceptual modes. And from within the conceptual sphere, this cannot be done. The world of alphabetically fixated concepts (which is called the *bibliosphere* in the present study[127]) envelops us all like the water envelops the fish,[128] and most of us are, most of the time, completely unaware, of how it envelops and influences all our conceptions of reality. For this reason the alphabetic literature of our civilization may not be the most ideal place to look for ways out of this.

->:SEMIOSPHERE, p. 116, ->:FUNDAMENTAL_IDEAS, p. 112, ->:SYMBOL, p. 119

17.1.7. The Socratic contention

@:SOCRATIC_CONTENTION

A slightly different wording is the Socratic contention:
Popkin (1956: xiv, xvi): Socrates, at his trial in 399 B.C., maintained that the reason he philosophized was that 'the unexamined life was not worth living'. ...
Most of us, like Socrates' contemporaries, have never bothered to examine our views to discover their foundations, whether we have adequate or acceptable reasons for believing what we do...
Otherwise, the best that we may be able to accomplish by philosophical examination is only to realize the inadequacy of all answers that have been thus far presented.

A fundamental factor is that the western academic tradition, as an intellectual enterprise of the last 2500 years, is based on the alphabetic written tradition as handed down to us in countless volumes of recorded philosophical and scientific thought since the days of Thales, Anaximander, Anaximenes, Heraklit, and Parmenides. Pleger (1991), Heuser (1992), Gadamer (1989). A fundamental philosophical question to ask is: what may have been the systematic inadequacy of all the alphabetically formulated questions and answers that have been thus far presented in the whole of recorded history of writing civilizations?

->:FUNDAMENTAL_IDEAS, p. 112

17.1.8. The emphasis on non-verbal cultural transmission

@:WITTGENSTEIN

If alphabetically reinforced logocentrism has indeed influenced the thinking of the elites of our Western cultures in such a subtle and profound way as to have erected an invisible conceptual barrier and a filter for our experience around us, then it seems useless to try to use this very same medium of the alphabet for a demonstration of its own weaknesses and drawbacks, the accounting of all those instances where verbal description is not the ideal, nor a suitable form of cultural expression or transmission. For demonstration, we may borrow the famous aphorism 7 of Wittgenstein's tractatus: (Wittgenstein 1969: 83)

Wovon man nicht sprechen kann, darüber muß man schweigen[129].

There is an obvious answer:

Wovon Du nicht sprechen kannst, das mußt Du tanzen, singen, musizieren, töpfern, schreinern, schmieden, weben, spinnen, malen, streicheln und massieren[130]. (A.G.)

---

[127] ->:BIBLIOSPHERE, p. 195

[128] ->:COSMIDES, p. 195

[129] Of which one cannot speak, one has to be silent about.

[130] What You can't speak about, that You have to dance, sing, make music, make pottery, make carpentry, forge, weave, spin, paint, caress, and massage.

17.1.9. Excarnation

@:IN_EXCARNATION

This example emphasizes those experiences in the lived (incarnated[131]) reality of bodily performance that are beyond verbal descriptions and which cannot be captured by words. This is (or was) the daily reality of non-civilized (indigenous) cultures that had not taken up writing for the preservation of their cultural memory.

->:CULTURAL_MNEMO, p. 230, ->:SOMATIC_FACTORS, p. 145

The salient issue is that by a strict logocentric standard, everything conveyable through various somatic acts and productions can be mapped onto a statement made in verbal language (plus some graphics), which can, in turn be written down with an alphabet[132], and then printed in a book, copyrighted, enshrined in laws and contracts, and sold for a good price on the market. Anything that cannot be mapped to such statements, tends to be considered as non-existent, or unimportant, and will fall out of the rasters of the logocentric framework.

In the civilizations, the incarnated somatic cultural memory was carried on in the arts and crafts traditions until a break set in with the printing revolution (Assmann, 1993: 137-139 citing Giesecke), and the somatic value of the arts and crafts experienced a devaluation, and became to be considered as of lesser import than the pursuit of excarnated literate exercises of the elites (Morris 1986: 7-79).

Assmann (1993: 147): Vier Sinne sind kaltgestellt, die Beweglichkeit des Körpers ist in starre Ruhelage versetzt. Die Wahrnehmung ist reduziert auf die Augen, die statt in der farbigen Welt umherzuschweifen auf eine geregelte Minimalbewegung des Abtastens schwarzer Spuren auf weißem Grund festgelegt sind. "Bücher machen kurzsichtig und lahmärschig", so faßt Hans Blumenberg den schriftbedingten Verlust an Sinnlichkeit und Mobilität zusammen... "No man can print a kiss". (148): Das vielfarbige, vielgestaltige, vibrierende Leben läßt sich sowenig aufs Papier bannen wie ein Würfel auf eine Fläche...

In his article on the work of the French Guild "Companions du Devoir", Bernard (1985) presents an argumentation that parallels that of Leroi-Gourhan (1984), and he describes the problems engendered by the "aberration" of excarnation, the separation of manual and intellectual work. He presents the argument that the hand and the mind are complementary, and "the hand is not the mere instrument of the mind, but its close associate" (p. 15). He merits the Egyptian stone art: "The Egyptians, however, worked stone with stone for thousands of years, and it is not the least of their merits to have brought beauty to a very high point in their great works using methods which for a long time remained prehistoric" (p. 15). The problems of the "aberration": "It has been said that we have lost our common sense, and to tell the truth we are also losing our 'senses'. The same causes that have transformed our work have also altered our vision, deformed our hearing and our sense of smell, and weakened our backbones. Will we, in the same way, lose the use of our hands and our sense of touch?"

->:CRAFT_TRADITION, p. 221, ->:SOMATIC_FACTORS, p. 145
->:SMELL, p. 149, ->:TACTILE, p. 147

---

[131] Referring to the excarnation / incarnation dichotomy in the history of Christianity that Aleida Assmann refers to in (1993: 133, 141-143). ->:LIT_CULTMEDIA, p. 140

[132] Illich (1988: 11): This Byblos alphabet whose letters stand only for sounds does not have any letters for vowels. The freely voiced qualities of breathing are not indicated, only the consonants, the harsh or soft obstacles the breath encounters. Its script does not yet transform the page into a mirror of speech, but is rather a burial ground for the skeleton of language.

(13): The Greeks froze the flow of speech itself onto the page.

So the question turns into that of the "Hintergehbarkeit der Sprache", an expression originally coined by Nietzsche that is only very inadequately translated as "the subversibility of language", (Holenstein 1980: 11). The question is that of language as epistemological condition of any knowledge and first subject of a *prima philosophia* (ibid.). The fundamental problem is of demonstrating that the range of expression of non-verbal productions exceeds that of verbal language itself. This can in no way be done in (excarnated) writing, but only in bodily experience. But then the demonstration must consist in the performance itself, and its appreciation: a piece of music, a dance, an epic poem, or a ritual performance. As will be shown later, the field of ritual is essentially this. Staal (1982, 1986, 1989).

->:RITUAL_PATTERN, p. 224

17.2. Defects of writing

17.2.1. Factors of obsolescence: missing mnemonic ecology

@:OBSOLESCENCE

As to the potential case of "worn-outness" of the alphabet, the discussion of the *bibliosphere* shows the main catch. The calculation yielded that it would take a human being about 6,500,000 years to read one billion books of the collected written materials of humanity. One principal problem of the alphabet compared to a non-material cultural transmission is that it facilitates the unchecked accumulation of obsolete data.[133] Among those billions of books in the bibliosphere, there may be one million redundant duplications and different re-statements of Platon's ideas,[134] and one million redundant duplications of some statements that are attributed to Jesus Christ, and one million redundant duplications of some statements of Muhammad, Moses, Buddha, ... and so on. In a non-material cultural transmission everything that is transmitted must fit into the memories of the human cultural memory carriers, and what doesn't fit, is lost, forgotten. While this may be deplorable from one side, it has the great advantage that people will be extremely inventive how to condense the memorized material to the maximum. And the availability of writing has led to a gross sloppiness with regard to the potential of condensation of memorabilia. The writing civilizations could be accused to have grossly neglected the factor of *mnemonic ecology*. This is essentially the criticism of Plat**o**n in the next section.

17.2.2. Factors of defects and serious side effects of writing

@:SIDE_EFFECTS

As to the other potential defects of writing, let us now review some more of the principal criticisms of writing that were made in the literature and that were touched in the prior discussions of this study.

Schärli (1996: 29): We remember 10% of what we read, 20% of what we hear, 30% of what we see, 50% of what we hear and see, 70% of what we ourselves say, 90% of what we do ourselves.

---

[133] "Wissen als Altlast?". Kompaktseminar, Prof. Dr. Klaus Kornwachs, Humboldt-Studienzentrum, Uni Ulm, 4-6 March, 1998.

[134] It seems as no coincidence that Western philosophy and the alphabet derive from the same culture: Ancient Greece. We can extend the aphorism of Whitehead: "The safest general characterization of Western philosophical tradition is that it consists of a sequence of footnotes to Plato" (Whitehead 1957: 53) to mean that whatever types of fundamental question (or rather: the ways and manners to ask questions at all) were put up from the times of Thales, Anaximandros, Heraklit, Parmenides, Plat**o**n, and Aristoteles, this has kept Western philosophy in an alphabetic mental frame ever since.

This quotation from Schärli gives corroboration to Platon's statement in Phaidros below. A defect or unwanted side effect of writing may be that it is an expedient way to facilitate forgetting.

@:PLATO_PHAIDROS

Platon (1988, Phaidros, 274c-275): ... But when they came to letters, This, said Theuth, will make the Egyptians wiser and give them better memories; it is a specific both for the memory and for the wit. Thamus replied: O most ingenious Theuth, the parent or inventor of an art is not always the best judge of the utility or inutility of his own inventions to the users of them. And in this instance, you who are the father of letters, from a paternal love of your own children have been led to attribute to them a quality which they cannot have; for this discovery of yours will create forgetfulness in the learners' souls, because they will not use their memories; they will trust to the external written characters and not remember of themselves. The specific which you have discovered is an aid not to memory, but to reminiscence, and you give your disciples not truth, but only the semblance of truth; they will be hearers of many things and will have learned nothing; they will appear to be omniscient and will generally know nothing; they will be tiresome company, having the show of wisdom without the reality.
...
Soc. I cannot help feeling, Phaedrus, that writing is unfortunately like painting; for the creations of the painter have the attitude of life, and yet if you ask them a question they preserve a solemn silence. And the same may be said of speeches. You would imagine that they had intelligence, but if you want to know anything and put a question to one of them, the speaker always gives one unvarying answer. And when they have been once written down they are tumbled about anywhere among those who may or may not understand them, and know not to whom they should reply, to whom not: and, if they are maltreated or abused, they have no parent to protect them; and they cannot protect or defend themselves.

@:SOCIETY_EFFECT

If we focus on the societal conditions as "serious side effects in usage", we may take a closer look at the kinds of societal systems that writing has served to fortify in the last 5000 years. These may not be to everybody's full liking. But what exactly is an "agreeable and desirable society" is not an academic question, but a political one, and therefore cannot be dealt with here. For possible further discussions of this subject, the following statements may serve as starter, and further material is found in the works of S. Diamond (1976), J. Diamond (1992), (1997), Foucault (1969), and Siu (1993).[135] Ivan Illich (1976-1988) has added an important criticism on how the institutional school system leads to a forced delegation of cultural intelligence to the specialist classes. This may then lead into an inquiry into the question of correlations between writing civilization and social pathology.

Levi-Strauss, (1978: 294, 295, transl. A.G.): If my hypothesis is true, then we have to assume that the primary function of written communication is to facilitate enslavement. The use of writing for unselfish purposes, i.e. in the service of intellectual and aesthetic satisfaction, is a secondary result, if not even a means to amplify the other, to justify it and to mask it... Even if writing alone wasn't sufficient to stabilize knowledge, it was indispensable for the consolidation of domination.

Derrida (1974, 168, transl. and condensed, A.G.): That access to written symbols grants the sanctified power... that the whole priestly class - it they wielded political power or not - arose at the same time as writing arose, and that it could establish itself with the aid of the dominion that was grounded in writing, that military strategy, ballistics, diplomacy, agriculture, taxation, and criminal law are bound up in their history and their structure with the evolution of writing. That the origin of writing was associated in the most diverse cultures ... with the distribution of political power and the structure of the family, a process that was very complex but also very orderly. The possibility of capitalization and the political-administrative organizations was always going through the hands of the scribes. Wars were possible because technology and administration were able to cooperate. Writing systems were always more and the same time something else than mere communication media. Power and

---

[135] ->:PANETICS, p. 233

efficiency of rulership was only thinkable through the "symbolic force" of writing. Monetary and pre-monetary economy co-originated with writing.

Gellner (1993: 211): Diejenigen, die den letzten König mit dem Gedärm des letzten Priesters erdrosseln wollten, ließen damit dem Beitrag sein Recht widerfahren, den die Geistlichkeit zur Aufrechterhaltung des Systems leistete.

Gellner (1993: 179): Die agrarische Gesellschaft ist zur Gewalt verurteilt. Sie hortet Reichtümer, die verteidigt werden müssen, und deren Verteilungsmodus mit Gewalt durchgesetzt werden muß. In einem zuverlässigen Sinn genügend Reichtümer gibt es nie. Die Agrargesellschaft ist eine malthusianische Gesellschaft, die durch ihren Bedarf and Arbeitskräften und Kriegsmannschaft gezwungen ist, die Bevölkerungszahl so groß wie möglich zu halten. Nachkommenschaft oder jedenfalls männliche Nachkommenschaft steht hoch im Kurs, und periodische Hungersnöte sind mehr oder minder unvermeidlich. Sodann ist die Verteidigung der befestigten Getreidespeicher, wie immer diese auch aussehen mögen, ein zwingendes Erfordernis... Im Agrarzeitalter waren die Menschen gar nicht frei... sie waren unterdrückt und in einem Zustand ständiger Unterernährung... Die Rangordnung wurde mit Gewalt aufrechterhalten, aber sie war zugleich ein soziales Kontrollinstrument.

The memetics discourse[136] has presented major research on the pathologies of culture. A common term in memetics is "viruses of the mind" (Brodie). Special research would have to be devoted if and how writing influences the "virulence" of mind memes. But it is easily seen even without longer research that TV and radio are far more efficient in transmitting virulent pathological ideas than could ever be done with written material.[137]

17.2.3. Factors of principal limitation: stasis vs. dynamis

@:PRINCIPAL_LIMIT

Obviously, there are many domains where verbal language is not useful or sufficient for description, and the many alternate systems used by humans, like mathematics, music, chemical symbolisms, graphics, maps, etc., show that this has been addressed since a long time. But some aspects are not covered yet. The main missing factor is *dynamics*. All notation systems are static and don't cover the essentially dynamic character of life. This is a possible problem for a civilization that commits by far the largest part of its cultural memory to a system of static representations. In many non-western cultures, there is (or was) a strong tradition of non-verbal, dynamic cultural transmissions and it needs to be noticed that western civilizations have lost "the science of ritual" to a large extent (Staal 1982). There is the large field of cultural movement patterns that are not amenable in principle to static representations, since movement, when frozen in a static form, simply vanishes. *Dynamis* is incontrovertible with *Stasis*. This essential lack of all the static CMM that are so widespread in western civilizations alerts us to the possibility that perhaps there may be some very essential factor that civilizations are losing when they commit the bulk of their cultural transmission to written, static representations.

> ->:DYNAMIC_CMM, p. 203, ->:RITUAL_PATTERN, p. 224

---

[136] ->:MEMETICS, p. 248

[137] See McLuhan's research on the use of radio propaganda by the Nazis.

18. Dynamic Cultural Transmission

@:DYNAMIC_CMM

The manipulation of the body through movement in purposeful, intentionally rhythmical, attention riveting, discrete cultural patterns presents a dramatic, powerful statement ...

Hanna (1979: 198)

Je danse, donc je suis

Leopold Senghor, in Paque (1967)

Perhaps the largest area of cultural transmission where the limitations of the expressive capacities of verbal language and writing are most apparent, is the field of *kinemorphics*. We will begin this section by giving some representative statements of researchers and practicioners of these traditions.

18.1. Worlds beyond Words

@:BEYOND_WORDS

Moore (1988, 1): In recent years, research in the area of nonverbal communication has verified that words comprise only about 10 percent of human communication while nonverbal behavior makes up all the rest.

Birdwhistell (1970: 188): For the cinesicist, silence is just as golden as are those periods in which the linguistic system is positively operative.

Moore (1988, 2): Unfortunately, the very ubiquity of movement leads to its being taken for granted. Our dependence upon movement perception for forming impressions and making judgements about the life around us appears almost proportional to our lack of awareness that we are doing so. The automatic subliminal functioning of movement perception may be efficient but, unexamined, it may also account for many illusions about the life around us... As Condon has mused, "Maybe 95 percent of reality for us is mythological, and it behooves us to begin to look *at* the universe itself and let it speak and talk."

Moore (1988: 164): Yet it is a peculiar feature of modern life that something as basic as movement, as culturally rich and complex as dance, has been largely overlooked in the schooling of the young. Anna Pavlowa is reported to have said, "Life would probably have far more meaning and light if, side by side with the teaching of reading and writing, people were also taught to dance beautifully."

Moore (1988: 297): Body movement is the first seat of knowledge for the human child. Soo to it was the first source of knowledge for the species. It would therefore seem we *should* know a great deal about human movement. But what we do *not* yet know is greater still. Perhaps as we continue to explore the world beyond words, we may lift the veil of ignorance a little more and, by so doing, illuminate not only where we have been but also where we are going.

Moore (1988: 295): The role that culture plays in dictating how the body will be used has come to be appreciated only in this century. Pioneers such as Franz Boas, Bateson, Hall, Margret Mead, and Lomax have focused our attention on the influence of culture on body use, knowledge, and prejudice. Yet, little is known about how this influence is exerted, how malleable human movement behavior is, and to what extent and by what means culturally-learned motor habits may be learned.

Moore (1988: 296-297): The virtual absence of any serious reserach on movement's role in human development after the age of five or so is a very peculiar lapse in the history of human studies. Consequently, examination of the developmental functions of movement throughout the human life span represents one of the most unexplored areas of inquiry on the "beyond words" horizon and possibly one of the richest and most fascinating.

Moore (1988: 297): The role of movement in human history is as much a matter of supposition as fact. It is ironic that movement, which is an ever present and highly influential part of human life, has

escaped sustained study at the longitudinal and historical levels[138]. We know very little about how the movement behaviors of the individual change throughout his or her lifetime. We know perhaps even less about how the movement patterns of cultural groups and the species itself are developing over centuries. Since movement is a part of time and life itself, its potential to elucidate the mystery surrounding us appears great.

Hanna (1979: 198): The power of dance lies in its cybernetic communication process, its multimedia thought, emotion, motor and aesthetic capability to create moods and a sense of situation for performer and spectator alike. The manipulation of the body through movement in purposeful, intentionally rhythmical, attention riveting, discrete cultural patterns presents a dramatic, powerful statement which can influence predispositions, attitudes, beliefs, and actions.

Moore (1988: 161-162): "Thus motion.. which was believed to denote life, was the first thing which the savage mind connected with supernatural powers." By imitating the movement of animals, treed, streams, clouds, etc., humans attempted to align themselves with the supernatural powers that they believed inhabited the natural world. Highwater has hypothesized that through dance, primal peoples "touch unknown and unseen elements, which they sense in the world around them."

Moore (1988: 169) as Meerloo has noted, "the dance of the medicine man, priest or shaman belongs to the oldest form of medicine and psychotherapy in which the common exaltation and release of tension was able to change man's physical and mental suffering into a new option on health."

Moore (1988: 164) [Laban] continues, "In the teaching of children and the initiation of adolescents, primitive man endeavoured to convey moral and ethical standards through development of effort thinking in dancing. The introduction to humane effort was in these ancient times the basis of all civilization."

Moore (1988: 295): Franziska Boas commented... "At last dance in modern society is acquiring the natural function which it had and still has in those less mechanized and less guilt-ridden cultures... men and women... may find a renewal of life, a stimulus of creative action and certainly a better understanding of the intricacies of human nature, through actual doing."

Moore (1988: 297): As Laban suggested, "In every trace-form, created by the body, both infinity and eternity are hidden. Sometimes the veil seems to be lifted for an instant. Inspiration, clairvoyance, and a heightened awareness can thrive from this fissure in the part of the world which we see as eternity."

Moore (1988: 163): But, while the Christian Church has not been totally successful in suppressing dance, it has not been completely unsuccessful, either. As Highwater observes, "the idea that spirituality can be associated with the body is extremely remote from the Western belief in the dichotomy of mind and body, spirit and flesh." Indeed, communal dance as a means to communicate with, celebrate, or influence the deity would be regarded as an exotic or even superstitious activitiy in contemporary society. "The European has lost the habit and capacity to pray with movement," Laban has observed, and the fact that "very little is known in our day of the magic which resides in movement, and the potency of certain gestures" has also been sadly noted by Isadora Duncan. Today, to a great extent, movement has been stripped of its sacred functions and relegated to the purely secular domain of human life. As a result, movement now possesses only a humble and static existence in Western civilization"
Unfortunately, divorcing spiritual values from our physical activities has had an impoverishing effect on the quality of life. As Duncan noted:
The number of physical movements that most people make through life is extremely limited. Having stifled and disciplined their movements in the first states of childhood, they resort to a set of habits seldom varied. So, too, their mental activities respond to set formulas, often repeated. With this repetition of physical and mental movements, they limit their expression until they become like actors who each night play the same role. With these stereotyped gestures, their whole lives are passed without once suspecting the world of the dance which they are missing.

---

[138] this corresponds to the *synchronic / diachronic* distinction used in the present study. See:
->:CULTURE_PATTERN, p. 132, ->:CMS_DEF, p. 139

18.1.1. Kinemorphae, Kinesics, Kinesthetics and Rhythm

@:KINEMORPHAE

Literature: Noeth (1985: 354-361), Birdwhistell (1970), Bücher (1924), Chernoff (1994), DerraDeMoroda (1982), Franko (1993), Hanna (1979), Jeschke (1983), Lamb (1979), Moore (1988), Spencer (1985).

The term *kinemorphae*[139] or *movement Gestalt*[140] is used here in the meaning of the Japanese term *Kata*.[141] It denotes a wide-ranging class of dynamic cultural transmissions that comprises elements such as dance, but also gymnastics, martial and marital arts, and juggling, etc., whose common denominator is that they involve complex movement patterns of the body. These are intersubjective cultural patterns as described in:

>   ->:CULTURE_PATTERN, p. 132.

The reason and effects for which people engage in *kinemorphae* behavior are covered only partly by the communicative aspect as it is treated in kinesic and kinemic study, Noeth (1985: 354-361), Birdwhistell (1970). This aspect can be covered with the methods of semiotics, and analysed into discernible phases of movement. For this analysis, different notation systems have been devised, like the one Birdwhistell (1970) describes in his book (101-304). As he points out on p. 186, there is no possibility to assign a straight "meaning" to gestures that could be directed into a kind of "lexicon".[142] A general survey of kinemorphic notation systems is given by Jeschke (1983). The best known of these is probably the Laban system (399-406). One main problem of all kinemorphic notation systems is the immense spectrum and variability of movement parameters that make the notation either very difficult and time-consuming to handle or unsuitable for finer gradations as they may be needed in dance choreography when very fine gestures like facial expressions are to be included (154-165). Another, but more fundamental, problem of these notations is that they have no way of taking into the account the essential ballistic gravitational dynamics of the body mass as it is being propelled into agitated movements by the muscular effort, that is so aptly described by Kleist in his treatise on the "Marionette Theater" (Franko 1993: 144-145).

The externally discernible aspects of movement are not the only parameters that bear importance in the *kinemorphae* process. When someone is dancing, she is not only dancing to convey a message to someone else, but she dances to feel *herself* moving in her body, and to feel *herself* moving in synchrony with other moving bodies. This may be called the *proprioceptive* aspect of movement behavior. This side covers the concurrent physiological processes, the feelings, and inner experiences, of the person doing the movement.

The *proprioceptive* aspects of body sensations connected with gravity are *kinesthetic, spatial situational* and *spatial motional*. (MM-Encyc: Biological equilibrium). The kinesthetic sense is related to the tactile sense since the vestibulum organs in the ear are tactile hairs that

---

[139] Birdwhistell (1970: 101) uses *kinemorph* in an analogous way to the linguistic *morpheme*, here it is in the more general meaning of Gestalt morphology. ->:GOETHE_MORPHOLOGY, p. 129

[140] Spengler (1980: 703-712) describes something very similar to *kinemorphae* or *Kata* in his description of "Das Wesen der Rasse". His unfortunate confusion with genetic transmission implied by the term race resulted not only in the fatal connection to Nazi race politics, but also led to the complete oblivion of the more useful aspects of his contribution.

[141] ->:KATA, p. 221

[142] Which is not even possible for many situations of verbal communication as pointed out by Strecker. ->:MULTIVOCALITY, p. 225

provide the sensory data, *spatial situational* gives the spatial orientation of the head with respect to the earth's gravitational field (up and down), *spatial motional* measures the acceleration.

Other physiological effects are dependent on the vigorousness and speed of the movement which is generally faster and more agitated than the kinds of movement patterns a normal western civilization dweller performs when shopping in a supermarket. It is usually also not easy to lead a conversation in verbal prosa language while dancing, and this gives another aspect why dance and verbal prosa language are antithetical. The above quotations of researchers and practicioners of these traditions convey some of that incontrovertibility of the dance medium to verbal description.

Blacking (1985: 65): What is anthropologically interesting about dance and music is the possibility that they generate certain kinds of social experience that can be had in no other way... There is a methodological problem that cannot be avoided: aspects of dance and musical communication cannot be translated into other modes without distortion of meaning... (66): Films, videotapes, and various notation systems such as Laban and Benesh are all useful tools for referring to the object of study, but they cannot describe or explain what is happening as human experience, because dance... is about subjective action and conscious human intentions, and not only about observed behavior.

18.1.2. Trance

@:TRANCE

A very common phenomenon occurring in connection with dance, and even harder to describe in the intersubjective terms of verbal prosa language, is *trance*. Benedict (1934: 233, 265-270), Rouget (1985: 3-46). The verbal description of a trance experience generally means nothing to someone who hasn't experienced it, and also it doesn't help anyone enter a trance. We have here a prime case of the "Hintergehbarkeit der Sprache" (Holenstein 1980). Goodman (1974-1990) for example, uses highly subjective terms to describe her personal experiences with spirit evocation techniques that she discovered while imitating postures depicted on statues. Trance is an element in shamanic practices and initiations. Rouget (1985) gives a world wide overview of trance practices in connection with music covering shamanism, possession trance, exorcism, initiation, and the historical mystery cults of the ancient world and religious movements like the Sufis. (As example: Mevlana whirling Dervishes, p. 263-289). Because verbal description of trance states is considered inadequate, there are practicioners who provide opportunities for trance experiences for westerners. Felicitas Goodman has led such seminars herself and her students continue this work. Also Kaye Hoffman (1986-1996). The Umbanda rituals that are presently also being led in the U.S. and Europe (Baby Garroux, personal communication) are in any case an indication for the great demand of such experiences that exists in the North-Western civilizations.

18.1.3. The paradox of movement and dynamis

@:MOVEMENT_PARADOX

No matter how many pages of intensive verbal description of the quality of movement patterns may be delivered, they will always fall way short of what is happening. This is nowhere as evident as in dance, but it is more evident to the dancer herself than to those who may be uncomprehending consumers of the performance. The power and value of dance can only be experienced in and through dancing oneself. Let us take Zeno's famous paradoxes for a demonstration: If we press movement into static written symbols, the movement disappears altogether. (Goppold 1998: 2), (Marijuán 1997). Alphabetically framed thinking in static concepts and dynamic movement are incommensurable. It took humanity 2000 years after the invention of the alphabet, until western mathematics could overcome the block of thinking in static categories and find a useful formalism for describing motion with the calculus invented

by Newton and Leibniz. Newton stated about his discoveries: Not only may we speak of the rate of change of distance with time, which is *velocity*... but we may speak of the rate of change of velocity with time, which is *acceleration*". (Young 1976: 11).

18.2. The Aoide-Hypothesis:
Information technologies of advanced oral tradition

@:AOIDE_HYPOTHESE

18.2.1. Neurology, epics, trance, and neuronal patterns in the brain hemispheres

@:NEURO_BRAIN

An important aspect of the methods and arts (CMA) that the Cultural Memory Bearers (CMBs) of the oral traditions used, is the issue of *epic trance*. In present neurological research, this is formulated as a question of self-stabilizing neuronal homeostatic patterns that are evoked by reciting and listening to metered poetry. It has been treated in a paper by Turner and Pöppel.[143] In their paper, Turner and Pöppel make a strong case for the effects of metered poetry on the development of a wholesome, whole-brained usage of the mind. Metered poetry has the capability of inducing the brain to a mode of functioning that, according to their hypothesis, is actually of a higher quality than the free-form prosaic mode of thinking that has become the norm in script based civilization. We thus have an indication that the epic poetry induces mental states and modes of functioning that are today loosely called "trance". This is often associated with the more prophetic aspects of *aoidoi*. In the indian Vedic tradition, we find the *rishis*, whose task was predominantly that of seers and prophets. It also gives us an opportunity to reconsider the tradeoffs humanity has bought into by adopting writing, occasion for a reconsideration of the inherent drawbacks of this powerful civilatory instrument. Platon also issues a stern warning about the use of script in Phaidros (274c - 276e[144]).

Pöppel and Turner write:
(p.75): Human society itself can be profoundly changed by the development of new ways of using the brain. Illustrative are the enormous socio-cultural consequences of the invention of the written word. In a sense, reading is a sort of new synthetic instinct, input that is reflexively transformed in to a program, crystallized into neural hardware, and incorporated as cultural loop into the human vervous circuit. This "new instinct" in turn profoundly changes the environment within which young human brains are programmed... our technology [functions] as a sort of supplementary nervous system.

(p.76-77): **The fundamental unit of metered poetry is what we shall call the line**... it is recognizable metrically and nearly always takes from two to four seconds to recite... The line is nearly always a rhythmic, semantic, and syntactical unit as well - a sentence, a colon, a clause, a phrase, or a completed group of these. Thus, other linguistic rhythms are accomodated to the basic acoustical rhythm, producing that pleasing sensation of appropriateness and inevitability, which is part of the delight of verse and aid to the memory.

The second universal characteristic of human verse meter is that certain marked elements of the line or group of lines remain constant throughout the poem and thus indicate the repetition of a

---

[143] Turner and Pöpel: "Metered Poetry, the Brain, and Time" in Rentschler (1988:71-90).

[144] Unfortunately, Platon himself must not have taken his own words too seriously since he left us with the largest volume of written material produced by any individual up to his time. For his defence it could be mentioned that he probably never wrote anything himself. Platon was an aristocrat und thus still bound up with the class struggle against writing. As Havelock has noted, the greek aristocracy resisted for very long time the writing introduced by the lowly people: the merchants and craftsmen. The aristocracy considered the epic tradition the only culture befitting them. Nevertheless, Platon allowed his scribes to note down his diatribes that have been handed down to us well-preserved over 2400 years.

pattern. The 3-second cycle is not marked merely by a pause, but by distinct resemblances between the material in each cycle. Repetition is added to frequency to emphasize the rhythm. These constant elements may take many forms, the simplest of which is the number of syllables per line... Still other patterns are arranged around alliteration, consonance, assonance, and end rhyme. Often, many of these devices are used together, some prescribed by the conventions of a particular poetic form and others left to the discretion and inspiration of the individual poet.

The third universal characteristic of metrical poetry is *variation*. Variation is a temporary suspension of the metrical pattern at work in a given poem, a surprising, unexpected, and refreshing twist to that pattern... Meter is important in that it conveys meaning, much as melody does in a song. Metrical patterns are elements of an analogical structure, which is comprehended by the right cerebral hemisphere, while poetry as language is presumably processed by the left temporal lobe. **If this hypothesis is correct, meter is partially a method of introducing right brain processes into the left brain activity of understanding language.** In other words, it is a way of connecting our much more culture-bound linguistic capacities with relatively more primitive spatial recognition pattern recognition faculties, which we share with the higher animals.

(p.81-82): Here it might be useful to turn our attention to the subjective reports of poets and readers of poetry as an aid to our hypothesizing. These reports may help to confirm conclusions at which we have tentatively arrived...
The imagery of the poem can become so intense that it is almost like a real sensory experience. Personal memories... are strongly evoked; there is often an emotional re-experience of close personal ties with family, friends, lovers, and the dead. There is an intense realization of the world and of human life, together with a strong sense of the reconciliation of opposites - joy and sorrow, life and death, good and evil, human and divine, reality and illusion, whole and part, comic and tragic, time and timelessness... There is a sense of power combined with effortlessness. The poet or reader rises above the word, so to speak, on the "viewless wings of poetry" and sees it all in its fullness and completeness, but without loss of the clarity of its details. There is an awareness of one's own physical nature, of one's birth and death, and of a curious transcendence of both, and, often, a strong feeling of universal and particular love and communal solidarity.

To reinforce their hypothesis the authors turn to new and speculative fields of scientific inquiry, which are variously termed "neurobiology", "biocybernetics", and "psychobiology". Quoting an Essay by Barbara Lex (1979), "The Neurobiology of Ritual Trance", they state:

(p.82): ... various techniques of the alteration of mental states... are designed to add to the linear, analytic, and verbal resources of the left brain the more intuitive and holistic understanding of the right brain; to tune the central nervous system and alleviate accumulated stress; and bring to the aid of social solidarity and cultural values the powerful somatic and emotional forces mediated by the sympathetic and parasympathetic nervous systems and the ergotropic and trophotropic resources they control.

(p.83): The linguistic capacities of the left hemisphere, which provide a temporal order for spatial information, are forced into an interaction with the rhythmic and musical capacities of the right hemisphere, which provides a spatial order for temporal information.

(p. 84-85): The traditional concern of verse with the deepest human values - truth, goodness, and beauty - is clearly associated with its involvement with the brain's own motivational system. Poetry seems to be a device the brain can use in reflexively calibrating itself, turning its "hardware" into "software", and vice versa... As a quintessentially cultural activity, poetry has been central to social learning and the synchronization of social activities. Poetry enforces cooperation between left brain temporal organization and right brain spatial organization and helps to bring about that integrated stereoscopic view that we call true understanding. Poetry is, par excellence, kalogenic - productive of beauty, of elegant, coherent, and predictively powerful models of the world.

We also find the forces that will work to suppress poetry:

(p.87): A bureaucratic social system, requiring specialists rather than generalists, might well find it in its interest to discourage reinforcement techniques like metered verse because such techniques put the whole brain to use and encourage world views that might transcend the limited values of the system.

They quote from Sidney:
(p.90): "It may well be that the rise of utilitarian education for the working and middle classes, together with a loss of traditional folk poetry, had a good deal to to with the success of political and economic tyranny in our times. The masses, starved of the beautiful and complex rhythms of poetry, were only too susceptible to the brutal and simplistic rhythms of the totalitarian slogan or advertising jingle. An education in verse will tend to produce citizens capable of using their full brains coherently - able to unite rational thought and calculation with values and commitment"

If we apply these views to the societal role of the CMBs of Epic Tradition, we get this surprising picture: The Aoidoi of the past Oral Age may have served a much more important function than the history writers had allotted to them. As hypothetically this could be summed up thusly: They were the guardians of the sacred chants and poems whose purpose was much more than entertaining, or keeping a mythological record of the past, a sort of proto-history. They were the masters of the forgotten arts of attuning the soul with the body, of projecting the past and the future, and healing the cracks and fissures of human society. When civilization arose and humans adopted writing, the use of poetry as cultural memory medium was quickly discarded and relegated to purely entertainment purposes. The important cathartic role played by theater, and especially tragedy, in ancient greek society is one of the last vestiges of this once vigorous tradition. Once the art of the Aoidoi was forgotten, humanity was on full course into the Iron Age, the Kali Yuga, the Age of "Blood, Sweat and Tears".

18.2.2. Participatory events: dancing and drumming

While the epic tradition rested on a fairly select group of people, all traditional cultures had many occasions for participatory events where the larger part of the population was involved: festivals, dancing and drumming. Tribal african culture has developed the art of dance and rhythm to a high level. A particular case are the polyrhythmic traditions of this globe. These are particularly effective in attuning the brain halves. In such communal rhythmic events, it was not only the single person or a small group who experienced the wholesome effect of rhythm but the total community. Even though contemporary civilizations still have preserved remainders of this cultural heritage, it has become confined to specialist performers, with a passive audience whose role is now to applaud, or to let the movements of their bodies be dictated by beat of the metronomic machinery that generates the sound.

18.2.3. Mary LeCron Foster: The reconstruction of the evolution of human spoken language

@:PHEMEME_HYPOT
Mary LeCron Foster (1996): Abstract

Language is an analogical system for classification on multiple levels. Language systems build upon semantic analogies and analogies in phonological, morphological, and syntactic distributions (positional analogies). New meanings are created through the process of metaphorical extension. The direction of language change is determined in large part by this process and by analogical systematization _ hierarchical congruence of classes.

The regularities of sound-change reconstructed by the comparative method provide the most reliable diagnoses of remote linguistic relations; but these are limited to 'families', or, in a few cases, 'stocks' made up of interrelated families. Broader groupings, 'phyla' or 'super-stocks', are suggested on the basis of typological relations, rather than on firmly established sound-correspondences. The basis for going even further and attempting to reconstruct a single prototype for all the world's spoken languages is not agreed upon; but the reconstruction should reflect systematic correspondences in sound and meaning throughout, whether insights were initially gained from typological studies of phonology and/or from internal reconstructions. Hypotheses

must show system. While individual meanings underlying reconstructed forms need not be identical, differences should be minimized. Once correspondences are firmly established, culturally influenced semantic variations are useful in assessing degrees of interrelationship among languages.

Pursuing the monogenetic reconstruction through this bare-bones phonemic approach, refined by a series of simplifications, leads to the startling hypothesis that the sounds of which the VC and CVC roots are composed were originally themselves meaning-bearers. These phememes, as they are termed, were minimal units of sound whose meaning derived from the shaping and movement of the articulatory tract. In other words, the phonemes of language, as well as the combinations into which they unite within the word were originally not arbitrary signs, but abstract, highly motivated analogical symbols.

In the earliest stage of primordial language, single phememes expressed notions o space and motion. Across the evolution of the genus Homo these were differentiated and new phememes created, hypothetically in stages, until the phememic inventory was completed during the Upper Palaeolithic. In the Neolithic period, it is hypothesized, syllabic concatenation with morphophonemic merging increasingly obscured the analogical significance of phememes, which gradually became what we now know as phonemes. Nevertheless, in the roots of most modern languages a number of the primordial phememes are still recognizable [Eds].

18.2.4. The AOIDE model

@:AOIDE_MODEL

The following sketch will present an epic language processing model called the AOIDE. This is the working name for a hypothetical information model of neuronal structures and mental functioning of the professional Cultural Memory Bearers of the ancient oral epic traditions world wide whose thinking modes were, according to the hypothesis, different from modern civilized western prosa thinking. The base of the hypothesis are data we have available on the greek *Aoidoi*, (like Homer), the african *Griots*, the norse *Skalden*, the welsh *Bards*, the Australian Aboriginal *Songline* tradition, and the indian *Rishis* and what can be inferred from these data. In the following the word *aoide* will be used for the generic class of all Cultural Memory Bearers of all epic traditions world wide.

AOIDE[145] is called the model of {cultural memory / information / language / epic / sonic / mythic / lucid trance / divination / prophesy} mental technology (mentation) derived from data on various oral traditions around this planet.

The working hypothesis on which AOIDE is based, are the
Onoma-Semaiophonic Principles: The Nexus Sounds, Links, and Fields of oral epic song technology.

The following text will try to elaborate this model. Apart from the author's original ideas, this is based on the oral memory technology researches of Hertha v. Dechend's "Hamlet's Mill" (1993), with her concept of the oral epic computation and data transmission technology, of the comparative trans-global epic studies of Theodor Strehlow (1971),[146] the detailed work on Aoide and the alphabet of Barry Powell (1991), the global musical cosmogony of Marius Schneider (1951-xxxx), and the *phememe* hypothesis of Mary LeCron Foster (1996).[147] As will be made more explicit in the ensuing discussion, *aoide mentation*[148] has a connection with {entering / entertaining} {different / alternate} modes of mental functioning than the normal waking state. One popular name for such states is the blanket term "trance". It must remain for

---

[145] CAPS for distinction of the generic world-encompassing principle of AOIDE mental functioning from any actual historical incorporation, like the greek *aoidoi* whom we know as *Homer* and *Hesoidos*.

[146] ->:ABORIGINES, p. 222

[147] ->:PHEMEME_HYPOT, p. 209

[148] This term is used to denote ways of using our brain in some ways that are outside of the normal modes we call *thinking*.

a later and larger project work to define that more closely, and using the results from applying the tools.

18.2.5. The Theory: Onoma-Semaiophonic Principles - Nexus Sounds, Links, and Fields

@:ONOMA_SEMAIOPHONIC

Let us design a construction principle for a structural edifice of sounds and meaning.

1) *onoma-semaiophonic*

The key term *onoma-semaio-phonic*[149] is the working principle of the method applied. It assumes a hypothetical[150] interrelation and connectivity of semantic/phonetic elements of an archaic language like the aoide language is assumed to have been. The German term for *onoma-semaiophonic* is *Sinn-Klang*, in English *Sing-Lang*, and Aboriginal Australian: *Song-Line*. *It has to be stated that this is not an etymological concept.*

2) *nexus sounds as attractors*

Let us now call the sound meaning of the *stoichea* as used by Platon in his linguistic discussions in Phaidros, Kratylos, and Timaios the *nexus sounds*[151] of the *aoide language*.[152] The greek version is given only as paradigmatic example, and the principle holds equally for any language in which the aoide sings[153]. *The nexus is not a linguistic or etymological concept.* The *nexus* was used in a slightly different {meaning / intention} by Whitehead in "Process and Reality" (1969: 22-25)[154] and the general principle is transferred to this context. If we want to use a physical metaphor, we can use the *attractor principle* of chaos theory, or maybe an electrostatic / electromagnetic / gravitational attraction force field. Behind this lies a neurological attractor model, but at present this cannot be worked out. (See the note on William Calvin, further down).

3) the *onoma-semaiophonic nexus* and the *morphogram*

This is conventionally called a *word*.[155] An *onoma-semaiophonic nexus* (or short: *nexus*) is the form (*morphae*) of several con-*nexted nexus sounds*. We have to differentiate between the

---

[149] *onoma-* = name, *saema-* , *saemeion* = sign, meaning, *phonae-* = sound. short form: *semaiophonic*

[150] Which can be viewed as a special interpretation of the *phememe* model by Mary LeCron Foster (1996).

[151] In Greek: *plexis*, *synapsis*. The plural of *nexus* has a long "u" and is properly written with a bar over the 'u', but this character doesn't exist in the Win standard charset, so will be written *nex**u**s*.

[152] ->:STOICHEA, p. 216

[153] The strange indication given by Chatwin, that Australian songlines are easily transferred between the different Australian languages, means that there must be a sound-principle of meaning. ->:CHATWIN, p. 223

[154] The exact connection of this study to Whitehead's philosophy would take an inordinate amount of time and effort to discuss thoroughly. To outline the principle in a few words: Western philosophical notions of ontology are {pervaded / tainted / burdened} by the effects of the primary CMM, the alphabetic principle, fixating the living sounds of speech, the *stoichea*, into the *grammata*. If we want to get an alphabet-neutral ontology and epistemology, we have to backtrack to the Heraklitean philosophy of *dynamics* and *relation* (which was concurently formulated as the principle of *paticca samuppada* by the Buddha). The modern western philosophical application of the buddhist principle was essentially presented by Whitehead (in a somewhat difficult to interpret form).
->:WHITEHEAD_SOCIETY, p. 112, ->:PATICCA_SAMUPPADA, p. 120

[155] Due to the different usage and context, the conventional term could lead to misleading impressions, especially that the present subject matter could be treated with linguistic or etymological methods.

sound form as it can be put into *grammata* (written signs), the *morphogram*, and its sounding form, the *phonae-morphae*, or *stoichaea*, or in German, *Klang-Form*.

4) the *onoma-semaiophonic* link
Let us assume a sound connection between different but similar *nexus*, i.e. that *nexus* bearing a similar sound will have a connecting similar (and also antagonistic) meaning field, forming an *onoma-semaiophonic link*.

5) *Semaiophonic fields*
are called networks of *nexus* that are connected by *semaiophonic* links.

6) *Semaiophonic structures, notation*
It is almost impossible to describe *semaiophonic structures* in linear alphabetic textual manner. We can use the hypertext metaphor of links extending to the related sounds. We assume that a there is a kind of sonic hyper link between similarly sounding words. This gives many-dimensional structures, quite unlike the linear textual sequence.

7) *Semaiophonic core structure*, the *Klang-Sinn*
The most important question is how sound and meaning (*Klang* and *Sinn*) are connected.[156] This is is a difficult theme that can only be sketched in one paragraph for the present context: The neural representation of the machinery to {produce / recognize} a nexus sound with the human voice apparatus needs some neurological structure that are tentatively (and hypothetically) identified by Calvin with certain hexagonal structures on the cortex. Although producing and recognizing structures need (and can) not be identical, there must be a correspondence between them. Then, the structures necessary for vowel formation must by needs be different from those for consonants, since they involve a totally different muscular activity. And since there is no homunculus somewhere in deeper recesses of the brain to attribute meaning to these sound structures, the meaning we (in our consciousness) attribute to the words, must also be embedded in these structures, or be at least morphologically connected, and be of the same morphae (form).

8) Modeling *semaiophonic structures* in a molecular model
These *onoma-semaiophonic networks* can then be assembled in a molecular model similar to the way the atomic constituents of molecules are presently visualized in appropriate chemical models. The matter of technical workability is not concerned with the question whether the model as such makes sense according to current philological or linguistic theories. In the present case, it is important to present a research tool first, and try it out and test it, get experimental results, and not try to prove the consequences and results of the application of the tools, beforehand. Following Whitehead, we need "a new tool as a way for new insights". In the Popperian manner the tool gives ways to experiment with falsifiable hypotheses.

Relation of molecular models in Platon's works

A molecular model of semaiophonic structures is suggestive for the following reason: the sound connections in the model extend from the nex**u**s in semaiophonic space like atomic binding forces. As we see with a glance to Plat**o**n's Timaios, the ancient cosmology is replete with allusions to a sound combination structure that we can easily match up to modern molecular chemistry models. The geometric connections of the basic geometrical forms, are quite recognizable in the onoma-semaiophonic mapping. Plat**o**n speaks explicitly of the

---

[156] See: W.H. Calvin (1996a): The cerebral code.

geometric figures (like Tetraeder) as the basic "elements" of his musico-logical cosmos[157]. These geometries reappear faithfully in the modern molecular models as the space structures of the electron clouds which form the chemical bonds. The view of Platon's Timaios can be interpreted as the chemical bonds *minus (or abstracted from) the atoms*. More enigmatic passages in Platon's works indicate that there are "trap doors" which may lead us into an unknown dimension of epic language.

18.2.6. Platon's Kratylos Hypothesis and the Semaiophonic Aoide Thought Structures

@:KRATYLOS_HYPOT

This is an excerpt of a conference paper presented at: "Semiotics of the Media", Kassel (Goppold 1995b)

The main semiotic thesis of Platon in Kratylos is formed by the connection: "*onoma homoion to pragmati*" (the word resembles the thing) and "*stoicheia homoia tois pragmasin*" (the sounds, ie the stoicheia, be similar to the things also). The paper presents arguments for the interpretation that it is of prime importance to differentiate between Platon's usage of sound (*phonae*, *stoicheia*) and letter (*gramma*), and that the "things" he means should not be taken as objective-out-there-things, but as phenomenal "things" to be interpreted in terms of the modern neuronal presentation of what is happening as brain processes while these things arise in our imagination (*phainomenon*). Even though Platon could not think in these terms, we may get a better understanding of what he was hinting at.

The Kratylos Question

nomina sunt omina
(Proverb)

In his famous chapter in Phaidros (274c-275), Platon talks explicitly about the problems of the alphabet. In another work, Kratylos, he deals with certain aspects of the connection of sound and meaning in ancient Greek language. This material will be taken as starting point for the enquiry. It is always good to start with Platon. Whitehead had stated: "The safest general characterization of western philosophical tradition is that it consists of a sequence of footnotes to Plato" (Whitehead 1969: 53). If Platon had found something important enough to be worth devoting a whole lengthy work, then we might well ask if there is some meaning to be found in what he tells us.

Onoma homoion to pragmati

In Kratylos, Platon talks about the connection of words and namings, meaning, and sounds. This would today be considered a discussion of semiotics. He opposes two views:

@:PROTAGORAS

1) The names of things and people are products of social convention only (the *signe arbitraire* doctrine), with Prodikos (384b) and Protagoras as proponents. The famous statement of Protagoras is cited (386a):

panton chraematon metron einai anthropon.
The human is the measure of all things.

---

[157] See also the works of Marius Schneider.

2) The view of Kratylos is summed up in "onoma homoion to pragmati" (434a), "the name is similar to the thing". This may be called the *Kratylos Question*, the core of the argument of the dialogue:

Oukoun eiper estai to onoma homoion to pragmati, anankaion pephykenai ta stoicheia homoia tois pragmasin.

If now the word resembles the thing then by necessity must the sounds (the stoicheia) be similar to the things also.[158]

Kratylos is Platon's discussion of the subject of fittingness or adequacy of words or symbols to the things symbolized. The key questions are:

1) Are all words arbitrary? (the *signe arbitraire* doctrine).
2) Are there some words more fitting than others?
If we assume 2), then we might continue to ask what they may be more fitting to:
2a) the (objective) thing or
2b) the neuronal (re)presentation the thinker has of a thing.

If we assume 1), we might ask why they are arbitrary. Objective realism, or materialism states that there are totally objective things "out there". We now have to concede the fact that humanity has created literally all possible sound combinations to denote, for example, the "horseness" of the horse in tens of thousands of languages and dialects. Therefore one might be hard put to explain why one word would be more fitting than thousands of others. Now if all words are arbitrary, there is no great sense in searching for better fitting ones.

The structure of the Kratylos text

The structure of the semi-monologue in Kratylos is peculiar. As in most other works by Platon, we find Sokrates doing most of the argument. He talks about 90 % of the time and his partners Hermogenes and Kratylos can only interject a few statements like: "Yes indeed", "Sure", "I see", "Why?", "I believe that", "of course", and so on. Therefore, we cannot call this kind of conversation a true dialogue. Unfortunately, the people who are most knowledgeable about the subject, position 1) Prodikos (384b) and Protagoras (386a) are not there, Hermogenes professes being largely ignorant and acts only as dummy or sparring partner for Sokrates in 75 % of the text. And Kratylos, the proponent of position 2), has hardly the opportunity to say two coherent sentences about his view on the matter when he finally gets the word in the last 25 % of the text, starting at 428d, to 440.

Sokrates himself professes, as usual, to be completely ignorant, because he has only heard the "one-Drachme" talk of Prodikos, and not the one for 50 Drachmes (384c). After professing his ignorance, he anyhow goes on developing all sorts of interesting but not very convincing etymologies[159] to support position 2), but finally comes to a position that true understanding is better attained through the things themselves (439b). How this is to be done, he apparently doesn't have the time left to expound, since the text ends two pages later.

Did Platon make a joke?

So the whole work could be interpreted as some kind of tongue-in-cheek practical semiotic joke that Platon makes to befuddle his students in the academy and us across the millennia. Or

---

[158] Kratylos 434a, Platon, Werke, Vol. III, engl. transl. A.G.
[159] They may be sufficient to impress his sparring partner Hermogenes, but we can be quite sure that Protagoras himself would have torn them to shreds.

it can be assumed that Platon didn't have the right conceptual tools to make a semiotic analysis. This seems to be a modern interpretation which is also proposed by Eco (1993: 25). But there are two questions remaining: First: Platon is known to be one of the most outstanding geniuses of mankind. But humor was not one of his strong points. Second: Why did he go through such an effort to make it known to posterity, that he didn't know very much to say about the matter? If we assume that Platon saw enough relevance in the subject to write about it, or have someone else write down his talks about it, then there are again two possibilities: 1) He knew more about it than he wanted to write, the unwritten teachings being in the background. 2) He was guessing himself, but wanted to preserve something that even he, one of the most knowledgeable men of his time, had only a dim recollection of, so that it became not totally lost to posterity. In this treatment, we will lean towards version 2), and give our reasons why.

The terms used by Platon

In Platon's time, Greek was not yet a standardized language. Every greek region had their own dialect. The Ionian was different from the Athenian, that again different from Spartan, and the Italian greek dialects were different still. Platon makes reference to these differences in Kratylos. Classical greek, as it is known today, is the **koinae**, the standardized language of the post-alexandrian oikumene, a product of the work of scholars whose main base was the Alexandria library (which served also as research, studying, and teaching center).

It is usually straightforward to find equivalents between classical greek and modern languages for words of common culture use like: house, ship, knife, loom, horse, sheep, river, tree, mountain, etc., because they denote easily identifiable tangible, physical objects that are common in western, indo-european cultures. Philosophical texts though, present a particular problem for translation because of the extreme variance of semantic fields of key terms used as compared with modern european languages. Kratylos is even more problematic because Platon uses his words in a technical sense, and uses them while he talks about them, without having a proper meta language at his avail. We should note that ususally our modern meta languages derive most of their words from greek roots. Here are some of the keywords used by Platon:

onoma - name, denomination, appellation, designation,word, expression.

chraema - this semantic field denotes things of practical relevance and objects of human environment: thing, action, usage, money, belongings, happenings.
There are many similar-sounding, similar-meaning words in the field: chreia, chreos, chreoo, chrae, chraezoo, chraestos, chraestes, chraeo.

chraema was the term used by Protagoras. If the very global meaning of "thing" is substituted for the more specific sense of "objects of human environment" then we get the most obvious and commonsense statement of "the human is the measure of all objects of the human environment". No one in his right mind would want to argue against this. Otherwise what would they be there for? Today, one would call that statement a core requirement of **ergonomics**. And as ergonomics consultant, Protagoras might still make good money today.

pragma - things done, business, negotiation.
This term is used by Kratylos. There is very slight variance to **chraema**, but it might be significant. The semantic field of pragma is a little more oriented towards process, dealings, and doings. The word **praxis** belongs to this field.
Platon uses this term in the majority of places that are translated as "thing".

onta, **einai** - being things.

With the "to ti aen einai" the thingness of things starts to appear in Aristoteles. Platon uses this term sparingly (385b) and he does not seem to differentiate very much between all the three terms.

Pythagorean Cosmology and the Alphabet:
The Stoicheia as used in Kratylos and Timaios

@:STOICHEA

In most translations of Platon's works, **stoicheia** and **grammata** are treated as synonyms: meaning letters of the alphabet. But for Platon, there is a quite marked distinction: when he talks about **stoichea**, he talks about spoken sounds, and when he says **grammata**, he means the **written** letter. The translation of Kratylos has to be treated with special care to yield any useful information of what Platon was talking about. The semantic field of stoichea is:

stoicheoma:	element, fundamental building block, first principle
stoicheoo:	to teach the basics
stoicheomata:	the 12 signs of the zodiac
stoicheon:	letter of the alphabet
stoichos:	the rod or stylus of a sundial that casts the shadow by which the time is indicated on the dial

It is easy to see that the term is heavy with connotations from ancient cosmology. This subject has been treated in another of Platon's dialogues: Timaios. The first meaning of **stoicheoma** denotes the idea of a first principle of the cosmos. This is also called the **archae**. The zodiacal signs can be clarified in connection with the sundial. The sundial was introduced in Greece by Anaximander. He is also connected with the original formulation of the ancient greek theory of the four elements and the **apeiron** (Hölscher 1989: 172). The following passage from Timaios gives us the connection between cosmological primitive elements and letters-of-alphabet:

Now we must go back to a second, and new, beginning (archae) which adequately befits our purpose, just like we did with the earlier subject. We must consider the true nature of the fire, the water, the air, and the earth for themselves, before heaven was created, and we have to consider their states before its creation. Because up to now no one has enlightened (illuminated) on their origin. Instead, as if we knew what really is the true nature of the fire, the water and the others, we talk about them as the origins (archai), in the way that we equate them with the letters (the **stoichea** or original components) of the cosmos. But it is not adequate that the amateur may even compare them with the form of the syllables.[160]

The four elements as Timaios describes them in the quotation, are also called **stoichea**. Anaximander had brought the sundial from Babylon. The dial is partitioned in 12 sections, like any modern clock is, corresponding to the 12 hours of the day. The 12-scheme of the hours corresponds to the 12-scheme of the months of the year and the 12 zodiacal signs wich are all of babylonian (or chaldean) origin. In the world of antiquity, if one wanted to learn about astronomy/astrology, one went to Babylon, because here were the first and foremost experts of all the oikumene on that subject. Timaios, who is the fictional narrator in that monologue, has been introduced to the group in 27a as the one who is the most expert of them on Astronomy/Astrology. Obviously Timaios must have been in Babylon to learn the basics

---

[160] Timaios 48b , Platon, Werke, Vol. VII, engl. transl. A.G.

(or **stoicheoma**) of the story he is telling in Platon's "Timaios", just like Anaximander before him.

We now have one detail left to clarify: Why and how might the word stoichea have acquired the meaning of letter-of-alphabet which is usually denoted by the word grammata? Let us create a mental image of a sundial: We see a rod, or stylus, the sun shines, and the stylus casts a shadow. Then we call into memory another memorable fable of Platon, the **cave parable**. There, Platon talks about a big cave where miserable humans are chained fast to their seats so they cannot move and only watch the shadows dancing on the cave walls, forever entertaining themselves guessing what these shadows mean and what they stand for. The connection to the stoichea becomes immediately clear. The symbols of the alphabet are viewed as the shaped holes through which the pure light of the divine logos shines. The shadows that are cast on the dial of the sundial or the cave walls are the meanings of those symbols as we perceive them from our lowly perspective. Platon talks in Phaidros, 276a of the grammata as the shadow pictures of the living, animated logos. He uses a very subtle word-play here, the opposition of **eidotos** (true knowledge) and **eidolon** (shadow image).

@:EIDOTOS

Ton tou eidotos logon legeis, zonta kai enpsychon, ou ho gegrammenos eidolon an ti legoito dikaios

You mean the living, ensouled speech, the **logos**, of the truly knowledgeable, of which the written version can only be looked at as shadow image.

<div align="right">(Platon, Werke, Vol. V, 276a)</div>

We also find a statement in the same vein in Platon's revealing (and ominous) seventh letter. With all these indications and examples from different works, it is sure worth trying to find an explanation for Platon's interesting speculation.

The Kratylos examples are taken from greek epic tradition

When we look at the examples Sokrates gives for the similiarity of name and thing, we quickly see that Platon was careful to choose mostly words that have no physical referent. He derives his terms mostly from mythology and other greek terms of the ethical domain. He starts out with Homer as one of those people who are **daemiourgon onomaton**, the master in the art of forming *words* (390e). This is is highly significant because we find a direct correspondence to the **daemiourgos** of the Timaios, who is creating the *world*.[161] Then he goes through an assorted list of greek gods and heroes. He follows the genealogy list as given by Hesiodos, and in 409, he comes to the planets and stars, the four elements, and the four seasons. In 411 he talks about abstract and ethical terms like virtue, righteousness, etc. This gives an indication that Platon did not have the intention to show us the relations of names for physical objects but rather, to the thought and association structure contained in the greek epics, cosmologies, and mythologies. And here, it makes much more sense to speculate about a connection between the thing and the name, and the sounds of the names: This archaic thought structure was preserved and transmitted by the ancient aoidoi, as the poets, singers, and bards of greek antiquity were called.

So there is no problem to relate them to the phenomena perceived. The greek gods and mysteries literally "lived" in the rhymes and metres of ancient greek epical poetry, and it would be impossible to extract them from there. Another indication for this is Platon's use of **pragma** to denote the "things". He doesn't talk about a thingness-in-itself as Kant may have postulated,

---

[161] This connection even evokes the English similarity of the two terms: *the world* and *the word*. The creator of both the *world* and the *word* are thus related through the sounds of the language.

but about a going-on. That is for example the reciting of an epic text. While the text was recited, the mental imagery unfolded in the inner vision of the aoide and his audience. So the examples Platon refers to, his **pragmata**, were for the ancient greek audience of epics a true process, of the nervous system, and not concepts. In this respect, we can perceive an **auto-poieitic** element, as the sounds themselves create their meaning by rhythm, meter, and association. The rhythm and meter component cannot be treated here, so another work will be referred to which does an extensive discussion on that subject: J. Latacz (1979-1991).

18.3. Examples of Kinemorphic Cultural Transmission

@:KINESIC_TRADITION

18.3.1. Dance and ballet

@:DANCE

A general bibliographical overview on the history of dance is given in: DerraDeMoroda (1982). Ubiquitous in all human cultures are dance systems. Dancing is not only a popular recreational pastime, as it is in western societies today, but has been intimately tied into the social fabric in a most decisive manner, most of the times in human history, in most societies on the planet. The integrative importance of dance in the African societies is for example evidenced by the accounts of Spencer (1985), and Chernoff (1994), and its essential functions in the societies of Antiquity, by Rouget (1985: 187-226). Its importance in China is described by Granet (1994). The cultural appreciation of dance in European history has been marked by a discontinuity that occurred at the end of the Roman Empire and the rise of the Christian system. (Dufour 1898,III: 58-66). The early Christian zealots, like Tertullian and Basilius, saw in theatre and dance the expression and culmination of the decadence of the Antique world, and sought to eradicate all traces of these arts from the cultural memory of Western European civilization by persecuting the actors and burning all the scriptures pertaining to it. One of the few remaining works on this is Lukian's "De Saltatione".

Even though people also dance in the present-day technological civilizations, this tends to happen in an extremely circumscribed social reservation area that has no relevance in the society general. In earlier Europe, the dance had evolved to a very high, and exclusive mastery (of the ruling classes) as classical ballet and court dances. It served high political functions at the courts where a main part of the politics-making consisted in dancing. Best known for their political importance are the dances at the court of Louis XIV, which were transmitted by special couriers to all the other european courts, once the dance master in Versailles had created a new form (Franko 1993, 8). The connection of politics and body art was continued until this century in Vienna, where also the high art of political marriage had been perfected (tu felix Austria nube). The connection of ballet and politics has been covered by Rebling (1957).

18.3.2. Martial arts of all cultures

@:MARTIAL_ART

(Encarta: martial arts). Dance and martial arts are intimately connected, as many of the male dances can be considered stylized, danced representations of combat techniques or military exercises. Robert Bly (1991: 207) cites an ancient celtic motto related by Michael Meade: "Never give a man who can't dance, a sword. The initiatior offers the sword only after the heart of the young man has been touched by the sensitivity and the dance of love." In Europe,

there existed a long tradition of high artistic perfection in the ritualized fencing techniques[162] that are still practiced as sport today (Encarta: fencing). Fencing with sharp swords as initiation ritual was continued in Germany until well into the 20th century by certain fraternities of university students called "schlagende Verbindungen". Gay (1993: 9-33)[163]. Chinese: Kung Fu, Tai Chi (Kobayashi 1983), Chi Gong (Schillings 1989); Japanese: Karate, Kendo, Jiu-Jitsu, Kyudo (Budo-ABC 1971). In Germany, perhaps the best known classic was: Herrigel (1988). Korea: Tai Kwon Do; Thai: Thai Boxing; Phillipine: Escrima; Afroamerican: Capoeira. There are thousands of books available in the {New Age / Martial Arts} section of any larger bookstore. Martial arts represent an elaborate system of movement patterns that are conventionally declared as fighting and self defence techniques and forms of self-expression. But in the present context, they also constitute elaborate kinemorphic CMM systems. A good example are the Chinese Kung Fu and Tai Chi techniques which are officially named after certain animal defence postures. They are said to be derived from observation of natural forces and events. (Kobayashi). The limitation of verbal description is easily experienced when one tries to learn Tai Chi from a purely verbal guide. Notable is the current high interest for martial arts in all western civilizations, spurring a revival of old traditions. The widespread advertisement of martial arts in TV (Kung Fu Series) and Film (Bruce Lee and successors), served to re-awaken western interest in these themes.

18.3.3. Marital arts

@:MARITAL_ART

Conversely the marital (*sexual and erotic*) arts present an equally well elaborated codification system of kinemorphics. The connection with *martial arts* is suggestive because the sex act was often metaphorically described as the battle of the sexes. These art forms have actually not very much to do with marriage, since they are (or rather, were) to be practiced mainly outside of the marriage, and were especially part of the training program of concubines, hierodules, hetairae, and devadasis, of earlier times. Dufour (1898), Edwardes (1967), Goodland (1931), Mandersen (1997), Shunga, Tresmin-Tremolieres (1919). In ancient China, the prostitutes were important cultural agents. The Chinese sign *chi* has two meanings: prostitute and art. Feustel (1995: 61). The *Kama* (sensual pleasure) *Sutra* (Vatsyayana 1964) served as such a training manual (p. 12). The *Kama Sutra* is a very short compendium consisting of seven sections, thirty-six chapters, and sixty-four topics (p. 13), of an also short compendium of five hundred chapters, compiled by Svetaketu (p. 11) who had made an abridged version of a major scholarly treatise on *kama* that had 1000 chapters, and had been written by Nandin (p. 10-11). This one is said to have been "the attendant of Shiva who recited the Kama Sutra while the high god was engaged in intercourse with his divine consort, Parvati." (p. 11). That must have been a work larger than the Rg Veda[164] and may attest to the richness of cultural patterns connected to the sexual arts as they were practiced in ancient India. These arts probably had a very old history from paleolithic times on (Anati 1991: 51, 91-94, 212-215, 234), (Schulz 1995: 220-221), (Hunger 1990: 518-524), but have tended to be repressed in sexually restricted {puritan / patrist / patriarchic} cultures of modern times (Reich 1981), DeMeo (1986), (Eisler 1995: 84-142, 201-243). There are also works on Indian Tantra: Avalon (1972), Shukla (1994). There was Geisha training in this direction in Japan

---

[162] Wiener (1982: 175), also subject of countless novels, for example Doumas: The three musketeers.

[163] Gay (1993: 258) describes Bismarck as having delighted the 25 mensur duels that he had fought - and won. Probably the best known (worldwide visible) document of this practice was the picture of Hans Martin Schleyer, with the characteristic "Schmisse" (initiation scars in his face) appeared probably in every newspaper and TV show in the whole world. He was the former president of the German industrial association (Arbeitgeberpräsident), and was murdered by the RAF (Rote Armee Fraktion).

[164] which has 10,800 verses, and 432,000 syllables. Dechend (1993: 149).

(Nakamura 1997), (Schulz 1991: 602-603), (Dufour 1898,VI: 193-201), and the Manchu rulers in China (Lin Yutang, personal communication, Prof. Ye.). There is also a muslim love manual called "The perfumed garden of the sheikh Nefzaoui" (Nefzaoui, 1995). Sexual arts are meanwhile also practiced in the New Age scene (Naslednikow 1990) and many more titles on "Tantra"[165] in the Esoterics and New Age sections of larger bookstores.

18.3.4. Juggling, gymnastic and massage arts

@:GYMNASTIC_ART

On all fairs over all the world were always body artists that entertained the audience with physical tricks and skills. Today, some remainders exist in the circuses, which are dying because of TV competition.

A well known and very elaborated gymnastic system is Indian Hatha Yoga, with a host of classical postures, that are said to have very distinct physiological and psychological characteristics and effects. Also often associated with animal stances: Locust Posture, Cobra Posture, Cock Posture, Tree Posture etc. (Iyengar 1966). Hatha Yoga is a system of still postures, but there are dynamic variants, like Sikh Kundalini Yoga (KRI 1976). The south Indian Drawidian Kalyarippayat contains also a massage practice. Chinese Chi Gong (Qi Gong) is a gymnastic system of postures and movements. Schillings (1989).

@:MASSAGE_ART

There exist worldwide many elaborate systems of massage whose techniques and strokes could be classed with formal grammars similar to language systems, except that they don't convey *meaning*, but *pleasure*, or generally, *well-being*. (Source: personal experience with several massage systems). No such scientific studies have been located in the research of this study. Noeth (1985) doesn't mention massage. Montagu's observation that western cultures tend to repress the tactile dimension is conspicuously underlined by the fact that the Microsoft Encarta Encyclopaedia doesn't have an entry on massage. Apparently this doesn't exist in the world system of its editors. Chambers (1968) devotes a full ten lines to it under "Physiotherapy". Asokananda (1990) describes the systematics of the Thai massage system which is derived from the Indian Hatha Yoga postural system. Since massage is a "hot topic" of the New Age subculture, much of general literature on the subject can be found in the appropriate sections of every larger bookstore. Keywords: Rolfing, Postural Integration, Lomi, Rebalancing, Shiatsu, Acupressure, Esalen massage...

18.3.5. Afroamerican spirit practices: Macumba, Condomblé, Umbanda, Santeria

@:UMBANDA

Bramly (1978), Goodman (1974-1990), Hoffman (1986-1996), Rouget (1985: 46-62), Turner (1986b: 33-71), and personal communications: Baby Garroux, Brazilian TV star and Umbanda terreiro leader in São Paulo. A great resurgence of kinemorphics occurs currently in the Brazilian-African systems of trance ritual. There, the movement patterns are classed to be effected by certain *spirits* (orixas, caboclos, pretos velhos, crianças), having certain powers and effects. Goodman (1988: 42-51). As cultural patterns, these *spirits* have great intersubjective constancy, and they have pronounced effects in the experienced psychological reality of the persons affected by them. By relegating these patterns to trance performance, the conscious influence of the human agent is explicitly treated as secondary, or even a hindrance to the process. In neurological terms, one may hypothetically link trance patterns to autostable neuronal excitation oscillation fields that lead to motion behavior.[166] In terms of intersubjective coherence, the Umbanda *spirits* certainly do satisfy the requirement of

---

[165] Not to be confused with the Tantra of Avalon (above).

[166] ->:NEURONAL_PATTERN, p. 124

synchronic and *diachronic* extension of cultural pattern. Goodman (1990: 25) mentions some neurological studies done in collaboration with Prof. Johann Kugler, München, and Prof. Guttmann in Vienna, but these could not be checked up in the course of the present study. A recent work of Calvin (1996a) may possibly point into the same direction. Further research is needed to establish the *meaning of meaning* on the basis of neuronal activation patterns.

->:MEANING_OFMEANING, p. 225, ->:CULTURE_PATTERN, p. 132

18.3.6. Craft traditions

@:CRAFT_TRADITION

Bernard (1985), Bücher (1924), Leroi-Gourhan (1984). The arts and crafts of humanity always involve kinemorphics. Doing manual work implies the very complex and coordinated movement of the body. The kinetic interplay of work piece, tools, and body movement unfolds in sets of kinemorphic patterns typical for each combination. Therefore the arts and crafts traditions had built up a vast and rich cultural transmission repertoire of body motions and experiences that are totally inadequate to cover when the crafts are only considered under the utilitarian viewpoint that they are necessary to fabricate certain material objects. According to Morris, the highest levels of craftsmanship and precision, as well as extreme esthetic value of the objects created in this tradition, had reached, and passed its culmination in former ages, and in far away cultures. Morris (1986: 45-78, 79-110). Today, the craft traditions of civilizations are becoming extinct, together with much indigenous cultural diversity, and the natural species diversity. The exception that proves the case is the tradition of the French Guild "Companions du Devoir", that is keeping the European heritage of the manual work alive, as described by its current leader, Bernard (1985: 14): "Its goal is 'the professional, moral, and spiritual perfection of its members' through manual work and the simultaneous nurturing of conscience". Another exception is Japan which holds its master craftsmen as "living national treasures".

->:IN_EXCARNATION, p. 199

18.3.7. The Kata Tradition

@:KATA

Japan is a notable case of a technological civilization that maintains a cultural tradition that has found a means of systematic expression of the essentially un-fixable element of the *kinemorphae* in the principle of *Kata*. Blassen (1987),[167] Immoos (1990a), (1990b). The term originates in the Japanese performing (Noh theater) and martial arts tradition, and it indicates there the optimum perfection and performance to be attained in a form of movement. There exist stylized *kata* movement patterns (*kinemorphae*) that are part of the training program in Karate, Judo, and Aikido. Similary for Chinese Tai Chi or Kung Fu sequences. (Personal communications, Tetsunori Koizumi, and personal experience in Japanese martial arts training). This is a valid approach for giving a specification for movement qua *dynamis*, without falling into the trap of trying to find a static representation which would destroy the movement. Koizumi has published several works on the combination of Kata with systems science, for which the following may serve as introduction:

Forming a well-defined kata, or a structured pattern of interaction, is one way in which open systems go about maintaining their homeostatic equilibrium, stability, cohesion and viability in the midst of

---

[167] Blassen (1987, p: 96), die Bedeutungen von *Kata*:

1. als Bezeichnung fuer ein Muster (z.B. einen Wachsabdruck)
2. als Bezeichnung fuer einen Typ (z.B. einen Autotyp etc.)
3. als Bezeichnung fuer einen Stil (z.B. einen Tanzstil, Schreibstil etc.)
4. als Bezeichnung fuer eine Regel (z.B. traditionelle Etikette)
5. als Bezeichnung fuer eine Formel (z.B. eine feststehende Redensart)
6. als Bezeichnung fuer etwas stets Gleichbleibendes.

continuous changes they are subjected to both internally and externally. The propensity of a system to form katas can be formulated as a principle of evolutionary change which applies to the evolution of natural as well as human systems. What we propose to do in this paper is to show that kata, in the sense of a topological image or a geometric feature of a system, is one of those concepts which many thinkers in the tradition of both Eastern and Western thought have sought...

<div align="right">Koizumi (1997, abstract)</div>

By this, he also gives an essential statement for the understanding of the intimate connection between Buddhist philosophy and general systems theory. *Dynamis can only be understood through dynamis and not through static concepts.*
->:PATICCA_SAMUPPADA, p. 120, ->:MOVEMENT_PARADOX, p. 206

18.3.8. Theodor Strehlow and the Australian Songline tradtition

@:ABORIGINES

Literature: Strehlow (1947), (1964), (1971), (1996). The performative transmission of the Australian Aboriginal culture represents a possible example case for a dynamic polar opposite to the dominant static transmission systems of Western Europe. Of special interest for the present study is the fate of an anthropologist of German descent, Theodor Strehlow (1908-1978), who studied the cultural transmissions of the Aranda and Loritja tribes of Central Australia. He was the youngest son of Carl Strehlow, a missionary in the Australian Aranda territory at Hermannsburg, who worked and lived there from 1894. Carl Strehlow was one of the first white people in Australia who didn't just consider the Aborigines as fair game for extermination hunts. He gave them shelter and protection from the man-hunters, tried to convert them to become good Christians, and all the while studied their lifestyles which he documented in several books. After Carl's death in 1922, Theodor continued the ethnographical work of his father. Strehlow (1996: 20-21).

Theodor Strehlow is one of those exceedingly rare cases of an anthropologist who could view the culture that he studied, from the inside, with the eyes of a native (the emic view), since he had grown up among the Aranda children, but he could also see their culture from the viewpoint of the scientist (the etic view). He was one of those rare cross-cultural individuals whose cognitive system enabled them to entertain otherwise mutually incompatible worldviews. He was able to perform a cognitive Gestalt flip of perception between the extremely disparate perceptions of reality as those of the whites and the Aborigines.[168] Because of this intimate insight, T. Strehlow's work offers some aspects that can hardly be found in any other studies on Australian Aboriginal culture. The essential factor that makes his work important in the present context is his primary socialization into Aranda culture (see Chatwin, below). The elements of primary socialization, those cultural materials and factors of somatic conditioning that are "imbibed with the mother's milk" tend to remain hidden from view and from conscious observation, for any outside observer who comes from a western civilization to an indigenous setting as different as the Aranda life is.[169] Such factors must be counted among prime candidates for "unobservables" as Staal calls them.[170] They can be so unobservable that Strehlow himself wasn't aware that he could notice something that no-one else from the white culture was able to discern. Of course the Aborigines knew that he could perceive (even though he wasn't able to let this percolate through to his rational verbal language thoughts) and therefore they let him partake in rituals that neither before him nor after him any Western person had been allowed to see and hear. Moreover, they allowed him to film and tape that material. And today this material lies at the Strehlow Research center.

---

[168] ->:BORING_WOMEN, p. 123

[169] ->:IMPRINTING, p. 227

[170] ->:STAAL_RITUAL, p. 225

From the personal accounts (Chatwin, W. Strehlow), one gets the impression that T. Strehlow was a man who lived "between two worlds" and belonged to neither.

@:CHATWIN

Bruce Chatwin (1988: 76-79) gives a vivid description of T. Strehlow and his work:

(76): Strehlow, by all accounts, was an awkward cuss himself.

(77): His father, Karl Strehlow, had been pastor in charge of the Lutheran Mission at Hermannsburg, to the west of Alice Springs. He was one of a handful of 'good Germans' who, by providing a secure land-base, did more than anyone to save the Central Australian Aboriginals from extinction by people of British stock. This did not make them popular. During the First World War, a press campaign broke out against this 'Teuton spies'-nest' and the 'evil effects of Germanizing the natives'.

As a baby, Ted Strehlow had an Aranda wet-nurse and grew up speaking Aranda fluently. [Emphasis, A.G.]. Later, as a university graduate, he returned to 'his people' and, for over thirty years, patiently recorded in notebooks, on tape and on film the songs and ceremonies of the passing order. His black friends asked him to do this so their songs should not die with them entirely.

It was not surprising, given his background, that Strehlow became an embattled personality: an autodidact who craved both solitude and recognition, a German 'idealist' out of step with the ideals of Australia.

Aranda Traditions, his earlier book, was years ahead of its time in its thesis that the intellect of the 'primitive' was in no way inferior to that of modern man. The message, though largely lost on Anglo-Saxon readers, was taken up by Claude Levi-Strauss, who incorporated Strehlow's insights into *The Savage Mind*.

Then, in late middle age, Strehlow staked everything on a grand idea.

He wanted to show how every aspect of Aboriginal song had its counterpart in Hebrew, Ancient Greek, Old Norse or Old English: the literatures we acknowledge as our own. Having grasped the connection of song and land, he wished to strike at the roots of song itself: to find in song a key to unravelling the mystery of the human condition. It was an impossible untertaking. He got no thanks for his trouble.

When the *Songs* came out in 1971, a carping review in the *Times Literary Supplement* suggested the author should have refrained from airing his 'grand poetic theory'. The review upset Strehlow terribly. More upsetting were the attacks of the 'activists' who accused him of stealing the songs, with a view to publication, from innocent and unsuspecting Elders.

Strehlow died at his desk in 1978, a broken man.

(78-79): Strehlow once compared the study of Aboriginal myths to entering a 'labyrinth of countless corridors and passages', all of which were mysteriously connected in ways of baffling complexity. Reading the *Songs*, I got the impression of a man who had entered this secret world by the back door; who had had the vision of a mental construction more marvellous and intricate than anything on earth, a construction to make Man's material achievements seem like so much dross - yet which somehow evaded description.

What makes Aboriginal song so hard to appreciate is the endless accumulation of detail...

I read on. Strehlow's transliterations from the Aranda were enough to make one cross-eyed. When I could read no more, I shut the book. My eyelids felt like glasspaper. I finished the bottle of wine and went down to the bar for a brandy.

The ecological setting of Central Australia forced the Aborigines into a nomadic lifestyle, since the rainfall is extremely sporadic, there is no predictable rain season, but irregular thunderstorms that appear very locally and at long time intervals (around ten years). So the people had to be constantly on the move to places where there were foodstuffs, animals, and water. There were no pack animals that could carry any belongings, and so the people could carry with them only very few material possessions. Whatever cultural material they wanted to preserve, they had to keep entirely in their minds and memories.

Even though Aboriginal culture was almost erased by the whites, some material remains, but how much needs to be determined. Of special importance seem to be the data collected in the Strehlow Research centre, the films of the last Aranda rituals that the elders performed for Strehlow before they died without successors to carry on their tradition. The Aboriginal Aranda tradition may present the last, largest, and purest case of a purely performative

transmission that has been preserved up until our days. The Aranda had to concentrate all their knowledge in a non-material transmission form of dance and songs. Chatwin (1988: 119-120) indicates that it is not the words of the songlines which convey the information but the melody, or the rhythm, or both. This gives a hint that there may be an important element in aboriginal transmission that is non-verbalizable.

18.4. Ritual and Dynamic Transmission

As introduction to the present section, the statement of Isadora Duncan shall be repeated:
> If I could tell you what it meant there would be no point in dancing it.

The lessons to be learned from the dynamic cultural traditions of humanity, be they indigenous, or of the civilizations, may prove extremely valuable for the present civilizatory situation. We may quote Strecker's statement concerning the essential dynamics of symbolization:
->:DYNAMIC_SYMBOL, p. 226

Strecker (1988: 223): This rediscovery necessitates its own kind of ethnography which may well depart from some of the established ways of describing other cultures. For by its very nature the meaning of a symbolic statement may not, as we have seen, be arrested. If one arrests the oscillation of thought which has been produced by the symbol, one destroys the meaning.

18.4.1. Ritual as symbolic behavior forming cultural patterns

@:RITUAL_PATTERN

Ritual is one of the prime subjects of CA studies, giving rise to many, often quite incompatible, theories and views of what constitutes ritual, how to characterize and document it. It is not the purpose of this study to give an exhaustive overview, nor to devise yet another explanatory scheme. Of the vast anthropological literature available on ritual, a selection has been referenced to show some representative positions: Aquili (1979), Benedict (1934), Gennep (1960),[171] Staal (1982), (1986), (1989), Strecker (1988), Turner (1973, 1982, 1986a, 1986b, 1987, 1990). A structural description of ritual in the context of cultural transmission is given, following Aquili.

Aquili (1979: 1): Ritual is never random behavior but is highly organized, encompassing myriad discrete and symbolic elements intertwined in a complex behavioral matrix. Like the spectrum, ritual is structured by a set of organizational principles that are only partially, if ever, comprehended by participiants and includes both observed and unobserved elements. Furthermore, there are certain preconditions for ritual...

Aquili (1979: 51): ... ritual connotes for both biologists and anthropologists behavior that is formally organized into repeatable patterns.

Wilson (1975: 560): Slowly changing forms of culture tend to be encapsulated in ritual.

A society whose life is literally filled with ritual is described by Benedict:

Benedict (1934: 59-60): The Zuñi are a ceremonious people, ... their interest is centred upon their rich and complex ceremonial life. Their cults of the masked gods, of healing, of the sun, of the sacred fetishes... No field of activity competes with ritual for foremost place in their attention. Probably most grown men among the western Pueblos give to it the greater part of their waking life. It requires the memorizing of an amount of word-perfect ritual that our less trained minds find staggering...

---

[171] Classification of rites, p. 1-16.

The problem of ethnographic description of ritual is very much that of the antagonism between the role of society and that of the individual as indicated above.[172] In his discussion of "the social practice of symbolization" Strecker (1988) mentions the decisive importance of the *Gestalt* formation but he also points out the danger of over-emphasizing the observer (etic) aspect, drawing on the example of Turner's theory of ritual symbolism (p. 19-26).

Strecker (1988: 21): ... in ritual each participant views the event 'from his own particular corner of observation'... Therefore the job of the anthropologist is to overcome this selectivity and assemble a whole, a *Gestalt*, which reveals more than the single views which the participants individually hold.
Strecker (1988: 22): It is he, the anthropologist, who reveals the final and deepest truth and meaning of the symbols used by the people whom he, the outsider, has come to study. They, the participants, hold only a partial view and have only limited insight into what they are doing, but the anthropologist arrives at a complete and unbiased understanding of the meaning of the symbols.
                    ->:EXTRA_OBSERVER, p. 113

18.4.2. The meaning of meaning

@:MEANING_OFMEANING

The central and fundamental issue of all symbolic behavior, is the question of the "*meaning of meaning*". (Bateson 1972: 128-144). Again, different researchers tend to give different answers, and a few voices shall be presented here. The discussions of Staal (1982), (1986), (1989) and Strecker (1988) show that the association of symbolism and (verbalized) meaning (Strecker, 18-26: *exegesis*) with ritual is highly problematic if it is interpreted as purely verbal language-oriented. Bateson (1979: 16-18) has pointed out the context-dependency of meaning. He defines *context as a pattern through time* (p. 15). In the present context, this is the occasion for the definition of a generalized and abstracted[173], neuronal based "*meaning of meaning*" that is not limited to verbal language representation.

@:MULTIVOCALITY

Strecker (1988: 43, 44): The possibility of saying something indirectly and multivocally animates the sender to engage in that type of creative thought which we call symbolic and which generates an infinite variety of symbolic statements which pervade everyday life in the form of politeness, flattery, irony, jokes, slogans, puns, etc. All the messages that pass to and fro in these delicate fields have in common that they say something and say it not, that they reveal and also hide. They can only have this dynamic character because their meaning is not absolute but situational and is defined in terms of time. The time involved may be no more than a fraction of a second... it may involve hours, even weeks...

Ritual as described by Staal is a prime candidate for a generalized and abstracted "*meaning of meaning*" beyond verbalization.

@:STAAL_RITUAL

Staal (1989): (xiii) Ritual and mantras lead a life of their own, independent of religion, society and language. (12): Ritual and mantras can only be accounted for when unobservables are taken into account. (61): Goody: Anthropologists have called almost anything ritual. (69): Vedic ritual is the oldest surviving of mankind[174]. (111): Ritual, after all, is much older than language. (112): meaning was held to be mysterious and inaccessible to scientific treatment... There are many facts that support the view that syntax [structural rules of ritual] is older than semantics [language oriented meaning]. Vedic ritual provides such evidence. (117): Ritual is orthoprax. (123): The only cultural values rituals transmit are rituals.

---

[172] ->:MEMORY_PATTERN, p. 134

[173] By the same method of generalization as Salthe defines the "analogous structure". ->:SALTHE_STRUCT, p. 126

[174] The Australian Aboriginals would strongly object to this, since they claim that their tradition is tens of thousands of years old. The problem is that this is unprovable, whereas the comparison with 3000 year old text documents from Iranian sources underlines the claim of Staal.

@:TRANSITION_RITUAL
> Strecker (1988: 25-26, citing Sperber): Transition rituals are not accompanied by any initiation into a body of esoteric knowledge... a complex symbolic system can work very well without being accompanied by any exegetic commentary.

In the present context, a tentative definition of the ***meaning of meaning*** on the neuronal basis will be given:
1) *neuronal excitation patterns as they are elicited by stimuli (sensory input patterns) in the neuronal networks of cognitive systems,*
2) *regardless whether these neuronal networks are of biological or technical origin, and*
3) *regardless whether there exists anywhere a language representation for any of these neuronal excitation patterns,*
4) *if it is possible by any means to establish an* ***intersubjective coherence*** *of the (behavioral or verbal or otherwise...)* ***effects*** *of these patterns.*

@:DYNAMIC_SYMBOL

Strecker (1988: 223) sums up the essentially dynamic, performative character of symbolization, that cannot be captured in fixed concepts, and he gives a statement that underlines Peirce's recursive definition of the interpretant: ->:PEIRCE_SIGN, p. 154

> Only those who master the culture as a whole can master the art of displacement and create positional meaning. Therefore the positional meaning lies first and foremost with the people who have created the symbols, and the task of the ethnographer can only be to rediscover it.
> This rediscovery necessitates its own kind of ethnography which may well depart from some of the established ways of describing other cultures. For by its very nature the meaning of a symbolic statement may not, as we have seen, be arrested. If one arrests the oscillation of thought which has been produced by the symbol, one destroys the meaning. Thus one needs an ethnography which is also able to speak at times indirectly and by implication.

To this may be added that this would mean an ethnography which can make use of dynamic representation systems to match the essentially dynamic nature of their subject processes and performances. A neuronal pattern definition of *meaning* will satisfy even the stringent conditions for transmission of ritual as postulated by Staal (1989). With this definition of meaning and with Staal's contributions (rituals transmit rituals), we can then endeavor to give an extended definition of the meaning of ritual.

18.4.3. The meaning of ritual

Ritual is that type of symbolic cultural pattern, that
1) *has synchronic and diachronic extension and*
2) *appears as a self-stabilizing cultural transmission and*
3) *creates its own meaning.*

In cultures where "the science of ritual" (Staal 1982) is still practiced, the ritual supplies by this, meaning to everything else in the culture. Thus, ritual would be the originator and source of all symbolism, in the diction of Staal. Turned the other way: Cultures that have lost "the science of ritual" will turn *meaningless* (and, by Spengler, will take their *Untergang*).

18.4.4. Ritual as base for Symbolics

Staal (1989: 141): How, then ist it possible to understand ritual without interpreting it in terms of symbols, meaning, or sense? In order to achieve such an understanding we have to do three things, more or less at the same time: first we must have an open mind with regard to the conceptual question where ritual "belongs." We should detach it in particular from those domains where our culture and history have been predisposed to place it: in the realms of religion and society. Second,

we must study ritual in much greater depth than is done by the professional students of religion and society. And third, we should conceive of ritual in more general and abstract perspectives than has ever been attempted.

Ritual, as described by Staal, is essentially performative, and is carried out regardless of verbal meaning (*exegesis*, see Strecker) that could be associated with it. By this, ritual stands outside the domain of verbalized statements that can be written down. We may of course give a verbal description of some of the circumstantial events accompanying it, but this amounts to about as much as if we say: "The car is set in motion by my turning of the ignition key". That may surely be true, but if we have forgot to put a motor in, or to fuel up the tank, a million years of "turning the ignition key" will not get us started to anywhere. The same seems to hold with verbal descriptions of ritual.

Staal gives us a description of the "deep structure" of ritual. (Staal 1989: 85-114, 157-221). The structural diagrams he presents us are done using letters of the alphabet, and that may be misleading us to believe that this uses a method of alphabetic writing. Quite to the contrary. The formal structures given have nothing to do with a phonetic spelling of sounds that are produced when speaking a verbal language. Deep formal structures are very difficult to describe with verbal language, and therefore specific formal rules have to be introduced in order to handle them. These rules have been standardized in the computer sciences. See Bauer (1971,II: 100-144), Brauer (1968: 108-115) for descriptions of formal languages.[175] And for the practical purpose of labeling, one uses a standard printable set of alphabetical characters, out of the plain economic reasons that these are readily available in any printing shop. (Computerized character sets have somewhat loosened that constraint). But this application of the alphabetical characters is not guided by phonetic spelling at all, rather "the set of principles and rules for the formation and reading of aggregates of characters of the character system" is determined by the entirely different *structural requirement* of what is encoded.

19. The age group modes of cultural transmission

@:AGE_GROUP

The most common methods, means, and mechanisms of diachronic cultural transmission between generations can be classed by a set of modes connected to age groups. These are: 1) *imprinting*, 2) *imitation and exploration*, 3) *education*, and 4) *initiation*.

General literature: Ba (1986), (1993), Campbell (1978), Illich (1976), (1978), (1980), (1984), (1988), Lock (1996, ch. 13-18: Ontogeny), Struck (1994) (1995), Read (1968).

19.1. Growing up: Imprinting, education

19.1.1. Imprinting

@:IMPRINTING

Lock (1996, ch. 13-18: Ontogeny), Kolata (1984). Imprinting is the mode of transmission of the baby and the toddler. It consists of those cultural elements which are instilled in the children mainly through intimate contact with the mother and the immediate environment (family) up until the transition when the child can walk and talk on his/her own and the individual personality develops. The cultural patterns that are taken up in this phase, are formed outside of personal consciousness. This mode is here called *imprinting* because the child has little alternative but to accept the kinds of cultural models offered by the environment or stay retarded for life. A specific pathology connected with this phase is known

---

[175] ->:WRITING_CRIT, p. 193

as *autism*. Sacks (1995: 233-282). Very few people who get disconnected from their mother at this early age grow up to any adult functionality at all. Sacks movingly describes one such very rare case, of a woman who became a respected animal psychologist, because she could relate to animals much better than to people, and was successful this way.

Much of the learning in early childhood is embedded in neuronal patterns that cannot be (re-) learned or changed in later life. Spitzer (1996: 202), (Lock 1996: 407-431)[176]. The crucial cultural material learned in this phase is: upright walking and the mother language[177], as well as culture-specific kinesic and gesticular motor habits. There are some important observations meriting a deeper exploration of a very crucial question: is it possible to draw a correlation between the level of complication, rigidification, structurization, and formalization of a highly civilized society and a danger of leading to deficiencies in the treatment of small children which are avoided in indigenous societies? The material presented by Ariès (1962), Gay (1993), Liedloff (1983), Maturana (1994b), Montagu (1974), Zenz (1981), indicates that this may be very much so. See also ->:PANETICS, p. 233.

19.1.2. Imitation and exploration (play)

@:EXPLORATION

Literature: Ba (1986), (1993), Fog (1997), Maturana (1994b), Read (1968). Imitation and exploration are mainly connected with behavior of children in the next age group, in our societies mostly up to the age of five. A more common term that is often used in this context is *play*.

Fog (1997)[178], ch. 11.4:
Comparison with other cultural phenomena
I have mentioned that playing and other learning mechanisms are necessary for the flexibility and adaptability of the human race. When a playing child imitates an adult, he learns the behavior of the adult, and we may say that a cultural transmission has taken place. Play may also be experimentation and exploration, where the child does not learn from others but learns to know his physical environment. Or play may be an exercise where the child learns to control his body. Thus only some of the playing activities of a child are part of the cultural transmission process.

In the play phase, the younger generation is allowed to gather the cultural information[179] by its own initiative and activity, often roaming the life environment in children's groups. In western societies, because of the omnipresent traffic danger and a certain restrictive attitude towards children's play, urban children are severely limited in this exploratory behavior, and are put under observation by adults in a kindergarden and given substitutes in form of miniaturized versions of the cultural implements of adult society (toys) by which they can familiarize themselves with the material structure of their cultural environment. This is much less the need and the case in indigenous societies, where most of the implements of adult society are neither as numerous nor as dangerous nor as likely to be damaged by children's handling.

---

[176] In German there is a fitting proverb: "Was Häschen nicht lernt, lernt Hans nimmermehr".

[177] Because of the deep neuronal embedding, some aspects of the first language are almost impossible to learn / train in later life, like the Chinese tonal patterns that can never be produced perfectly if learned after puberty.

[178] no page number because of WWW-document.

[179] And of course, in the rural environment of all societies except western industrialized ones, the basics of nature, as well as the basic knowledge of life processes, of which the western urban societies go through horrible contortions telling their children such stories as "the birds and the bees". For an in-depth discussion of this subject see also: Strehlow (1971: 462-541).

19.1.3. Education and initiation

@:EDUCATION_INITIATION

Literature: Ba (1986), (1993), Illich (1976-1988), Struck (1994), (1995), Read (1968). Beyond age five or so, a different tone sets in for the cultural transmission. Now it is the adults who are setting the content and the pace for the instilling of cultural material to the younger generation. The pattern of cultural transmission becomes markedly different between western societies and indigenous societies.

In the West, the *formal education* sets in, with the standard school system, beginning with the training of the young generation in the use of the alphabet and other formal systems as standard CMT. This involves a partial casernification of the age group between 6 and 14, in higher education to 18. (Casernification meaning: the compulsory relegation by law, under threat of punisment, of this age group to a specific spatial and temporal regime, i.e. the school building and the regulation of instruction by the clock). See Foucault (1969), Illich (1976-1988). In many societies this is part-day for the public school system, and total casernification in boarding schools for a good percentage of the upper class children in some other countries, like England and the US. The compulsory military service in many countries imposes another, more severe casernification for males around age 18 to 20. And the university education usually also involves some kind of further spatial segregation of that age group. This is more prominent in the US where college life is usually in a different city "away from home".

In the indigenous societies the child begins the integration into the productive sector (farming, craft) by another cycle of imitation and exploration, i.e. apprenticeship under the surveillance of the elders in the specific activities and crafts of the respective culture sector. Ba (1993: 166-245), Read (1968). The transmission of the other cultural elements is effected by participation in the communal rituals of society and by going through various stages of age-group oriented rituals called *initiations*.

19.2. The patterns of initiation

@:INITIATION_PATTERN

The extremely varied and wide spectrum of the patterns of initiation covers a major part of the whole ethnological literature and a structure of it needs to be given here for the purposes of accounting its important role in CMS. Initiations are usually connected with the age group transition at puberty, i.e. ages 12 and up, and the transformation from the social status of child into that of the adult (Benedict 1934: 24-30), and concurrently or later, the marriage as legitimation to procreate (Müller 1985).

The data given by Ba (1993: 242-243), Benedict (1934), Bly (1991), Campbell (1978), Erdheim (1984), Fontaine (1985), Gennep (1960), Klosinski (1991), Popp (1969), Prahl (1974), Straube (1964: 671-722), and Turner (1973), (1982), (1986a), (1986b), (1987), (1990) are taken as base for the present study. The difference in initiation patterns between {tribal / indigenous} societies and civilizations loosely follows the distinction into *hot* and *cold* societies of Levi-Strauss (also: Erdheim 1984) and there is a corresponding distinction of *dionysian* and *apollonian* societies by Ruth Benedict (1934). The respective patterns in civilizations will be called *vestigial initiations* or *initiatoid*.

19.2.1. Hot and cold initiations

We can make a general broad distinction that the *cold* societies have *hot* initiations (involving wounds and blood, with *hot* pains of the flesh) whereas the *hot* societies have *cold* {vestigial initiatic / initiatoid} patterns where the pains are more of the kind of ordeals of endurance, merit, accomplishment, restriction, seclusion, humiliation, casernification, self-restraint etc.

The proverbial "dark night of the soul" (St. John of the Cross) may give a good example of this initiatic pattern as practiced in the catholic church.

Compared with indigenous rituals, the vestigial initiatoid patterns of western societies are more of a theatrical performance. A typical example of a western theatrical "cold" initiation is the masonic.

Fontaine (1985: 181,183): Initiation rituals have much in common with plays. They are artificial experiences... the initiation of the masonic candidate... is a ... journey created for him by the lodge members.

In indigenous societies there is usually one main initiation (mostly the puberty initiation), after which the initiand then belongs to the adult society and is a full member with all responsibilities and privileges. In some societies, there is no (apparent) transmission of CM material whereas others do have a transmission happening at that occasion, Ba (1993: 242-243), often with successive further degrees of initiation. Elkin (1977: 3-6, 17-28, 71-134) Strehlow (1971: 392-413).

->:TRANSITION_RITUAL, p. 226

In the stratified and classed western societies, there is a multitude of {initiation-analogous / initiatoid} occurrences, and many subclasses and subgroups have their own type of initiatoid ritual. Drinking of alcohol, smoking, group violence, vandalism, and risky behavior like car racing, etc. are frequently practiced among {youth groups / juvenile gangs} as initiatoid pattern. The experience of war has been the most common European initiatic ritual in the last millennium. Gay (1993) makes an analysis of the war-like climate in 19th century european societies. Also in many indigenous societies. Benedict (1934: 25): "Adulthood in central North America means warfare". In peace times, the ordeal of the military boot camp serves as initiatic substitute, except that there is no reintegration ritual, and no ritual celebration of the attained manhood[180]. The school system with its recurrent examinations provides some initiatic patterns, and the ritual celebration of school / university graduation is indeed one of the few remaining initiatic events in western societies. Many western craft traditions had preserved elaborate initiatic rituals before they died out with the industrialization.[181] Ong has pointed out the male puberty rite setting with its deliberately imposed hardships, and physical punishments, in the earlier phases of the western school systems. Ong (1971: 113-141), (1981: 119-148), (1982:113). It has also been noted that the academic doctorate presents one of the purest remaining initiatic / initiatoid patterns in western societies. Prahl (1974).

19.2.2. Initiation as mnemotechnics

@:CULTURAL_MNEMO

Most initiatic rituals impose on the initiands tasks that involve stress and ordeal, great deprivation, pain, fear, and even mortal terror. The initiate is subjected to varying degrees of bodily infliction, and ritual mutilation (preferably of the genitals), and wounds, that are severe enough to threaten the life of the initiate. In some cases it may seem as if there is just pain inflicted for the sake of subduing, brutalizing, and breaking the will, or the sense of self of the initiands[182]. Fontaine (1985: 186/187), Clastres (1976). In terms of CMM, we thus have the

---

[180] The young recruits returning home have no reason to feel elevated for any reason other than having gotten away from the military. And so the most common ritualistic occurrence is that they get senselessly drunk. (My own fieldnotes).

[181] ->:CRAFT_TRADITION, p. 221, ->:INITIATION_QUEST, p. 222

[182] The military boot camp may serve as a prime example of a formerly initiatic technique deliberately designed to just this sole aim. Prisons, correction centers, and concentration camps ditto. The large field of female genital mutilation (FGM) in Africa and Islamic countries is often interpreted as a means to subdue the women to sexual chattel, to convert them to obedient child-bearing machines, and macho

body as coding substrate, and in all these cases, the *medium is the message* (according to McLuhan, *and it is by no means a massage*, Goetsch 1991: 124). Because the dire message is written into the body itself, that the society has the power over life and death of the individual, and that the individual do better to submit to the main tenets of his/her culture. This lesson usually sticks for life. Various cultural materials can be transmitted at the occasion, that make use of the particular mnemonic value of pain in connection with other stimuli.[183] In Africa, the institution of initiation teaching is called bush-school, for appropriate reasons. Ba (1993: 242-243). Diallo (1989: 64-76) gives an account of initiation among the Minianka, of Fienso in Mali. This society, he relates on p. 64, "have the most initiations of any ethnic group in Africa". The bush-school training lasted six months (p. 64) and "During the initiation retreat, the boys get intensive training in music and dance (p. 66). There exist different grades and levels of initiation through which one passes in life (p. 67-76).

One text on initiations, Fontaine (1985: 171) found the occurrence of a non-bloody initiation rite in Africa remarkable enough to make a special notice of it: "the Bemba... a matrilineal belt of Africa... absence of physical mutilation... emphasis on mimes, singing and dancing, showing of sacred objects".

Fontaine (1985: 189): Ritual knowledge, unlike science, is antithetical to change. It must be handed down, not tested, altered, improved on or even discarded.

The mnemonic role of the (for our civilized feelings) particularly brutal and gruesome initiation rituals of the Australian Aboriginals are amply described in the literature. Roheim (1945), Strehlow (1971), Elkin (1977), Campbell (1978: 132-152). The function of extreme pain during initiation as mnemotechnics is described by Clastres:

Clastres (1976: 174): Folter-Gedächtnis:
Die Initiatoren achten darauf, daß die Intensität des Schmerzes ihren Höhepunkt erreicht. Bei den Guayaki würde ein Bambusmesser bei weitem ausreichen, die Haut der Initianden zu durchschneiden. *Doch das wäre nicht schmerzhaft genug.* Daher muß ein Stein benutzt werden, der stumpf ist, aber nicht zu sehr, ein Stein, der statt zu schneiden zerreißt. So macht sich ein Mann mit geschultem Auge auf den Weg, um bestimmte Flußbetten zu erkunden, wo diese Foltersteine zu finden sind...
Die Peiniger kamen näher; sie untersuchten seinen Körper, sorgfältig. Wenn die Qual enden sollte, mußte er, ihrem Ausdruck gemäß, *völlig tot*, d.h. ohnmächtig sein... Doch nach der Initiation, wenn jeder Schmerz bereits *vergessen* ist, bleibt etwas zurück, ein unwiderruflicher Rest, die *Spuren*, die das Messer oder der Stein auf dem Körper hinterläßt, die Narben der empfangenen Wunden. Ein initiierter Mann ist ein gezeichneter Mann. Das Ziel der Initiation in ihrem Folter-Aspekt besteht darin, den Körper zu zeichnen: im Initiationsritual *drückt die Gesellschaft ihr Zeichen auf den Körper der jungen Leute*. Eine Narbe, eine Spur, ein Zeichen sind nun aber unauslöschlich. Tief in die Haut eingeschrieben, zeugen sie für immer, ewig davon, daß der Schmerz, auch wenn er nur noch eine böse Erinnerung sein mag, dennoch mit Furcht und Zittern ertragen wurde. Das Zeichen verhindert das Vergessen, der Körper selbst trägt auf sich die Spuren der Erinnerung, *der Körper ist Gedächtnis*.
Clastres (1976: 176): Gedächtnis-Gesetz:
Das Initiationsritual ist eine Pädagogik, die von der Gruppe zum Individuum, vom Stamm zu den jungen Leuten geht. Eine Pädagogik der Affirmation, kein Dialog... Mit anderen Worten, *die Gesellschaft diktiert* ihren Mitgliedern *ihr Gesetz*, sie schreibt den Text des Gesetzes auf die Fläche der Körper. Denn das Gesetz, welches das soziale Leben des Stammes begründet, darf niemand vergessen.

---

sex-satisfaction devices, to deprive them of their libido, for "sexual blinding". Lightfoot-Klein (1993) and Daly (1981: 175-198). A discussion on that subject can presently be found on the WWW under: http://www.hollyfeld.org/fgm/
[183] ->:NIETZSCHE, p. 77

19.2.3. The origins of mnemotechnics

Nietzsche describes the origin of mnemotechnics in "Genealogie der Moral", 1887, p. 289:

Vielleicht ist sogar nichts furchtbarer und unheimlicher an der Vorgeschichte des Menschen, als seine Mnemotechnik. "Man brennt etwas ein, damit es im Gedächtnis bleibt: nur was nicht aufhört weh zu tun, bleibt im Gedächtnis" - das ist ein Hauptsatz aus der allerältesten ... Psychologie auf Erden... Es ging niemals ohne Blut, Martern, Opfer ab, wenn der Mensch es nötig hielt, sich ein Gedächtnis zu machen; die schauerlichsten Opfer und Pfänder (wohin die Erstlingsopfer gehören), die widerlichsten Verstümmelungen (zum Beispiel die Kastration), die grausamsten Ritualformen aller religiösen Kulte (und alle Religionen sind auf dem untersten Grunde Systeme von Grausamkeiten) - alles das hat in jenem Instinkte seinen Ursprung, welcher im Schmerz das mächtigste Hilfsmittel der Mnemotechnik erriet... Je schlechter die Menschheit "bei Gedächtnis" war, um so furchtbarer ist immer der Aspekt ihrer Bräuche.

After Nietzsche, there were scores of anthropologists searching out and charting to the minutest details all the intricacies of indigenous mnemotechnics world wide. For specifics, see:

19.2.4. Initiation as quest

Klosinski (1991), Campbell (1978), Bly (1991). Initiation is not usually conducted to mete out pain for the purpose of creating pain, but rather it is a part of a test of endurance, will, and self-control (and / or restraint). There is a large tradition towards this end, in many different societies. It is most pronounced in the Amerind vision quest initiations. Here the aim is to let the initiand make an *initiative* out of his ordeal, in most cases he is sent out on some quest, and supposed to return with something to society that is novel, exciting, useful, intriguing or otherwise remarkable. European societies also had a rich repertoire of such initiatic settings, starting with the legendary Arthurian knights who went out far and wide doing great deeds, and rescuing many a fair damsel[184] from the claws of dragons, villains, and ogres, in their search of the holy grail. Campbell (1978) and Bly (1991). One example of the initiatory elements in the crafts tradition was the customary masterpiece to be delivered (Bernard 1985: 14). There is also ample material presented in the european fairy tales (Grimms Märchen). Lastly to be mentioned is the academic tradition of the doctorate thesis whose original aim was to come up with a novel contribution to the science and which the candidate must defend on his own[185]. The issue here is that the novice must not just submit to a {structure / ordeal} imposed by the elders but that he should bring in some individual contribution that has the potential of changing the system, means bringing innovation into the structures of a society. This element of potential change of the system distinguishes the *cold* societies, which do everything to preserve their structures, from the *hot* ones. In terms of CMS, this presents the important element of *cultural learning*. The CMS is not just about eternally carrying on some cultural contents throughout the millennia, but also about cultural learning, regeneration, re-organization, re-juvenation, and (if we choose to call it so) cultural evolution. Only where a society has succumbed to a process akin to senescence in organisms, does the initatic ordeal have the sole purpose of subduing the will and erasing the personality.

---

[184] Cursory analysis of the materials presented in the mythological accounts yields that the percentage of ugly old hags saved from the dragons' claws is zero. The question of a possible mythological *gestalt* flip picture must be posed. ->:BORING_WOMEN, p. 123

[185] Although in actual practice this may not so much live up to these lofty ideals. Focus 7/1995, Mariela Sartorius: "Doktor, summa cum gaudi".

19.2.5. Open issues of initiation

The research on the patterns of initiation failed to bring about substantial material on the "inside" accounts of being initiated. Most descriptions were made from the objectivist exterior, by the vistiting anthropologist, describing this and that setting, this and that procedure, and scarcely a mention of how and what the initiands felt, and especially not what the resulting "metanoia" was for them, how their own perceptions of themselves and the world had changed.[186] Also no data were found on possible neurological changes in the patterns of the nervous system as effected by initiation ordeals. In the present situation of orientation towards neuronal processing, this should be very important information A case in point may be the extremely drastic Australian initiations which should leave "their mark" in the nervous system, and perhaps accounting for some of the otherwise hard to explain facilities that these people display. This is an aspect of initiation that must be formulated as hypothetical in the present study, because it cannot be verified or falsified from literature study: If initiation represents a transmission of cultural material that cannot be told in words, nor shown by example, nor conveyed at all as positive knowledge, then it would be entirely impossible to represent within the framework of any conceptual model conveyed within the expressive range of verbal language and writing.

20. Panetics as transmitted cultural pattern

Literature: Benedict (1934: 130-172), Villeneuve (1965), (1988), Gay (1993), (Encarta: Torture, Inquisition, Aztec), Foucault (1969), Said (1979: 24-30), (1994), (Siu 1993, I-III), Straube (1964: 671-722). See also:

Bloom's (1995) book: "The Lucifer Principle. A scientific expedition into the forces of history" describes vividly the principle of competition, destruction, the "survival of the most brutal and ruthless", in the creation of the biological world and of human societies. Thus he gives a very important support for the presentation of the luciferic elements of (human) life on this planet.[187] This view is based on the fundamental principle of thermodynamic processes, that has also been developed as a cultural theory by Neirynck (1994). Ruth Benedict (1934: 130-172) describes in her account of the Dobu a society that has made this principle the basis their life:

Benedict (1934: 172): Life in Dobu fosters extreme forms of animosity and malignancy which most societies have minimized by their institutions. Dobuan institutions, on the other hand, exalt them to the highest degree. The Dobuan lives out without repression man's worst nightmares of the ill-will of the universe, and according to this view of life virtue consists in selecting a victim upon whom he can vent the malignancy he attributes alike to human society and to the powers of nature. All existence appears to him as a cut-throat struggle in which deadly antagonists are pitted against one another in a context for each one of the goods of life. Suspicion and cruelty are his trusted weapons in the strife and he gives no mercy, as he asks none.

Siu (1993,II: 5) has made the proposal for a science of *Panetics*, the integrated systematic study of all the aspects of suffering inflicted on humans by humans. (Pali: *paneti*, to inflict). *The International society for Panetics* has compiled in its three volume set Panetics (Siu 1993, I-III), a list of the major incidents and causes, together with an encyclopaedic register containing several thousand bibliographical references of inflicted human suffering. In the

---

[186]
[187]

context of the present study, these various forms of inflictions represent *extremely stable and contagious cultural patterns*, that have afflicted humanity since millennia.

This factor of infliction as cultural memory pattern, the spreading of social pathologies, the "viruses of the mind" is a core subject of the memetics discourse. Brodie (1996) Lynch (1996).[188] The systematic connection of punitive childhood training and belligerence is an important factor in the cultivation of aggressivity of a culture. This is discussed by Gay (1993: 181-212) who describes the caning culture of the 19th century European school system in detail: the systematic training of young children of the higher classes to become emotionally detached and immovable to the suffering of fellow humans. Montagu (1976) brings arguments against the sociobiologist and "native aggressiveness" theories of Ardrey, Dart, Morris, and Lorenz. He describes some of the glaring problems of tactile deprivation in puritan European and US WASP society. Montagu (1976: 29): an analysis of Golding's "Lord of the Flies" as an account of how the English public school system systematically turned upper class children into sadistic and otherwise emotionally pathological cases of humans that were "fit to rule the world". Also Said (1994: 3-7, 160-200): Darwin's and Spencer's principles of "survival of the fittest" are described as ideologies of European supremacy, and as example, Kipling's (1994) justifications of European imperialism.

20.1. Issues of civilization and belligerence

@:BELLIGERENCE

Literature: Bloom (1995), Diamond (1992: esp. 180-191), (1997), Gellner (1993: esp. 168-183), Nye (1970). The advent of agriculture allowed an unprecedented population growth for people living in the areas that were to become the earliest civilizatory centers. As Diamond and Gellner point out, agriculture had grave side effects. The armed control over the surplus wealth production in the agricultural societies meant a perpetual pattern of violence in these societies. Additional factors were the high level of social stress, caused by crowding, chronic undernourishment, and repeated famines, high social inequality, and installation of tyrannical rulerships. Such social tension has always found a ready means to vent it: organized war, belligerence and expansion of these societies. Writing facilitated the control and domination of these people by rulers and deployment of these societies in massed organizations, and armies, and their specialization and commerce enabled them to develop metal weapons and military infrastructure that were the key to organized warfare.

->:SOCIETY_EFFECT, p. 201

Belligerence occurs in indigenous societies as much as it does in civilizations (Ferrill 1985: 9-32), (Frobenius 1900), (O'Connell 1989: 30-44). But indigenous societies with their low levels of societal organization cannot put forward large-scale and long-sustained mass efforts, due to infrastructure constraints, ie. limitations of: food for warriors, technology for arms, mass transportation, command, organization, and conscription. See: Oconnell (1989), Dudley (1991), Ferrill (1985), Havelock (1978: 81-94). This ensures that indigenous war activities have to remain on a low / local level[189]. The use of a CMT like writing (or the quipu in the

---

[188] ->:MEMETICS, p. 248

[189] Diamond (1992: 296) reports of the fierce war activities of New Guinea highlanders (whom he knows from his anthropological fieldwork) that they are not "ritual" and "unbloody" as Erich Fromm would have it, but if given the opportunity, they massacred a whole neighboring tribe.
(p. 297): As another example of how technology can expedite genocide, the Solomon Islanders of Roviana Lagoon in the Southwest Pacific were famous for their head-hunting raids, which depopulated neighboring islands. However, as my Roviana friends explained to me, these raids did not blossom until steel axes reached the Solomon Islands in the nineteenth enctury. Beheading a man with a stone axe is difficult, and the axe blade quickly loses its sharp edge and is tedious to reshapen.

Inca case) serves to forge mass organizations and thus supports to amplify a general and ubiquitous tendency of belligerence beyond the potential of indigenous means.

20.2.   Killer culture: the 'survival of the most ruthless'

Diamond (1992: 217-369) makes a report of all the documented genocides that occurred in history. A drastic account of the systematic breeding of "killer culture" is given by Bloom (1995: 223-269), presenting a stark picture of the core culture of Islam, the Bedouin,[190] citing an anthropologist work by Lila Abu-Lughod. The strict Islamic insistence on the written word as explicated in the Koran combined with harsh Bedouin child-rearing practices as well as emotional coolness and strict contact restriction in male-female relations makes for an especially potent "virus of the mind" to "put a premium on violence, anger, and revenge" (Bloom 1995: 241) and gives an incentive to conquer the world (Jihad) citing the ayatollah Khomeini (p. 232-233). "The modern growth of Islam is the coalescence of a superorganism drawn together by the magnetic attraction of a meme." (p. 233). Not quite as extreme but in a similar vein is Levi-Strauss (1978: 392-406) (who wrote his book in the 1950's before the revival of Islam fundamentalism). These passages of the Koran can be interpreted as direct exhortations to kill and eradicate all infidel non-believers: II, 186, 187, 212, IV, 76, IX, 52, 88-89, 90, XLVII, 4-7, 37, LX 38.

---

[190] Bedouin culture is the mother of all Islam. Bloom (1995: 240).

21. Goethe's Faust, Adolf Bastian, Memetics

21.1. Goethe's Faust

21.1.1. Faust and Logocentrism

@:GOETHE_FAUST

All citations from "Faust" by line number in Goethe (1972)

(354-363):
FAUST: Habe nun, ach! Philosophie,
Juristerei und Medizin,
Und leider auch Theologie
Durchaus studiert, mit heißem Bemühn.
Da steh ich nun, ich armer Tor,
Und bin so klug als wie zuvor!
Heiße Magister, heiße Doktor gar
Und ziehe schon an die zehen Jahr'
Herauf, herab und quer und krumm
Meine Schüler an der Nase herum -

In his Faust, Goethe presents in a few passages, in an extremely condensed and concise manner (die *Ver-Dichtung*, Strecker 1988: 217-219), a poetic analysis of the problems engendered by the logocentrism that has turned the word into a fetish, and then he takes us in a few more extremely condensed passages, down to the very foundations of our world system. In the opening scene (354-363), he lets Faust speak those famous words which probably every German speaking person has heard sometime in their life. Goethe portrays a man of scholarly learning, not in his youth any more, and apparently with a successful medical practice (981-1010) and ten years of academic teaching and consulting career behind him: "Und ziehe schon an die zehen Jahr' ... Meine Schüler an der Nase herum". In psychological diction, he is apparently experiencing his "mid life crisis" uttering the words in (354-363). This scholarly man of profound learning sees himself trapped in a logocentric bibliosphere of verbiage, that is highly academic, but essentially useless for the recognition of the basic forces and principles of the universe. In short, he is desperately looking for "Alternatives to written Words" (written in the alphabet): "Daß ich erkenne, was die Welt im Innersten zusammenhält, Schau' alle Wirkenskraft und Samen, Und tu' nicht mehr in Worten kramen" (382-385), With the aspect of purely conceptual learning Goethe also gives a characterization of the scholastic academic tradition of Europe before Bacon and Galileo[191].

->:FUNDAMENTAL_IDEAS, p. 112

In a later scene (1867-2050) Goethe turns again his subtle sarcasm against the logocentrism of academic tradition. Here he lets Mephistopheles pose as "academic study advisor" for a student who has come to request guidance as to which academic path he should follow. Words are perfectly suited to weave intricate and artful conceptual edifices (1922-1930) which make them ideal for the forming of academic schools, where many generations of students are made to obediently and unquestioningly follow the "words of the master" (1989) down to the Iota (2000). But they are all too often erring around in ornate edifices of verbiage.

---

[191] To do justice to the scholastic tradition, the thousands of selflessly serving monks in the monasteries and countless small technical innovations and inventions during many centuries of hard, straining labor in the scriptoria, paved the ground to the cursory handling of words in books that Faust and the Renaissance were the heirs to. Illich describes this century-long process in (1988: 29-51).

@:WORTE_WEBEN

(1922-1930):
Zwar ist's mit der Gedankenfabrik
Wie mit einem Weber-Meisterstück,
Wo ein Tritt tausend Fäden regt,
Die Schifflein herüber hinüber schießen,
Die Fäden ungesehen fließen,
Ein Schlag tausend Verbindungen schlägt:[192]
Der Philosoph, der tritt herein
Und beweist Euch, es müßt' so sein:
Das Erst' wär so, das Zweite so,

(1934-1939):
Das preisen die Schüler aller Orten,
Sind aber keine Weber geworden.
Wer will was Lebendigs erkennen und beschreiben,
Sucht erst den Geist heraus zu treiben,
Dann hat er die Teile in seiner Hand,
Fehlt leider! nur das geistige Band.

(1950-1953):
Da seht, daß ihr tiefsinnig faßt,
Was in des Menschen Hirn nicht paßt;
Für was drein geht und nicht drein geht,
Ein prächtig Wort zu Diensten steht.

(1987-2000):
Am besten ist's auch hier, wenn Ihr nur Einen hört,
Und auf des Meisters Worte schwört.
Im ganzen - haltet Euch an Worte!
Dann geht ihr durch die sichre Pforte
Zum Tempel der Gewißheit ein.
...
Schon gut! Nur muß man sich nicht allzu ängstlich quälen;
denn eben wo Begriffe fehlen
Da stellt ein Wort zur rechten Zeit sich ein.
Mit Worten läßt sich trefflich streiten,
Mit Worten ein System bereiten,
An Worte läßt sich trefflich glauben,
Von einem Wort läßt sich kein Jota rauben.

Innis (1991: 4): A complex system of writing becomes the possession of a special class and tends to support aristocracies. A simple flexible system of writing admits of adaptation of the vernacular but slowness of adaptation facilitates monopolies of knowledge and hierarchies... Concentration on learning implies a written tradition and introduces monopolistic elements in culture which are followed by rigidities and involve lack of contact with the oral tradition and the vernacular. "Perhaps in a very real sense, a great institution is the tomb of the founder." "Most organizations appear as bodies founded for the painless extinction of ideas of the founders." "To the founder of a school, everything may be forgiven, except his school".[193]

21.1.2. Faust's Metanoia and Mephistopheles

@:FAUST_METANOIA

The *step out of the bibliosphere* of the logocentric academic tradition that Goethe lets Faust perform is described in scene:
->:BIBLIOSPHERE, p. 195

---

[192] To which we might add that hypertext allows us to achieve yet one more level of interconnection over normal, linear text. See Landow (1992). See also: ->:WEAVING, p. 165

[193] Perhaps also to be applied to the school of Harold Innis.

(1224-1237):
Geschrieben steht: "Im Anfang war das Wort!"
Hier stock' ich schon! Wer hilft mir weiter fort?
Ich kann das Wort so hoch unmöglich schätzen,
Ich muß es anders übersetzen,
Wenn ich vom Geiste recht erleuchtet bin.
Geschrieben steht: Im Anfang war der Sinn.
Bedenke wohl die erste Zeile,
Daß deine Feder sich nicht übereile!
Ist es der Sinn, der alles wirkt und schafft?
Es sollte stehn: Im Anfang war die Kraft!
Doch, auch indem ich dieses niederschreibe,
Schon warnt mich was, daß ich dabei nicht bleibe.
Mir hilft der Geist! Auf einmal seh' ich Rat
Und schreibe getrost: Im Anfang war die Tat!

In this scene, Goethe takes us to the "foundations of the world", he lets Faust critically review the fundamental philosophical statement of the Christian tradition, John (1,1): "en archae en ho logos", which expresses the core of the logocentrism of this tradition. In this essential passage, Goethe lets Faust make his conversion (*metanoia*[194] / *kata strophae*) from a fundamentally static *declaration-oriented*[195] (logocentric, scholastic) framework to a *pragmatic and process-oriented* approach. In this, Goethe lets his protagonist perform "pars pro toto" the reorientation of the western mind from scholastic philosophy (ancilla theologiae) towards science and technology as it happened after the Renaissance[196]. Not without a sense for subtle humor, the name *Faust* (fist) of the protagonist emphasizes the elements of *action and process*, as opposed to the *Kopf* (head), the purely cognitive, word and mind oriented approach of the intellectual. It is the fist that forges and holds the tools with which the "faustian" Western civilization went on to conquer the world (Spengler).[197] As a pun, we might note that to become "a man of the fist", Faust needs to make a pact with *me-fisto*. This whole drama is described in its unfolding by Goethe in Faust II, the exploits of Faust and Mephisto in their work for the emperor (the powers of this world). Focusing again on the crucial passage around Faust's *metanoia*.

But the power behind the Faust stems also from a different source than mechanistic technology: Faust had become an adept of (alchymical) *ritual*: "Drum hab' ich mich der Magie ergeben" (375-520)[198] that is: he had studied an area which lies outside of logocentric scholastics as well as of the positivistic sciences and technologies. This focus on magical ritual sets the scene for the first climax of the drama that occurs in the immediately following passages (1255-1290) where Faust performs a series of conjurations, as he discovers that the poodle he has brought home from his walk in the fields, is no ordinary dog. The stages of this ritual process are unfortunately not described by Goethe in detail, only the first conjuration

---

[194] ->:BUDDHA_METANOIA, p. 120, ->:GESTALT_SWITCH, p. 123,
->:TRIAD_SWITCH, p. 136, ->:METANOIA, p. 136
Matth (4,17), Matth (18,3),
[195] "Fiat lux", "let there be light", is the paradimatic declaration of this tradition. (Genz 1994: 61). No questions may be asked as to where the switch is, or where the power for the light comes from.
[196] An extensive discussion of this break with the scholastic tradition is given by Campbell (1996,IV: 683-716), and the Faust theme is discussed on (1996,IV: 711-714). Historically, a person Dr. Johann Faust lived around 1480-1540. Campbell notes that one aspect of the immense popularity of the Faust theme had been the printing press. The first Faust book was brought out in 1587 by Johann Spießand immediately sold out, and was reprinted in four pirated editions (713).
[197] ->:KULTURMORPHOLOGIE, p. 131
[198] ->:RITUAL_PATTERN, p. 224

(1272-1291) where he evokes the elements. And when this doesn't work "Du sollst mich hören / stärker beschwören" (1296-1297) he makes another conjuration: "So sieh dieses Zeichen" (1300) and as last measure, he makes reference to an even "stronger medicine" that he has in store for his guest: "Erwarte nicht / das dreimal glühende Licht! Erwarte nicht / Die stärkste von meinen Künsten!" (1318-1321). Apparently this "magic of implication" works, and in an anticlimax, Goethe now describes the appearance of Mephistopheles, "the spirit of negation and destruction" (1328-1384).

@:MAE_PHIS_TELES
  1335-1344:
  MEPHISTOPHELES:
  [Ich bin] Ein Teil von jener Kraft,
  Die stets das Böse will und stets das Gute schafft.
  ...
  Ich bin der Geist, der stets verneint!
  Und das mit Recht; denn alles, was entsteht,
  Ist wert, daß es zugrunde geht;
  Drum besser wär's, daß nichts entstünde.
  So ist denn alles, was ihr Sünde,
  Zerstörung, kurz das Böse nennt,
  Mein eigentliches Element.

  1348-1352:
  Ich bin ein Teil des Teils, der anfangs alles war,
  Ein Teil der Finsternis, die sich das Licht gebar,
  Das stolze Licht, das nun der Mutter Nacht
  Den alten Rang, den Raum ihr streitig macht

@:WORLD_FOUNDATIONS
  With the appearance of Mephisto, Goethe now enters the metaphysical plane, and he goes even deeper, and under-mines all the foundations of our world views of the last 2500 years. He re-introduces the Presocratic philosophy, the concept of "generation and corruption" (1335-1344) which has first been described by Anaximander (also in the Aristotelian treatise under the same name). Thus he re-opens the philosophical field of contention for the ancient Heraklitean ideas of perpetual change "panta rhei", that had been closed shut with the static Parmenidean *Being* and the eternal unchanging world of the Platonic ideas that had been transfigured (heilige Wandlung) into the *Will of God* in the Christian "philosophia ancilla theologiae". Genz (1994: 74-99), Goppold (1998: 2), Weischedel (1975: 21-28), Parmenides (1974), Heraklit (1976). In a later passage, (7850-8487) Goethe lets Thales, Anaxagoras, and Proteus appear as protagonists for the Presocratics.
    ->:LOGOCENTRISM, p. 197

The word *Me-phis-to-pheles* as used by Goethe is worth scrutinizing. There is no direct translation into any Greek words, but there seem to be several ways to decypher[199] it:

(Chambers: Mephistopheles): Mephistopheles or Mephostophilis... Both forms go back to the Mephostophiles of the first *Faustbuch* where he describes himself as 'a prince, but servant to Lucifer'. The etymology of the name is obscure; its origin is probably Hebrew (*Mephiz*, destroyer and *Tophel*, liar), but in an age which delighted in rendering Germain into newly acquired Greek (as the homely Schwartzerd turned into the scholarly Melanchthon) the assimiliation to *maephotophilaes*, 'one who loves not the light' added dignity to the Prince of Evil.

For the symbolic decyphering of the appearance of *Mae-phis-to-pheles* we need to consider the alchymical ritual setting of the whole scene that Faust has prepared, and we can make use

---

[199] "Was ist mit diesem Rätselwort gemeint?" (1337)

of methods that are shown by Strecker (1988: 10-43, ch. 1 and 2), taking the *evocation* as important component of the *ritual process* (Turner 1987), in which Goethe lets us partake in this scene. The *Faust* is not an ordinary prosa text, but is an instance of extreme symbolic *Verdichtung*. Strecker (1988: 217-219): "The skilful placement speaks within the context of the totality or *Gestalt* of the ritual". This allows us to enter the *ritual process* ourselves and lets us strike the chords of evoked association and meaning that bear a connection to the themes that Goethe introduces in the passage between (1328) and (1867). The Latin words expressing the alchymical process are: *solve et coagula*[200], and *transmutatio*. (Chambers: Alchemy). In Greek (Rost 1862,I: 236), this is: {*analysis / diaballein*} (*dissolve*, to cast apart) and {*synthesis / symballein*} (*coagula*, to cast together), and {*metamorphosis / metaballein*} (*transmutatio*). The *symballein* connects us to the word *symbolon*.[201] The casting apart of *diaballein* had at some time assumed a pejorative aspect in *diabol /-us /-ic* as term for the devil. The alchymical theme of these passages in Faust is that of the processes of creation, destruction, and transmutation: *symballein*, *diaballein*, and *metaballein*. The introduction of the *Mae-phis-to-pheles* serves as cypher for the necessity of any creation to be balanced by dissolution, of the balance of *physis* and *lysis*: "Und das mit Recht; denn alles, was entsteht, / Ist wert, daß es zugrunde geht;". This is expressed by the *mae-*, the Greek negation operator (Rost 1862,II: 79): "ich bin der Geist, der stets verneint". It is also the fundamental tenet of the Anaximandros fragment.

@:MNAEMOSYNAE

Another association connected with *me-* is *mnae- / mnaemae-* (Rost 1862,II: 91): pertaining to memory[202]. This, the cultural memory, is the core theme of the present study, and it is also the theme of the very last sentence in Faust's life (11581-11586): "Es kann die Spur von meinen Erdentagen / Nicht in Äonen untergehn". It is Faust's ulterior wish and aim to remain eternally in the cultural memory of the people for whom he has conquered the *Lebensraum*[203], to become an immortal cultural heros[204] (11575): "Nur der verdient sich Freiheit und das Leben, / der täglich sie erobern muß".

21.1.3. Mephistopheles and the polarity of light and sound, space and time

We have several possible ways to decypher the *-phis-to-pheles*: It was mentioned above that there is a *phos-* element that appears as the theme of the consecutive dialogue. This has the following connections: *phos* connects to *phonae* (the sound) by the Greek word *phaino* to

---

[200] Illich (1988: 5-6): Writing is not the only technique we know for making the flow of speech coagulate and for carrying clots of language along intact for tens of even hundreds of years.

[201] ->:SYMBOL, p. 119

[202] Illich (1988: 13): At the time when heaven still embraced the earth, when Uranus still lay with full-hipped Gaia, an aeon before the Olympian gods, the Titans were born and with them, memory, or Mnemosyne. In the Hymns to Hermes, she is called the Mother of the Muses. She is the earliest of the goddesses, preceding even Apoll with his lyre. Hesiod mentions her as the goddes of the first hour of the world... When the god Hermes plays to the song of the Muses, its sound leads both poets and gods to Mnemosyne's wellspring of remembrance. In her clear waters float the remains of past lives, the memories that Lethe has washed from the feet of the departed, turning dead men into mere shadows.

About Mnemosyne as the mother of the muses, see also Hesiodos (1978: 47).

Hertha v. Dechend (1993: 257) asserts that *Hermes* is the Greek name for *Thoth* as he is called in Egyptian mythology

->:PLATO_PHAIDROS, p. 201

[203] I.e. this is the emphasis on the aspect of *space*, which Faust wants to conquer, only to be eventually defeated by *time*. (See Innis 1991).

->:INNIS_SPACETIME, p. 244

[204] Campbell (1996,III: 88-110, 165-214).

bring to light / to sound (Rost 1862,II: 595, 596). *ho phainon* is an alias name for the planet (and alchymical force) *Saturn*. Graves mentions in (1988: 86-88): *hae-phaistos*[205], *?haemeraphaestos?* (he who shines by day): Greek god of metal work and smiths who is ugly and ill-tempered and hobbles (like the devil). But *hae-phaistos* is well-liked on the Olympus because he makes the most exquisite mechanical devices, especially famous are his mechanical tripods. (Connection to Faustian technology, Spengler 1980). Then there is a Greek word *pistis / pistos* (Rost 1862,II: 293) that refers to a pact, a contract, an agreement, a guarantee, a pledge, a pawn, a collateral, an oath, a vow, which is of prime importance in the following text. The *-pheles* can either be taken as an allusion to *philes,* friend, or to *phalaes / phallos* -> male organ of generation (see Faust: Gretchen), or to *-pheres*, as in *phos-pheres*:= *lucifer*[206]. The self-characterization of *Mae-phaisto* between (1348 - 1379) makes recurrence to all the core subjects of presocratic philosophy, especially Thales, Anaximandros and Hesiodos. The alchymical elements can be found in the philosophy of Thales: the dry, the humid, the warm and the cold (1374-1376), (Pleger 1991: 56, 65), (Chambers: Alchemy). Anaximandros' work is about the reign of time over the waxing and waning of all things (1338-1344), (1699-1706), (Pleger 1991: 61-66).

The fundamental theme of the polarity of *space* and *time* is brought to bear to with "Das stolze Licht, das nun der Mutter Nacht / Den alten Rang, den Raum ihr streitig macht"[207] (1351-1352). This short passage makes allusion to the fundamental polarity that our main senses and modes of orientation have: *vision* as the sense of *space*, and *hearing of sound* as the sense of time. Night, darkness, is the realm of sound. It is also the *Leitmotiv* of the Apollonian / Dionysian dichotomy of Nietzsche, Benedict (1934), and Paglia (1991). From our own experience, we all know that in the darkness, we hear most acutely[208]. Illustrative for this is also the account of the intense experiences of Jacques Lusseyran when he became blind (Innis 1972: vii), (McLuhan 1978: 198, 1989: 27-28, 35-36, 37, 74-75). Time is the essential motif in the later passage (1699-1706). The polarity of space and time and the influence of the media is one of the main themes in the works of Innis (1952-1991), and McLuhan (1972-1989). In Faust (1384), Mae-phaisto is described as the son of *Chaos*[209]. This brings up Hesiodos' Theogony of the origin (*archae*) of the All (*ta panta*) in the *Chaos*. Hesiodos (1978: p. 34-35, p. 50-53,Theog.). Hesiodos says: *ex archaes... hoti proton genet auton* (from the beginning... what of those arose first), and then he continues: *aetoi men protista Chaos genet, autar epeita Gai' eurysternos,* (in the very beginning, verily, arose the *Chaos*, but then the broad-breasted[210] *Gaia*... (Theog.,ln. 116-117). And in that first act of primordial creation (out

---

[205] v. Dechend (below) equates *Saturn* again with *Hephaistos*.

[206] See also: Bloom (1995). His book: "The Lucifer Principle. A scientific expedition into the forces of history" describes vividly the the luciferic principle of destruction in history.
->:PANETICS, p. 233

[207] See also: Kaiser (1980: 87 ff.).

[208] Not to forget that we also tend to dim the lights when we go to bed with our lover, in order that our experience of *feeling* and *touching* is enhanced.
->:TACTILE, p. 147, ->:MARITAL_ART, p. 219, ->:SOMATIC_FACTORS, p. 145

[209] Rost (1862,II: 632): *chaos*, the emptiness, the void, the immense unfathomable open space, the deep cave, the gaping, the yawning, the unstructured formless "substrate" out of which the cosmos is fashioned. The present meaning of *disorder* is only a subordinate theme in the ancient meaning. The meaning of "*immense unfathomable open space*" is identical to the core concept of Anaximandros: the *apeiron*. Rost (1862,I: 123).

[210] To which Goethe makes allusion in (7902-7920) where he lets Anaxagoras call the goddess of night: "Du! droben ewig Unveraltete, / Dreinamig-Dreigestaltete, / Dich ruf' ich an bei meines Volkes Weh, / Diana, Luna, Hekate! / Du Brusterweiternde, im Tiefsten Sinnige", and 7990: "Die Parzen selbst, des Chaos, eure Schwestern". *moirae*: ->:MOIRAE, p. 166

of the Chaos) also arose *Eros lysimelaes*, "the most beautiful of the eternal gods, the *member-dissolving*" (Theog.,ln. 120).[211] And then, in the next act of creation, arose (out of the Chaos) the dark elements: *Tartaros*, *Erebos*, and *Nyx* (night), and only out of the coupling of *Nyx* and *Erebos* arose finally the *Ether* and the *Haemer* (light of day) (Theog.,ln. 119-124). This is definitely a view of creation that is as unchristian as can be, and *mae-phaistos* now appears as the emissary of all those primordial forces of creation that had been driven into the underworld (the Tartaros, or the hell as it is called in Christian terminology). "Ich bin ein Teil des Teils, der anfangs alles war" (ta panta). The identity of this "Part of the Part that was the All in the Beginning" is elaborated in a further scene (8027-8029): "(Meph.) Da steh' ich schon, / Des Chaos vielgeliebter Sohn! / (Phorkyaden) Des Chaos Töchter sind wir unbestritten / (Meph.) Man schilt mich nun, o Schmach, Hermaphroditen." This, the *hermaphroditaes* being the "*dearest Son of Chaos*" will add further *light* to the identity of *mae-phaistos*: Because in the Orphic hymns, he is known as the *Protogonos*, the *Erikepaios*, the *Phanes (phaino*, above*)*, and the *Priapus*[212], (Orpheus 1992: 29). According to Graves (1988: 30) he is also the *Eros*, who was hatched from a silver egg that Nyx had laid in the womb of Darkness, and he set the Universe in motion. Eros was double-sexed and golden-winged and, having four heads, sometimes roared like a bull or a lion, sometimes hissed like a serpent or bleated like a ram. By this, we have now recovered a few more of the "parts of the parts that were the All in the Beginning", and of the names and guises under which this master of *permutation (metaballein) of form* appeared. ->:MORPHOLOGY, p. 128

@:PHAOS

In the abovementioned passage of primacy of the *night* over the *light*: "Das stolze Licht, das nun der Mutter Nacht / Den alten Rang, den Raum ihr streitig macht", Goethe lets Mae-phaisto retrace the connection to John (1,5-9) which equates the *logos* (word) with the *phos* (light), and lets him confront that with the ancient creation mythologies of Anaximandros and Hesiodos (above). His old "birthright" over the light is evidenced in his alias name: the *phos-pheres*:= *lucifer* (1377: "Hätt' ich mir nicht die Flamme vorbehalten"). It was said above, that Night, darkness, is the realm of sound. This is the theme of the archaic *sound* creation mythologies of the *Chaos*, which are essentially polar opposites of the younger Judaeo-/Christian *light* creation mythology. These are in all depth and detail described in the works of Marius Schneider (Schneider 1951-1990). Ruth Benedict (1934: 78) retraces part of this development in her polarity of dionysian (orgiastic, sound[213]) and apollonian (rational, light[214]) cultural patterns after Nietzsche. (Encarta: Dionysos, Bacchus), (Graves 1988: 103-111).

---

[211] The element of *lysis* (dissolution) balances the creation of Nature (*physis*).

[212] (Encarta: Priapus): Priapus, in Greek mythology, god of fertility, protector of gardens and herds. He was the son of Aphrodite, goddess of love, and of Dionysus, god of wine, or, according to some accounts, of Hermes, messenger of the gods. He was usually represented as a grotesque individual with a huge phallus.

The phallus as "trademark" connects us back to the -pheles in *Mae-phis-to-pheles*. And we see why he was called *Herm-Aphroditaes*. The *Dionysus* is treated further down.

[213] The sound is chaotic, non-melodic: Orpheus (1992: 64): "Dionysos, dem Lauttosenden, den Herrn der Gestirne rufe ich an", p. 84: "Verzükter, lautlämender Bakchos, ... komm zu uns, Seliger, Reigenfreund, Bring allen die Flle der Freude!"

[214] Apoll was called the *phoibos* (Rost 1862: 615) the clear, radiant.

Related words are: *phos*, *photo-*, *phoos* and *phaos*. More words of visual phenomena: *photisma*, *phoibos***:** splendor, shining, sparkling, brilliant, luminous. *phoibasma*, *phoibetes*: prophet, oracle, mantics. *phoinos*: purple, phoenician, dark red (glowing). *phosphoros*: luck, fortune, rescue.

The connection between *Saturn* and *time* is given by H.v.Dechend (1993: 122, 203-4, 218, 242, 244-248) who equates *Saturn* with *Chronos* and *Kronos*, the god of time, and in (247-248) *Saturn* is again equated with *Hephaistos*.

Dechend (1993: 134): "Es ist das goldene Zeitalter, in der lateinischen Überlieferung *Saturnia regna*: Die Herrschaft des Saturn, des griechischen Kronos... In Indien hieß sie Yama; im Altpersischen *Avesta* hieß sie Yima xsaeta, ein Name, aus dem in Neupersien Jamshyd wurde; im Lateinischen hieß sie Saeturnus, dann Saturnus. Saturn beziehungsweise Kronos war unter vielen Namen als der Herrscher des Goldenen Zeitalters bekannt - jener Zeit, in der die Menschen weder Krieg noch Blutopfer kannten, noch die Ungleichheit der Klassen - , als Herr der Gerechtigkeit und der Maße, als Enki bei den Sumerern und in China als der Gelbe Kaiser und Gesetzgeber.

The central issue of the Saturnian reign over time is shown in the bet by which Faust wagers his soul's immortality (ie. the endurance of his person's substantial essence over time),[215] against the ever-increasing entropy, the second law of thermodynamics.[216] This is set in (1699-1706), and this sets the starting signal for Faust's and Mae-phaisto's race into creation and destruction, and the waxing and waning of worldly phenomenal appearances against the eternal law of time:

(1699-1706): Werd' ich zum Augenblicke sagen: / Verweile doch! du bist so schön! / Dann magst du mich in Fesseln schlagen, / Dann will ich gern zugrunde gehn! / Die Uhr mag stehn, der Zeiger fallen, / Es sei die Zeit für mich vorbei!

And this pact is to be set in writing (to preserve the evidence against the law of time, destruction, for eternity[217]). There is a discussion which writing medium is best: "Erz, Marmor, Pergament, Papier? Soll ich mit Griffel, Meißel, Feder schreiben?" (1731-1732). One settles for parchment: "Allein ein Pergament, beschrieben und beprägt" (1726). Now the central aspect of cultural memory could be characterized as: *CM is that of the personal memories which doesn't die with the person who is dying.* Thus we could state that writing as CM technology is an "Alternative to the immortal soul", and so we get the poignant theme of Faust's pact with his Mae-phaisto for the subject of the present study. This factor of "virtual immortality" is evident in the preservation of the names of scientific and literate workers in the collective memory of society. (Also: Assmann 1993: 145-147). Thus, the writing of an academic bibliography, whatever its utilitarian (exoteric) purposes may be, is also a solemn rite (esoteric) by which (virtual) immortality is instantiated and celebrated. And the very same moment Faust imagines to have achieved this:

(11581-11586): Zum Augenblicke dürft' ich sagen: / Verweile doch! du bist so schön! / Es kann die Spur von meinen Erdentagen / Nicht in Äonen untergehn. - / Im Vorgefühl von solchem hohen Glück / Genieß' ich jetzt den höchsten Augenblick.

That moment is the fulfilment of the pact, and the victory of time over creation:

(11589-11594): Den letzten, schlechten, leeren Augenblick, / Der Arme wünscht ihn festzuhalten. ... / Die Zeit wird Herr, der Greis hier liegt im Sand. / Die Uhr steht still - / Steht still! Sie schweigt wie Mitternacht. / Der Zeiger fällt. / Er fällt, es ist vollbracht. / Es ist vorbei.

---

[215] Günther (1980: 86): Aber Raum und Zeit sind der Seele, die nach Ewigkeit und Vernichtung aller Ferne verlangt, im tiefsten Wesen unangemessen. Alle Heils- und Seelengeschichte strebt nach Vernichtung von Raum und Zeit.

[216] ->:IMMORTALITY_COMPLEX, p. 137, ->:CULTURAL_MNEMO, p. 230

[217] This may be the logical error that Mae-phaisto committed: He as the lord of time and destruction wants to preserve something *against* time and *against* destruction. That doesn't compute.

Innis (1991: 93): The permanency of death became a basis of continuity through the development of the idea of immortality, preservation of the body, and development of writing in the tombs by which the magical power of the spoken word was perpetuated in pictorial representation of the funeral ritual.

Innis (1972: 7): The concepts of time and space reflect the significance of media to civilization. Media that emphasize time are those that are durable in character, such as parchment, clay, and stone. The heavy materials are suited to the development of architecture and sculpture. Media that emphasize space are apt to be less durable and light in character, such as papyrus and paper. The latter are suited to wide areas in administration and trade. Materials that emphasize time favour decentralization and hierarchical types of institutions, while those that emphasize space favour centralization and systems of government less hierarchical in character...

Thus we have brought about the main themes of the *Ver-Dichtung* in Goethe's Faust: time and space, sound and light, destruction and creation, forgetting and memory, death and immortality, and with the friendly help of *Mnae-phaisto-philes*, we have refreshed our memory (mnaemae) and traced them back to their very earliest and oldest beginnings (the *archai*) that exist in the cultural memory of Western civilization (the Homeric epics, the Presocratics, and the Orphic hymns), by this, we have *re-membered* (*Er-innern*) them, (made them present), and with Harold Innis, we can connect them to the cultural transmission that is the core subject of this study.

21.2. Faust: Encyclopaedia Britannica

Faust, also called FAUSTUS, or DOCTOR FAUSTUS, hero of one of the most durable legends in Western folklore and literature, the story of a German necromancer or astrologer who sold his soul to the devil in exchange for knowledge and power. There was a historical Faust, indeed perhaps two, one of whom more than once alluded to the devil as his Schwager, or crony.One or both died c. 1540, leaving a tangled legend of sorcery and alchemy, astrology and soothsaying, studies theological and diabolical, necromancy and, indeed, sodomy. Contemporary references indicate that he was widely travelled and fairly well known, but all observers testify to his evil reputation. Contemporary Humanist scholars scoffed at his magical feats as petty and fraudulent, but he was taken seriously by the Lutheran clergy, among them Martin Luther and Philippe Melanchthon. Ironically, the relatively obscure Faust came to be preserved in legend as the representative magician of the age that produced such occultists and seers as Paracelsus, Nostradamus, and Agrippa von Nettesheim.

Faust owes his posthumous fame to the anonymous author of the first Faustbuch (1587), a collection of tales about the ancient magi--who were wise men skilled in the occult sciences--that were retold in the Middle Ages about such other reputed wizards as Merlin, Albertus Magnus, and Roger Bacon. In the Faustbuch the tales were attributed to Faust; they were narrated crudely and were further debased with clodhopping humour at the expense of Faust's dupes. The intense conviction of the author's descriptions of Hell and of the fearful state of mind of his merciless hero, as well as his creation of the savage, embittered, remorseful fiend Mephistopheles were so realistic that they inspired unquestioning belief. Some of these passages were used verbatim by Thomas Mann in his novel Doktor Faustus (1947; Doctor Faustus, 1950).

The Faustbuch was speedily translated and read throughout Europe. An English prose translation of 1592 inspired The Tragicall History of D. Faustus (1604) by Christopher Marlowe, who, for the first time, invested the Faust legend with tragic dignity. It invoked more effectively than the original the summoning from the underworld of Helen of Troy to seal Faust's damnation. Marlowe retained much of the coarse humour and clownish episodes of the Faustbuch. German versions of Marlowe's play increased them. This association of tragedy and coarse buffoonery remained an inherent part of the Faust dramas and puppet plays that were popular for two centuries. Yet for all the antics of Casper the clown, the puppet plays retained some tense and moving scenes. Faust's end was often floodlit with poetry, and his eternal damnation was never in doubt.

The publication of magic manuals bearing Faust's name became a lucrative trade; the books included careful instructions on how to avoid the bilateral pact with the devil or, if need be, how to break it. The classic of these, Magia Naturalis et Innaturalis, was in the grand-ducal library in Weimar, Ger., and was known to Goethe.

The German writer Gotthold Lessing undertook the salvation of Faust in an unfinished play (1784). Lessing, an enlightened rationalist, saw Faust's pursuit of knowledge as noble, and arranged the hero's reconciliation with God. This was the approach adopted by the outstanding chronicler of the Faust legend, J. W. von Goethe. His Faust (Part I, 1808; Part II, 1832, after the poet's death) makes of the Faust myth a profoundly serious but highly ironic commentary on the diverse potentialities of Western man's cultural heritage.

The poem contains an array of epic, lyric, dramatic, operatic, and balletic elements, ranging through metres and styles to present an immensely varied commentary in terms of theology, mythology, philosophy, political economy, science, aesthetics, music, and literature. In the end Goethe saves Faust by bringing about his purification and redemption.

Hector Berlioz was moved to create a dramatic cantata, The Damnation of Faust, upon the French version of Goethe's dramatic poem by Gerard de Nerval. This work, first performed in 1846, is also staged as an opera. Charles Gounod based his opera Faust on Part I of the Goethe work, to a libretto by Jules Barbier and Michel Carré. It was first performed in Paris in 1859.

In the 19th and 20th centuries other writers sought to emulate Goethe in assaying Faust's salvation, but with none of his stunning success. And others retold the story without Goethe's happy ending. Among them were Adelbert von Chamisso, Faust, Ein Versuch (1804); Christian Grabbe, Don Juan und Faust (1829); Nikolaus Lenau, Faust: Ein Gedicht (1836); Woldemar Nürnberger, Josephus Faust

(1847); Heinrich Heine, Doktor Faust: Ein Tanzpoem (1851); and Paul Valéry, Mon Faust (1946). Lenau and Valéry, in particular, stressed the dangers of seeking absolute knowledge, with its correlative of absolute power. For them the incorruptibility proclaimed by Goethe confronts an annihilating instinct common to mankind and to the original Faustbuch. They fear that the Faustian spirit of insatiable scientific inquiry has been given modern expression.

21.3. Adolf Bastian's Elementar- und Völkergedanken

@:ADOLF_BASTIAN

Main literature: For introduction to Bastian's work: Fiedermutz (1990), Bastian (1881), Bastian (1866-71), Bastian (1903), Jahoda (1992: 104-110), Schwarz (1909).

For the present study, the relevance of Adolf Bastian stems from his expertise in the fields of biologiy and ethnology,[218] and his approach as of assuming a point of perspective under which to treat cultural productions in an abstract manner and with a systematic singular paradigm with focus on their aspects of form, rather than their content. This paradigm was called by Adolf Bastian's the *Elementar- und Völkergedanken* (here abbreviated as E&V). Since Bastian never brought this work to a definite conclusion (Fiedermutz 1990: 121), a certain measure of interpretation is admissible concerning the open areas of his work. The basic reasoning is this: The idea substrate that is constant behind all the varied individual and ethnic productions must be some basic elementary structure, which Bastian called the *Elementargedanken*. By applying an (unspecified) kind of logical combinatorics (*logisches Rechnen*, which he had derived from Quetelet), Bastian hoped to arrive at a structure which would explain the formation of local ethnic productions (the *Völkergedanken*). Bastian attempted to sum this up in one of the last publications in his life (1903), but since he could never arrive at a systematic exposition, his life work remains a torso. The basic mechanism of reproduction and transmission of cultural material is called the CMS[219] in the context of the present study. The simple observation of the fact that cultural material gets reproduced at all, and that it gets reproduced over a certain appreciable duration (the *synchronic and diachronic extension* of cultural patterns),[220] proves that there exist stable cultural configurations beyond any individual, idiosyncratic, ad hoc, productions, experiences, inventions, and intentions. After Bastian, there were many designs by diverse workers in different directions to establish systematic views of culture: Steward's Cultural Core (Raum 1990: 262), Leslie White's Concept of Cultural Systems (1975), and Mühlmann (1996), as well as the *memetics* view which will be mentioned in the next section.

Mühlmann (1996: 112): "Kultur ist eine Transmissionsdynamik. Merkmale werden innerhalb einer Generation und von einer Generation auf die nächste übertragen".

Mühlmann (1996: 111): Wenn es einer kulturähnlichen Organisation nicht gelingt, ihre Merkmale an die nächste Generation zu übertragen, kann aus ihr keine wirkliche Kultur entstehen.

Bastian (1866-71: Vol. 2, p. VIII):
Wir haben die Grundgedanken aufzusuchen, wie sie in allen Gedankenkreisen, unter allen Zonen und Ländern, in allen Zeiten mit zwingender Notwendigkeit aus der mikrokosmischen Anlage der Menschennatur hervorgewachsen sind, durch Besonderheiten der Umgebungsverhältnisse zwar an ihrer Oberfläche verschiedentlich gefärbt, aber dem zentralen Achsenkreuz nach unverändert dieselben.

---

[218] He was a medical doctor, thoroughly founded in the classics, and he is considered the founding father of German ethnology.

[219] ->:CMS_DEF, p. 139

[220] ->:CULTURE_PATTERN, p. 132

Bastian (1881, 182): Was wir hier suchen, wir werden es finden, in objectiver Umschau über die Gesammtheit der Völkergedanken, in einer Erschöpfung der Denkmöglichkeiten, da damit das Denken an die irdisch erreichbaren Grenzen seiner Fähigkeiten gelangt ist, und, innerhalb des so gezogenen Horizontes, in der Harmonie des Kosmos auch die für seine Schöpfungen harmonischen Gesetze zu finden haben wird... Keines der Völker der Erde vermag uns etwas zu lehren, wohl aber können wir, wenn wir es wollen, von ihnen lernen, -- lernen die Entwickelung der Denkgesetze, aus deren Studium in vorangegeangenen Philosophien wir in den bisherigen Wachstumsstadien unserer Civilisation bereits die kräftigste Nahrung gesogen.

Bastian's ideas stand in the tradition of Leibniz[221], Herder, A. and W. v. Humboldt[222], Wundt, and Schopenhauer (via Wundt). The main principle of Schopenhauer's *Vorstellung* is used by Bastian:

Bastian (1881: 12): Die Welt, soweit wir sie kennen, besteht nur aus unseren Vorstellungen, sagt Wundt, und wenn Schopenhauer mit dem Gehirn, worin die höchste Objectivation des Willens sich zeigt, die Welt als Vorstellung geschaffen sein lässt, mit Raum, Zeit, Formen, Vielheit, Causalität, so hätten auch die (objectiven) Einkörperungen (subjectiver) Abstraction hinzuzutreten.
(p. 14): Indem der Mensch in dem aus eigenem Mikrokosmos reflectirten Horizont seiner Vorstellungen lebt, ergeben sich die an demselben umherbewegten Gestaltungen als die in der Umgebungswelt projicirten Schöpfungen innerer Denkthätigkeiten...
(p. 15): "Das Vorstellen stellen wir gar nicht wieder vor, sondern indem wir vorstellen, ist ohne Weiteres dadurch dem Vorstellen gewiss, dass es vorstellt"...

Bastian emphasizes the collective psyche of humanity or any ethnic group. The individual psyche is secondary to the collective.
Schwarz (1909: 33): Bastian wiederholt häufig das Lichtenbergische Wort: "Es" denkt den Menschen... Die Sozialpsyche ist bei Bastian autonom, die Individualseelen sind ihr untergeordnet... das Individuum steht zur Sozialpsyche wie die Einzelzelle zum Organismus.

The E&V are by no means limited to mental thoughts and ideas alone, but they encompass the whole of cultural productions (Schwarz 1909: 34). Bastian's natural scientific approach is outlined in (1881: XVI). Here he mentions Quetelet as forerunner, and sketches a mathematical-combinatoric method. (Also Fiedermutz 1990: 131-132).

Bastian (1881: XVI): Die allgemein vergleichende Statistik (neben der Spezialstatistik) trägt vielleicht noch die Elemente oder die Keime von neuen besonderen Disciplinen in sich, deren Begriff bis jetzt mehr geahnt als klar erkannt worden, wenn man gesprochen hat von einer exacten Gesellschaftswissenschaft oder einer Mechanik der Gesellschaft oder einer Physique sociale, die Quetelet anstrebt, oder was man auch wohl bezeichnet hat, als Naturlehre des Staats oder der Gesellschaft oder als "Gesellschafts-Psychologie".

---

[221] Bastian (1881: XVII):
In den unendlich-klein dunklen Vorstellungen, aus denen das Bewußtsein erst hervorgeht, wird (nach Leibniz) die "Harmonie zwischen der materiellen und moralischen Welt"... zu erklären sein...
[222] Graebner (1927: X):
Der ganze Verlauf des Gedankenzusammenhangs von der Gesetzlichkeit des "harmonischen Kosmos" bis zu den religiösen und staatlichen Dingen erinnert an die "Idee zur Geschichte der Menschheit" von Herder. Der große weltanschauliche Zusammenhang, in dem er seine Ideen sah, ergibt sich aus der Widmung "Dem Gedächtnisse Alexanders. v. Humbold, während der völker-psychologische Inhalt dem Denken Wilhelms v. Humboldt näher steht. Interessant ist bei Bastians Gegensatz zur idealisierten Philosophie der formelle Bezug zu Schelling.

21.4. Memetics

Memetics is a recent discourse aimed at providing a Darwinistic evolutionary view of cultural phenomena. Its aim is similar to the CMS cultural pattern view presented here. Both views deal with the same observable phenomena, ie. the creation, maintentance, propagation, and degradation of cultural appearances, which are called *memes* in the memetics discourse, and *cultural patterns* in the CMS view.

21.4.1. Memetics WWW-Sites

There exists a large amount of memetics literature in the order of many megabytes on the following WWW sites:

The Journal of Memetics
http://www.cpm.mmu.ac.uk/jom-emit/

The Journal of Memetics also keeps a link list with "Other Memetics sites":
http://www.cpm.mmu.ac.uk/jom-emit/online.html

An extensive memetics bibliography is found under:
http://www.cpm.mmu.ac.uk/jom-emit/biblio

The Lycaeum: http://www.lycaeum.org/:
http://www.lycaeum.org/~sputnik/Memetics/index.html

Memetics index: http://143.236.107.53/authors/kkitow/memetics/

Principia Cybernetica: http://pespmc1.vub.ac.be/

The Ars Electronica festival 1996: http://www.aec.at/

21.4.2. Richard Brodie

Richard Brodie's (1996) introduction to his popular book on memetics perhaps expresses the more farfetched expectations of this discourse. The aim is, as he states, to find a new paradigm by which to unify the hitherto separated academic camps of humanities and natural sciences (C.P. Snow's two cultures: Encarta: Snow). If this program would be carried through, this would lead to a conversion of the academic humanities into branches of memetic engineering. This is reminiscent of the claims of the media engineering approach to cultural studies, and E.O. Wilson's sociobiologist proposal to convert the humanities into research protocols of human ethology and sociobiology.

->:LIT_CULTMEDIA, p. 140, ->:EXTRA_OBSERVER, p. 113.

(Brodie 1996[223]: 13-14): The good news is that the long-awaited scientific theory unifying biology, psychology, and cognitive science is here. An interdisciplinary effort by scientists in all those fields over the last 20 years or so—really back to 1859 and Charles Darwin, if you like—has produced a new science called memetics.

---

[223] From Richard Brodie's "Virus of the mind" homepage:
http://www.brodietech.com/rbrodie/votm.htm
"About the Author. Richard Brodie was Microsoft chairman Bill Gates's personal technical assistant and the original author of Microsoft Word, one of the world's best-selling computer programs."

The science of memetics is based on evolution. Darwin's theory of the evolution of species by natural selection utterly transformed the field of biology. Scientists are now applying modern evolutionary theory to the way the mind works, the way people learn and grow, the way culture progresses. In so doing, the field of psychology will ultimately be as transformed by the scientists researching memetics as biology was by Darwin.

(Brodie 1996: 15): paradigm shift

Every so often, the world of science experiences something called a paradigm shift. That happens when one of the basic, underlying assumptions we've been living with changes, such as when we shifted from looking at the universe as revolving around the earth to the earth revolving around the sun. Another shift occurred when Einstein discovered the relationships between space and time and between energy and matter. Each of these paradigm shifts took some time to penetrate the scientific community, and even longer to become accepted by the general public.

Viruses of the mind, and the whole science of memetics, represent a major paradigm shift in the science of the mind.

21.4.3. Liane Gabora

@:GABORA

In a more scholarly article, "Culture as a Second Form of Evolution", Liane Gabora states that "thus far memetics has not lived up to this potential":

Gabora (1997): While some ideas instantly fade into obscurity, others spread horizontally through society, and vertically from one generation to another[224], getting progressively refined and embellished along the way. Thus ideas, like the strands of DNA that encode instructions for building and maintaining living organisms, seem to undergo a process analogous to biological evolution.

Accordingly there has been a slow but steady effort to map the concept of evolution onto the dynamics of culture. Popper [72] and Campbell [11] alerted us to the evolutionary flavor of epistemology[225]. Dawkins [17] introduced the notion of a meme - a replicator of cultural information analogous to the gene. In his words: "Just as genes propagate themselves in the gene pool by leaping from body to body via sperm or eggs, so do memes propagate themselves in the meme pool by leaping from brain to brain." Others have drawn from mathematical models[226] of population genetics and epidemiology to model the spread of ideas...

These works point toward the possibility that memetics constitutes a second form of evolution, distinct from yet intertwined with biological evolution, with the potential to provide the kind of overarching framework for the social and cognitive sciences that the first form provides for the biological sciences. However thus far memetics has not lived up to this potential, a situation that seems unfortunate given the success of the biological precedent. Although much was known about living things before Darwin, his theory of how life evolves through natural selection united previously disparate phenomena and paved the way for further biological inquiry.

21.4.4. Journal of Memetics: A Brief Overview and History of Memetics

The following is an excerpt from: Journal of Memetics - Evolutionary Models of Information Transmission.[227]

```
-------------------------------------------------------------------------
A Brief Overview and History of Memetics
 * The History of the Memetic Approach
 * Memetics and Related Evolutionary Approaches
 * Some Key References
-------------------------------------------------------------------------
```

---

[224] In the present context also called the *synchronous and diachronous extension* of cultural patterns.
        ->:CULTURE_PATTERN, p. 132
[225] This is the epistemological line that Riedl bases his morphological method on.
         ->:MORPHOLOGY, p. 128
[226] The mathematical statistical approach to cultural phenomena was pioneered by Quetelet and Bastian. ->:ADOLF_BASTIAN, p. 246
[227] http://www.cpm.mmu.ac.uk/jom-emit/overview.html

The History of the Memetic Approach

At least since the early seventies several authors have tried to adopt the principle of evolution by selection to understand the continuous change in cultural behaviors (Boyd [1], Calvin [2], Campbell [6], Cloak [7]). Richard Dawkins popularized the memetic approach. He coined the term 'meme' as an analog to the biological unit of inheritance, the gene or the genetic replicator (Dawkins [11], [12]). The rather simple distinction between genetic replicators as 'genes' on the one hand, opposed to all non-genetic replicators as 'memes' has been firmly imprinted in the evolutionary thinking about cultural information (Dennett [14, 15, 16], Hays & Plotkin [18], Hofstader [21], Hull [23, 24, 25], Lynch [28, 29], Westoby [35]). Since its initial conception, the term 'meme' has been used under very different meanings and in very different contexts, infecting a wide variety of disciplines. Among the most known are Dennett [14, 15, 16], who sees the human mind as being built up with memes comparable to the programming of a computer. Hull [23, 24, 25] defines the meme as replicator, and adds interaction to account for evolution by natural or artificial selection. He thus describes selection processes in science and biology using exactly similar definitions. Perhaps the most popular informal use of the term describes memes as 'viruses of the mind.' Parallels to both biological and computer virus varieties have been drawn (Dawkins [11, 13]).

Memetics and Related Evolutionary Approaches

We see the memetic approach as an evolutionary one. The principle of evolution by selection is best known from the natural selection theory developed by Darwin to explain evolution of biological organisms [10]. Dennett [15] calls this natural selection principle a universal acid: it is such a powerful concept that it bites through everything. Indeed, in this sense Darwin described only a special case of selection when he was dealing with biological evolution.

Evolutionary theories are applied in a wide variety of disciplines. As mentioned above, evolutionary theories are applied to culture, like in the work of Boyd and Richerson [1], Cavalli-Sforza [6] and Csanyi [9]. The evolution of language can be seen in analogy to biological evolution, as described by Hoenigswald and Wiener [20]. In computer sciences, genetic programming and genetic algorithms are descendants of the evolutionary view as well, for example in the work of several people at the Santa-Fe Institute (Holland [22], Kauffman [26]). Learning theories of humans, applied to individuals, groups and society can be tied to evolutionary theory, as shown in the work of Campbell [4, 5]. The work of several philosophers of science shows evolutionary views, as in Popper's [34] and Kuhn's [27] work. In addition, these views have impact on evolutionary epistemology, and are analogical to biological evolution. Evolutionary theories have been described to account for brain development by Gerald Edelman [17], and extended to the msec-to-minutes time scale of thought and action by William Calvin [2, 3].Evolutionary theory is present in the field of economy, often tied to the development of technology, as in the work of Nelson and Winter [30, 31] or to the evolution of institutions as in the work of Hodgson [19] and North [32].

We feel that this plethora of approaches proves the potential of evolutionary thought in all fields of human sciences. At the same time this means that there is ample opportunity to compare models of evolution, and their applications, which is one of the aims of our journal.

Key References (for more see the Bibliography of Memetics)

1. Boyd R. and Richerson PJ. 1985. Culture and the evolutionary process. University of Chicago Press.
2. Calvin W. 1996. The Cerebral code: thinking a thought in the mosaics of the mind, MIT Press.
3. Calvin W. 1996. How brains think: evolving intelligence, then and now. Basic Books.
4. Campbell DT. 1965. Variation and selective retention in socio-cultural evolution. In: Barringer HR, Blanksten GI and Mack RW (eds). Social change in developing areas, a reinterpretation of evolutionary theory. Schenkman Publishing Co.
5. Campbell DT. 1974. Evolutionary epistemology. In: Schlipp PA (ed). The Library of Living Philosophers, Vol. XIV: The philosophy of Karl Popper. LaSalle: Open Court.
6. Cavalli-Sforza L. and Feldman M. 1973. Cultural versus biological inheritance: phenotypic transmission from parents to children. Human Genetics 25: 618-637.
7. Cloak FT. 1975. Is a cultural ethology possible? Human Ecology 3: 161-182.
8. Costall A. 1991. The meme meme. Cultural Dynamics 4: 321-335.
9. Csanyi V. 1989. Evolutionary systems and society. A general theory of life, mind and culture. Duke University Press.
10. Darwin C. R. 1859. The origin of species. By means of natural selection. John Murray.
11. Dawkins R. 1976, 1982. The selfish gene. Oxford University Press.

12. Dawkins R. 1982. Organisms, groups and memes: replicators or vehicles? P. 97-117, in: The extended phenotype. Oxford University Press.

13. Dawkins R. 1993. Viruses of the Mind. P. 13-27, in: Dennett and his Critics, Blackwell Publishers.

14. Dennett D. 1990. Memes and the exploitation of imagination. J Aesthetics Art Criticism 48: 127-135.

15. Dennett D. 1996. Darwins dangerous idea. The Sciences 35: 34-40.

16. Dennett D. 1991. Consciousness explained. Penguin Books

17. Edelman G. 1992. Bright air, brilliant fire. On the matter of the mind. Basic Books.

18. Heyes CM and Plotkin HC. 1989. Replicators and interactors in cultural evolution. In: Ruse M (ed). What the philosophy of biology is; essays dedicated to David Hull. Kluwer Academic Publishers.

19. Hodgson G. 1993. Economics and evolution. Bringing life back into economics. Polity Press.

20. Hoenigswald HM and Wiener LS. 1987. Biological metaphor and cladistics classification. Francis Pinter Publishers.

21. Hofstadter DR. 1985. Metamagical themes: Questions for the essence of mind and pattern. Basic Books.

22. Holland JH. 1975. Adaptation in natural and artificial systems. Univ. Michigan Press. Reprinted in 1992 by Bradford Books/MIT press.

23. Hull DL. 1982. The naked meme. In: Plotkin HC (ed). Learning development and culture, essays in evolutionary epistemology. John Wiley and Sons.

24. Hull DL. 1988. Interactors versus vehicles. In: Plotkin HC (ed). The role of behavior in evolution. MIT Press.

25. Hull DL. 1988. Science as a process: An evolutionary account of the social and conceptual development of science. University of Chicago Press.

26. Kauffman SA. 1993. The origins of order, self-organization and selection in evolution. Oxford University Press.

27. Kuhn TS. 1970. The structure of scientific revolutions. University of Chicago Press.

28. Lynch A. 1991. Thought contagion as abstract evolution. Journal of Ideas 2: 3-10.

29. Lynch A. 1996. Thought contagion. How Belief Spreads Through Society. The New Science of Memes. Basic Books.

30. Nelson RR. 1987. Understanding technical change as an evolutionary process. North-Holland.

31. Nelson RR and Winter SG Jr. 1982. An evolutionary theory of economic change. Belknap Press of Harvard University Press.

32. North DC. 1990. Institutions, institutional change and economic performance. Cambridge University Press.

33. Plotkin HC. 1982. Learning, development, and culture. Essays in evolutionary epistemology. John Wiley and Sons.

34. Popper KR. 1979. Objective knowledge: An evolutionary approach. Clarendon press.

35. Westoby A. 1994. The Ecology of intentions: How to make memes and influence people: Culturology.

21.4.5. Daniel Dennett: Memes and the Exploitation of Imagination

@:DENNETT_MEME

The following is an excerpt from Daniel Dennett's article on memes (1990):

... I shall understand art to include all artifice, all human invention...[228]

There are few ideas more hackneyed than the idea of the evolution of ideas. It is often said that schools of thought evolve into their successors; in the struggle for attention, the best ideas win, according to the principle of the survival of the fittest, which ruthlessly winnows out the banale, the unimaginative, the false. Few ideas are more hackneyed--or more abused; almost no one writing about the evolution of ideas or cultural evolution treats the underlying Darwinian ideas with the care they deserve. I propose to begin to remedy that.

The outlines of the theory of evolution by natural selection are now clear: evolution occurs whenever the following conditions exist:

1. variation: a continuing abundance of different elements

2. heredity or replication: the elements have the capacity to create copies or replicas of themselves

3. differential "fitness": the number of copies of an element that are created in a given time varies, depending on interactions between the features of that element (whatever it is that makes it different from other elements) and features of the environment in which it persists. [Endnote 1]

Notice that this definition, drawn from biology, says nothing specific about organic molecules, nutrition, or even life. It is a more general and abstract characterization of evolution by natural selection. As the zoologist Richard Dawkins has pointed out, the fundamental principle is "that all life evolves by the differential survival of replicating entities" [Endnote 2].

The gene, the DNA molecule, happens to be the replicating entity which prevails on our own planet. There may be others. If there are, provided certain other conditions are met, they will almost inevitably tend to become the basis for an evolutionary process.

But do we have to go to distant worlds to find other kinds of replication and other, consequent, kinds of evolution? I think that a new kind of replicator has recently emerged on this very planet. It is staring us in the face. It is still in its infancy, still drifting clumsily about in its primeval soup, but already it is achieving evolutionary change at a rate which leaves the old gene panting far behind. [Endnote 3]

These newfangled replicators are, roughly, ideas. Not the "simple ideas" of Locke and Hume (the idea of red, or the idea of round or hot or cold), but the sort of complex ideas that form themselves into distinct memorable units--such as the ideas of

arch / wheel / wearing clothes / vendetta / right triangle / alphabet / calendar / the Odyssey / calculus
...

Intuitively these are more or less identifiable cultural units, but we can say something more precise about how we draw the boundaries--about why D-F#-A isn't a unit, and the theme from the slow movement of Beethoven's Seventh Symphony is: the units are the smallest elements that replicate themselves with reliability and fecundity. Dawkins coins a term for such units: memes--

a unit of cultural transmission, or a unit of imitation. 'Mimeme' comes from a suitable Greek root, but I want a monosyllable that sounds a bit like 'gene' . . . it could alternatively be thought of as being related to 'memory' or to the French word même. . . .

Examples of memes are tunes, ideas, catch-phrases, clothes fashions, ways of making pots or of building arches. Just as genes propagate themselves in the gene pool by leaping from body to body via sperm or eggs, so memes propagage themselves in the meme pool by leaping from brain to brain via a process which, in the broad sense, can be called imitation. If a scientist hears, or reads about, a good idea, he passes it on to his colleagues and students. He mentions it in his articles and his lectures. If the idea catches on, it can be said to propagate itself, spreading from brain to brain. [Endnote 4]

So far, no doubt, this seems to be just a crisp reworking of the standard fare about the evolution and spread of ideas, but in The Selfish Gene, Dawkins urges us to take the idea of meme evolution literally. Meme evolution is not just analogous to biological or genic evolution, not just a process that can be metaphorically described in these evolutionary idioms, but a phenomenon that obeys the laws of natural selection exactly. The theory of evolution by natural selection is neutral regarding the differences between memes and genes; these are just different kinds of replicators evolving in different media at different rates. And just as the genes for animals could not come into existence on this planet until the evolution of plants had paved the way (creating the oxygen-rich atmosphere and ready supply of convertible nutrients), so the evolution of memes could not get started until the

---

[228] See also ->:BEDNARIK, p. 195

evolution of animals had paved the way by creating a species--homo sapiens--with brains that could provide shelter, and habits of communication that could provide transmission media, for memes...

The first rules of memes, as it is for genes, is that replication is not necessarily for the good of anything; replicators flourish that are good at . . replicating! --for whatever reason. As Dawkins has put it,

 A meme that made its bodies run over cliffs would have a fate like that of a gene for making bodies run over cliffs. It would tend to be eliminated from the meme-pool. . . . But this does not mean that the ultimate criterion for success in meme selection is gene survival. . . . Obviously a meme that causes individuals bearing it to kill themselves has a grave disadvantage, but not necessarily a fatal one. . . . a suicidal meme can spread, as when a dramatic and well-publicized martyrdom inspires others to die for a deeply loved cause, and this in turn inspires others to die, and so on. [Endnote 6]

The important point is that there is no necessary connection between a meme's replicative power, its "fitness" from its point of view, and its contribution to our fitness (by whatever standard we judge that). The situation is not totally desperate. While some memes definitely manipulate us into collaborating on their replication in spite of our judging them useless or ugly or even dangerous to our health and welfare, many--most, if we are lucky--of the memes that replicate themselves do so not just with our blessings, but because of our esteem for them.

...

@:MEME_GENE

Genes are invisible; they are carried by gene-vehicles (organisms) in which they tend to produce characteristic effects ("phenotypic" effects) by which their fates are, in the long run, determined. Memes are also invisible, and are carried by meme-vehicles--pictures, books, sayings (in particular languages, oral or written, on paper or magnetically encoded, etc.) A meme's existence depends on a physical embodiment in some medium; if all such physical embodiments are destroyed, that meme is extinguished. It may, of course, make a subsequent independent reappearance--just as dinosaur genescould, in principle, get together again in some distant future--but the dinosaurs they created and inhabited would not be descendants of the original dinosaurs--or at least not any more directly than we are. The fate of memes--whether copies and copies of copies of them persist and multiply-- depends on the selective forces that act directly on the physical vehicles that embody them.

...

I need not dwell on the importance of the founding memes for language, and much later, for writing, in creating the infosphere. These are the underlying technologies of transmission and replication analogous to the technologies of DNA and RNA in the biosphere. Nor shall I bother reviewing the familiar facts about the explosive proliferation of these media via the memes for movable type, radio and television, xerography, computers, fax machines, and electronic mail. Suffice it to say that we are all well aware that we live, today, awash in a sea of paper-borne memes, breathing in an atmosphere of electronically-borne memes.

Memes now spread around the world at the speed of light, and replicate at rates that make even fruit flies and yeast cells look glacial in comparison. They leap promiscuously from vehicle to vehicle, and from medium to medium, and are proving to be virtually unquarantinable. Memes, like genes, are potentially immortal, but, like genes, they depend on the existence of a continuous chain of physical vehicles, persisting in the face of the Second Law of Thermodynamics. Books are relatively permanent, and inscriptions on monuments even more permanent, but unless these are under the protection of human conservators, they tend to dissolve in time. As with genes, immortality is more a matter of replication than of the longevity of individual vehicles. The preservation of the Platonic memes, via a series of copies of copies, is a particularly striking case of this. Although some papyrus fragments of Plato's texts roughly contemporaneous with him have been recently discovered, the survival of the memes owes almost nothing to such long-range persistence. Today's libraries contain thousands if not millions of physical copies (and translations) of the Meno, and the key ancestors in the transmission of this text turned to dust centuries ago.

Brute physical replication of vehicles is not enough to ensure meme longevity. A few thousand hard-bound copies of a new book can disappear with scarcely a trace in a few years, and who knows how many brilliant letters to the editor, reproduced in hundreds of thousands of copies, disappear into landfills and incinerators every day? The day may come when non-human meme-evaluators suffice to select and arrange for the preservation of particular memes, but for the time being, memes still depend at least indirectly on one or more of their vehicles spending at least a brief, pupal stage in a remarkable sort of meme-nest: a human mind.

Minds are in limited supply, and each mind has a limited capacity for memes, and hence there is a considerable competition among memes for entry into as many minds as possible. This competition is

the major selective force in the infosphere, and, just as in the biosphere, the challenge has been met with great ingenuity.
...
A related phenomenon in the competition of memes for our attention is positive feedback. In biology, this is manifested in such phenomena as the "runaway sexual selection" that explains the long and cumbersome tail of the bird of paradise or the peacock. Dawkins provides an example from the world of publishing: "Best-seller lists of books are published weekly, and it is undoubtedly true that as soon as a book sells enough copies to appear in one of these lists, its sales increase even more, simply by virtue of that fact. Publishers speak of a book "taking off', and those publishers with some knowledge of science even speak of a 'critical mass for take-off'. [Endnote 11]

The haven all memes depend on reaching is the human mind, but a human mind is itself an artifact created when memes restructure a human brain in order to make it a better habitat for memes. The avenues for entry and departure are modified to suit local conditions, and strengthened by various artificial devices that enhance fidelity and prolixity of replication...

But if it is true that human minds are themselves to a very great degree the creations of memes, then we cannot sustain the polarity of vision with which we started; it cannot be "memes versus us" because earlier infestations of memes have already played a major role in determining who or what we are. The "independent" mind struggling to protect itself from alien and dangerous memes is a myth; there is, in the basement, a persisting tension between the biological imperative of the genes and the imperatives of the memes, but we would be foolish to "side with" our genes--that is to commit the most egregious error of pop sociobiology. What foundation, then, can we stand on as we struggle to keep our feet in the memestorm in which we are engulfed? If replicative might does not make right, what is to be the eternal ideal relative to which "we" will judge the value of memes? We should note that the memes for normative concepts--for ought and good and truth and beauty are among the most entrenched denizens of our minds, and that among the memes that constitute us, they play a central role. Our existence as us, as what we as thinkers are--not as what we as organisms are--is not independent of these memes.

Dawkins ends The Selfish Gene with a passage that many of his critics must not have read:

We have the power to defy the selfish genes of our birth and, if necessary, the selfish memes of our indoctrination. . . . We are built as gene machines and cultured as meme machines, but we have the power to turn against our creators. We, alone on earth, can rebel against the tyranny of the selfish replicators. (p.215.)
...
Homo sapiens has been around for half a million years. The first serious invasion of memes began with spoken language only tens of thousands of years ago, and the second great wave, riding on the meme for writing, is considerably less than ten thousand years in progress--a brief moment in biological time. Since memetic evolution occurs on a time scale thousands of times faster than genetic evolution, however, in the period since there have been memes--only tens of thousands of years--the contributing effects of meme-structures on our constitution--on human phenotypes--vastly outweigh the effects of genetic evolution during that period. So we can answer the defining question of the Mandel Lecture with a rousing affirmative. Does art (in the broad sense) contribute to human evolution? It certainly does, in the most literal sense. In fact, since art appeared on the scene, it has virtually supplanted all other contributions to human evolution. [Endnote 13]

I would like to close with some observations on the history of the meme meme itself, and how its spread was temporarily curtailed. When Dawkins introduced memes in 1976, he described his innovation as a literal extension of the classical Darwinian theory and so I have treated it here. Dawkins himself, however, has since drawn in his horns slightly. In The Blind Watchmaker (1988), he speaks of an analogy "which I find inspiring but which can be taken too far if we are not careful." (p.196). Later in the same chapter, he says "Cultural 'evolution' is not really evolution at all if we are being fussy and purist about our use of words, but there may be enough in common between them to justify some comparison of principles." (p.216) Why did he retreat like this? Why, indeed, is the meme meme so little discussed thirteen years after The Selfish Gene appeared?

In The Extended Phenotype, Dawkins replies forcefully to the storm of criticism from sociobiologists, while conceding some interesting but inessential disanalogies between genes and memes--

memes are not strung out along linear chromosomes, and it is not clear that they occupy and compete for discrete 'loci', or that they have identifiable 'alleles'. . . The copying process is probably much less precise than in the case of genes . . . memes may partially blend with each other in a way that genes do not. (p.112)

Endnotes

254

1. See, for instance, Richard Lewontin, "Adaptation," The Encyclopedia Einaudi, 1980, Milan; Robert Brandon, "Adaptation and Evolutionary Theory," Studies in the History and Philosophy of Science, 1978, 9, pp. 181-206, both reprinted in E. Sober, ed., Conceptual Issues in Evolutionary Biology, 1984, Cambridge, MA: MIT Press.

2. Richard Dawkins, The Selfish Gene, Oxford: Oxford University Press, 1976, p.206.

3. ibid

4. ibid

6. Richard Dawkins, The Extended Phenotype, Oxford: W.H. Freeman, 1982, p.110-11.

11.The Blind Watchmaker, London: Longman Scientific, 1986, p.219. Dawkins' discussion of these complex phenomena, in the chapter "Explosions and Spirals" (pp. 195-220), is a tour de force of explanatory clarity and vividness.

12. In several recent essays I have expanded on the claim that the very structure of our minds is more a product of culture than of the neuroanatomy we are born with: "Julian Jaynes' Software Archeology," in Canadian Psychology, 27, 1986, pp.149-54; "The Self as the Center of Narrative Gravity," (originally published as "Why we are all novelists," Times Literary Supplement, Sept. 16-22, 1988, p.1029), forthcoming in F. Kessel, P. Cole, D. Johnson, eds., Self and Consciousness: Multiple Perspectives, Hillsdale, NJ: Erlbaum; "The Evolution of Consciousness," forthcoming in The Reality Club, volume 3; and "The Origins of Selves," forthcoming in Cogito. See also Nicholas Humphrey and Daniel Dennett, "Speaking For Our Selves: An Assessment of Multiple Personality Disorder," Raritan, 9, 1989, pp.68-98.

13.Those who are familiar with the Baldwin Effect will recognize that art contributes not merely to the fixing of phenotypic plasticity, but can thereby change the selective environment and hence hasten the pace of genetic evolution. See my discussion in "The Evolution of Consciousness," oc.cit., and Jonathan Schull, "Are Species Intelligent?" forthcoming in Behavioral and Brain Sciences.

22. Bibliography

Bibliography

Abraham, R., Shaw, C.D.: Dynamics. The Geometry of Behavior, Addison-Wesley, Reading, Ma. (1992)

Abraham, R. H.: Chaos, Gaia, Eros: a chaos pioneer uncovers the three great streams of history, Harper, San Francisco (1994)

AEC: Ars Electronica Center Linz: Stocker, G. Schöpf, C. (eds.): Memesis: The Future of Evolution, Springer, Wien etc. (1996)

Albarn, K.; Smith J. M. , Steele, S., Walker, D.: The Language of Pattern, Thames and Hudson, London (1974)

Alexander, C.: A Pattern Language: towns, building, construction, Oxford Univ. Press, New York (1977)

Amiet, P.: Les elamites inventaient l'ecriture, Archeologia 12, p. 16-23, (1966)

Anati, E.: Felsbilder, Bär, Zürich (1991)

Aquili, d', E., Laughlin, C., McManus, J. (eds.): The Spectrum of Ritual, Columbia Univ. Press, New York (1979)

Arbeitsgruppe Ethnologie Wien (ed.): Von fremden Frauen, Suhrkamp, Frankfurt/M (1989)

Ariès, P.: Centuries of Childhood, New York (1962)

Aristoteles: Werke, Wiss. Buchges., Darmstadt (1974)

Ascher, M.; Ascher, R.: Code of the Quipu, Univ. of Michigan Press, Ann Arbor (1981)

Asokananda: The art of traditional Thai massage, Duang Kamol, Bangkok (1990)

Assmann, A.; J. (Hrg.): Schrift und Gedächtnis, Wilhelm Fink, München (1983)
Assmann, J.; Hölscher, T.: Kultur und Gedächtnis, Suhrkamp, Frankfurt/M (1988)
Assmann, A.; J.: (Hrg.): Weisheit, Wilhelm Fink, München (1991a)
Assmann, A.; Harth, D. (Hrg.): Kultur als Lebenswelt und Monument, Fischer, Frankfurt/M (1991b)
Assmann, A.; Harth, D. (Hrg.): Mnemosyne, Fischer, Frankfurt/M (1991c)
Assmann, J.: Stein und Zeit, Wilhelm Fink, München (1991d)
Assmann, J.: Das Kulturelle Gedächtnis, Beck, München (1992)
Assmann, A.: Exkarnation - Zur Grenze zwischen Körper und Schrift. In: Huber, J., Müller, A. (eds.): Raum und Verfahren, Zürich, p. 133-155 (1993)
Assmann, A.: Exkarnation - Zur Grenze zwischen Körper und Schrift. In: SFB-511, p. 346-384 (1995)

Avalon, A.: Tantra of the great liberation, Dover, New York (1972)
        orig.: London 1913

Aveni, A. F. (ed.): World archeoastronomy, Cambridge Univ. Press, Cambridge (1986)
Aveni, A. F.: Non-western notational frameworks and the role of anthropology in our understanding of literacy, in: Wrolstad, p. 253-302 (1986)

Ba, A. H.: Wangrins seltsames Schicksal, Lembeck, Frankfurt/M (1986)
Ba, A. H.: Jäger des Wortes, Hammer, Wuppertal (1993)

Bach, Klaus; Otto, Frei: Pneus in Natur und Technik, SFB 64 der DFG IL, Univ. Stuttgart (1977)

Bachofen, J. J.: Versuch über die Gräbersymbolik der Alten, Helbing & Lichtenhahn, Basel (1925)
        Ocnus der Seilflechter, p. 301-422

Bain, G.: Celtic Art, Dover, New York (1973)

Barham, J.: A dynamical model of the meaning of information, in: (FIS94), BioSystems 38, p. 235-241 (1996)

Barrow, John D.: Impossibility, MIT Press, Cambridge, Mass. (1998)

Barthel, T.: Viracochas Prunkgewand, Tribus #20, Linden-Museum, Stuttgart, p. 63-124 (1971)
Barthel, T.: Die Entzifferung der Osterinselschrift; In: Illius B. (ed.): Circumpacifica, Lang, Frankfurt/M, p. 12-15 (1990)
Barthel, T.: Über den Symbolgehalt altmexikanischer Spinnwirtel mit anthropomorphen Reliefs, Baessler-Archiv, Reimer, p. 269-304, Berlin (1996)

Bastian, A.: Der Völkergedanke im Aufbau einer Wissenschaft vom Menschen, Dümmlers, Berlin (1881)
Bastian, A.: Die Völker des östlichen Asien, Wigand , Leipzig und Jena (1866-71)
Bastian, A.: Das logische Rechnen und seine Aufgaben, Asher, Berlin (1903)

Bateson, G., Ruesch J.: Communications, Norton, New York (1968)
Bateson, G.: Steps to an ecology of mind, Chandler, Toronto (1972)
Bateson, G.: Mind and Nature, a necessary unity, Bantam, Toronto (1979)
Bateson, Gregory; Bateson, Mary Catherine: Angels fear, Bantam, New York (1986)

Baumann, H.: Das doppelte Geschlecht, Berlin (1955)

Bauer, F.L., Goos, G.: Informatik, 2 Vols., Springer, Berlin (1971)

BdW: Hat der Mensch verborgene Sinne?, Bild der Wissenschaft, 1, p. 51, (1996)

Bednarik, R.G.: On the scientific study of paleoart, in: Semiotica, p. 141-168 (1994)

Bee, R.: Patterns and processes, Free Press, New York (1974)

Benedict, R.: The patterns of culture, Houghton Mifflin, Boston (1934)
        edition 1989 with a preface by Margaret Mead and a foreword by Mary Catherine Bateson, Daughter of Margaret Mead and Gregory Bateson.

Berg, E.: Johann Gottfried Herder, in Marschall, p. 51-68 (1990)

Berger, P.; Luckmann, T.: Die gesellschaftliche Konstruktion der Wirklichkeit, Fischer (1990)

Bergson, Henri: L'energie spirituelle, P.U.F., Paris (1919)

Bernal, M.: Black Athena: the Afroasiatic roots of classical civilization
        Vol I: Free Association, London (1987)
        Vol II: Free Association, London (1991)
Bernal, M.: Cadmean letters, Eisenbrauns, Winoa Lake (1990)

Bernard, J.: The hand and the mind, Parabola, New York, p. 14-17, Aug. (1985)

Bertalanffy, L.v.: General systems theory, Braziller, New York (1968)
Bertalanffy, L.v., Rappaport, A. (eds): General systems. Yearbook of the society for general systems research, (16 Vols.), Braziller, New York (1956-1971)

Binswanger, Hans Christoph: Geld und Magie, Weitbrecht, Stuttgart (1985)

Birdwhistell, R: Kinesics and context, Univ. of Pennsylvania Press, Philadelphia (1970)

Blacking, J.: How musical is man? Faber and Faber, London (1976)
Blacking, J.: Movement, dance, music, and the Venda girls' initiation cycle. in: Spencer, p. 64-91 (1985)

Blake, A.: The collection of articles of Anthony Blake is under:
        http://www.uia.org/

Blassen, Wilhelm: Die Bewegungseinheiten (KATA) des japanischen Nô-Spiels, (Köln, Univ., Diss., 1987), Brockmeyer, Bochum (1987)

Bliss, C. K.: Semantography - Blissymbolics, Semantography - Blissymbolics Publications, Coogee, Sydney, 3rd prn., (1978)

Bloom, H.: The Lucifer Principle. A scientific expedition into the forces of history, Atlantic Monthly Press, New York (1995)
http://www.bookworld.com/lucifer/ , and http://www.heise.de/tp/deutsch/special/glob/default.html

Bly, R.: Eisenhans, Kindler, München (1991)

Bodmer, F.: The loom of language, W.W. Norton, New York (1985)

Böhme-Dürr, K. Technische Medien der Semiose, in: Posner, p. 357-383 (1997)

Bösel, Rainer: Physiologische Psychologie. Gruyter, Berlin, New York (1987)

Boggiani, G.: I Caduvei, Ermanno Loescher, Roma (1895)
Boggiani, G.: Viajes de un artista por la América meridional. Los Caduveos, Revista del Instituto de Etnología de la Universidad nacional de Tucumán (1930)

Bolter, J.: Der Digitale Faust, Klett-Cotta, Stuttgart (1990)
Bolter, J.: Writing Space, Erlbaum, Hillsdale (1991)

Boone, E. H.: Writing without words: alternative literacies in Mesoamerica and the Andes, Duke Univ. Press, Durham (1994)

Bourke, J.G.: Scatologic rites of all nations, W.H. Lowdermilk & Co., Washington (1891)

Bramly, S.: Macumba, Bauer, Freiburg (1978)

Brauer, W., Indermark, K.: Algorithmen rekursive Funnktionen, Bibl. Inst., Mannheim (1968)

Breidbach, Olaf: Expeditionen ins Innere des Kopfes, Thieme, Stuttgart (1993)
Breidbach, Olaf; Rusch, Gebhard; Schmidt, Siegfried (Hrsg.): Interne Repräsentationen, Suhrkamp (1996)
Breidbach, Olaf (Hrsg.): Natur der Ästhetik - Ästhetik der Natur, Springer, Wien (1997)

Briggs, John; Peat, F. David: Die Entdeckung des Chaos, Hanser (1990)

Bright, W.: The Devanagari script, in: Daniels, p. 384-390 (1996)

Brillouin, L.: Science and Information Theory, Academic Press (1962)

Britannica: Encyclopaedia Britannica, Inc., CD ROM Version (1997)
cited as (Britannica: keyword)

Brock, Bazon: Ästhetik gegen erzwungene Unmittelbarkeit, DuMont, Köln (1986)
cited in text as (AGEU)
http://www.uni-wuppertal.de/FB5-Hofaue/Brock/Schrifte/AGEU/
Brock, Bazon: Neuronale Ästhetik (NeuroAe)
http://www.uni-wuppertal.de/FB5-Hofaue/Brock/Projekte/NeuroAe1.html
http://www.uni-wuppertal.de/FB5-Hofaue/Brock/Projekte/NeuroAe2.html
http://www.uni-wuppertal.de/FB5-Hofaue/Brock/Projekte//NeuroAe3.html
Brock, Bazon, Breidbach, Olaf: Neuronale Ästhetik, Zyma Art Today, 2 (1994)

Brodie, R.: Virus of the Mind: The New Science of the Meme. Integral Press, Seattle (1996)
WWW: Virus of the mind:
http://www.brodietech.com/rbrodie/votm.htm

Bronowski, J.: The Origins of Knowledge and Imagination, Yale Univ. Press, New Haven London (1978)

Brown, J.C.: Loglan 1: A logical language, The Loglan Institute, Gainesville, (1989)

Buddhadasa, B.: Handbook for Mankind, Mahachula Buddhist University Press, Bangkok (1956)
Buddhadasa, B.: Heart-Wood from the Bo Tree, Suan Mok Publ., Suan Mok (1984)
Buddhadasa, B.: Paticcasamuppada, Buddhidhamma Fund, Nonthaburi (1992)

Budo-ABC: Alles über Judo, Ju Jutsu, Karate, Taekwon-Do, Aikido, Kendo, Budo-Verl., Sprendlingen (1971)

Bücher, K.: Arbeit und Rhythmus, Reinicke, Leipzig (1924)
        (6. Auflage)

Calvin, W. H.: The cerebral symphony, Bantam, New York (1989)
        http://www.WilliamCalvin.com/bk4/bk4.htm
Calvin, W. H.: The throwing madonna, Bantam, New York (1991)
        http://www.WilliamCalvin.com/bk2/bk2.htm
Calvin, W. H.: The cerebral code: Thinking a thought in the mosaics of the Mind, MIT Press, Cambridge
        (1996a)
        http://www.WilliamCalvin.com/bk9.html
Calvin, W. H.: The river that flows uphill, Sierra Club books, (1996b)
        http://www.WilliamCalvin.com/bk3ch1.html

Campbell, B.: Human ecology, Aldine, New York (1985)

Campbell, J.: Myths to live by, Bantam, New York (1972)
Campbell, J.: Der Heros in tausend Gestalten, Suhrkamp, Frankfurt/M (1978)
        engl: The hero with a thousand faces
Campbell, J.: Flug der Wildgans, Sphinx, Basel (1990)
        engl: The flight of the wild gander, Viking, 1969
Campbell, J.: Die Masken Gottes, Vol 1-4, DTV München (1996)
        engl: The masks of god, Viking, N.Y. 1968

Canfora, L.: Die verschwundene Bibliothek, Rotbuch, Berlin (1988)

Capurro, R.: Information: ein Beitrag zur etymolog. u. ideengeschichtl. Begründung des Informationsbegriffs,
        Univ., Diss., Düsseldorf, 1978, Saur, München (1978)

Carneiro, R. L. (ed): The evolution of society: selections from Herbert Spencer's Principles of sociology, Univ.
        of Chicago Pr., Chicago: (1967)

Cassirer, E.: Philosophie der symbolischen Formen, I, II, III, Bruno Cassirer, Oxford (1954)
Cassirer, E.: Wesen und Wirkung des Symbolbegriffs, Wiss. Buchges., Darmstadt (1959)
Cassirer, E.: Was ist der Mensch?, Kohlhammer, Stuttgart (1960)
Cassirer, E.: Symbol, Myth, and Culture, Yale Univ. Press, New Haven (1979)
Cassirer, E.: Symbol, Technik, Sprache, Meiner, Hamburg (1985)
Cassirer, E.: Zur Logik der Kulturwissenschaften, Wiss. Buchges., Darmstadt (1994)

Castells, Manuel: The Rise of the Network Society, Blackwell, Cambridge, MA (1996)

Chambers: Chambers's Encyclopaedia, International learning systems corp., 16 Vols, Pergamon, London
        (1968) cited in the text as: (Chambers: keyword)

Chardin, T.: Der Mensch im Kosmos, Beck, München (1981)

Chargaff, E.: Ein zweites Leben: autobiographische und andere Texte, Klett-Cotta, Stuttgart (1995)

Chatwin, B.: The songlines, Picador, London (1988)

Chernoff, J.M.: Rhythmen der Gemeinschaft, Trickster, München (1994)

Clarke, D.L.: Analytical archeology, Methuen, London (1978)

Classen, C.: Worlds of sense. Routledge, London (1993)

Clastres, P.: Staatsfeinde, Suhrkamp, Frankfurt/M (1976)

Cloak, F.T., Jr.: Is a cultural ethology possible?, Hum. Ecology 3: p. 161-182, (1975)

Cohen, M.: La grande invention de l'écriture et son évolution, Imprimerie nationale, Paris (1958)

Connerton, Paul: How societies remember. Cambridge University Press, Cambridge New York Port Chester
        (1989)

Corbin, A.: Pesthauch und Blütenduft, Wagenbach, Berlin (1982)
    orig: Le miasme et la jonquille, 1982

Coulmas, F.: Über Schrift, Suhrkamp, Frankfurt/M (1981)
Coulmas, F.: Schriftentwicklung, Schriftverarbeitung: Herkunft und Funktionsweise der japanischen Schrift,
        in: Coulmas, p. 57-79 (1981)

Creel, H.G.: On the Origins of the Manufacture and Decoration of Bronze in the Shang Period
        Monumenta Serica, Vol. I, Fasc. I, p. 64, (1935)

Critchlow, K.: Islamic Patterns, Thames and Hudson, London (1976)

Csikszentmihalyi, M.: Flow: The Psychology of Optimal Experience. Harper Perennial, New York (1990)

Daly, M.: Gyn-Ökologie, Frauenoffensive, München (1981)
        engl: Gyn-Ecology - The Metaethics of Radical Feminism, Beacon, Boston 1978

Daniels, Wright (eds).: The world's writing systems, Oxford Univ. Press, New York (1996)

Darnton, R.: The New Age of the Book, New York Review of Books, March 18, (1999)
        http://www.nybooks.com/nyrev/WWWarchdisplay.cgi?19990318005F

Dawkins, R.: The Selfish Gene, Oxford Univ. Press, New York (1976)
Dawkins, R.: The Blind Watchmaker, Norton, New York (1986)

Dechend, H v.: Bemerkungen zum Donnerkeil, Prismata, (Festschrift für Will Hartner), Franz Steiner,
        Wiesbaden (1977)
Dechend, H v., Santillana, G.: Hamlet's Mühle, Kammerer & Unverzagt, Berlin (1993)
Dechend, H v.: Archeoastronomy, draft (1997)

Delius, J. D.: Of mind memes and brain bugs, a natural history of culture, in: Koch, p. 26-79 (1989)

DeMeo, J.: On the origins and diffusion of patrism, Dissertation, Geography dept, Univ. of Kansas (1986)

Dennett, D.: Memes and the Exploitation of Imagination, Journal of Aesthetics and Art Criticism, 48, 127-35,
        Spring (1990)
        WWW: http://www.tufts.edu/as/cogstud/papers/memeimag.htm
Dennett, D.: Consciousness Explained, Little, Brown, Boston (1991)
Dennett, D.: Darwin's dangerous idea, Simon & Schuster, New York (1995)

DerraDeMoroda, F.: The dance library, Wölfle, München (1982)

Derrida, J.: Grammatologie, Suhrkamp, Frankfurt/M (1974)

Descartes, R.: The Philosophical Works of Descartes. 2 Vols., Cambridge (1973-1976)
        Discourse on method, Paris 1637
        Meditations on first philosophy, 1641

Description de l' Egypte, Taschen, Köln (1994)
            (complete reprint of "Description de l' Egypte", no author given).

Diallo, Y., Hall, M.: The healing drum, Destiny, Rochester VT. (1989)

Diamond, S.: Kritik der Zivilisation, Campus, Frankfurt/M (1976)

Diamond, J.: The third chimpanzee, HarperCollins, New York (1992)
Diamond, J.: Guns, germs, and steel, Norton, New York (1997)

Diels, H.; Kranz, W.: Die Fragmente der Vorsokratiker, 3 Vols., Weidmann, Berlin (1954)

Diringer, D.: The alphabet: a key to the history of mankind, Philosophical library, New York (1948)
            repr. 1953
Diringer, D.: The hand-produced book, Hutchinson's, London (1953)

Dobzhansky T.:Anthropology and the Natural Sciences - The problem of human evolution, Current
            Anthropology 4: 138, 146-148. (1963)

Dover, K.: Homosexualität in der griech. Antike, Beck, München (1978)

Dornach, Faust Festspiele am Goetheaneum, Dornach, 13.-18.7. (1999)

Dornseiff, Franz: Das Alphabet in Mystik und Magie, Teubner, Leipzig (1925)

Douglas, Mary: Natural symbols, Barrie & Jenkins, London (1970)

Drake, S.: Literacy and scientific notations, in: Wrolstad, p. 135-155 (1986)

Driver, G.R.: Semitic writing, Oxford Univ. Press, London (1948)

Dudley, L. M.: The Word and the Sword, Blackwell, Cambridge, Mass. (1991)

Duerr, H.P.: Über die Grenzen einer seriösen Völkerkunde oder Können Hexen fliegen? in: Schmied-Kowarzig,
            p. 381-394 (1993)

Dufour, P. (Lacroix): Weltgeschichte der Prostitution, Vols I-VI, Langenscheid, Leipzig (1898)

Ebberfeld, I.: Anrüchig und anziehend zugleich, in: Sexualmedizin 7/8, p. 205-208 (1996)
Ebberfeld, I.: Fetischismus oder ganz normale Leidenschaft, in: Sexualmedizin 9, p. 234-242 (1997)
Ebberfeld, I.: Geruchsempfindung und Sexualität, Habilitation Universiät Bremen, Prof. H.P. Dürr, upcoming
            as of 1997 (xxxx)

Eco, U.: Die Suche nach der vollkommenen Sprache, C.H. Beck, München (1993)

Edelman, G.: Bright air, brilliant fire, Basic Books, New York (1992)

Edwardes, Allen: The jewel of the lotus, Lancer, New York (1967)

Edwards, I.E.S.: The Pyramids of Egypt, Pelican, Baltimore (1961)

Eisenstein, E.: The Printing Press as an Agent of Change: Communications and Cultural Transformations in
            Early-modern Europe, 2 vols ., Cambridge Univ. press, Cambridge (1979)
Eisenstein, E.: The Printing Revolution on early modern Europe, Cambridge Univ. press, Cambridge (1983)
            abridged version of Eisenstein 1979

Eisler, R.: The chalice and the blade: our history, our future, Harper & Row, San Francisco (1987)
Eisler, R: Sacred Pleasure, UK: Element, Shaftesbury (1995)

Elias, N.: Über den Prozess der Zivilisation, 2 Vols., Suhrkamp, Frankfurt/M (1997)

Elkin, A. P.: Aboriginal Men of High Degree. University of Queensland Press, (1977)

Elwert, Georg: An Afrika ein Beispiel nehmen? In: Reflexion und Initiative, Körber-Stiftung, Hamburg (1997: 72-79)

Emmer, M.: The visual mind, MIT Press, Cambridge (1993)

Encarta: Microsoft (R) Encarta. Multimedia Encyclopaedia, CD-ROM, Copyright (c) 1994 Microsoft Corporation. Copyright (c) Funk & Wagnall's Corporation (1994)
cited in the text as: (Encarta: keyword)

Engl, L. & T.: Die Eroberung Perus, Piper, München (1991)

Erdheim, M.: Die gesellschaftliche Produktion von Unbewußtheit, Suhrkamp, Frankfurt/M (1984)

Ertel, S., Kemmler, L., Stadler, M. (eds.): Gestalttheorie in der modernen Psychologie, Steinkopff, Darmstadt (1975)

Esotera, Bauer Verlag, Freiburg

Fazzioli, E.: Gemalte Wörter, Gustav Lübbe, Berg. Gladbach, (1987)

Ferrill, A.: The origins of war: from the Stone Age to Alexander the Great. Thames and Hudson, London (1985)

Feustel, G.: Käufliche Lust, Edition Leipzig (1995)

Feyerabend, P.: Against Method, Humanities Press, London (1975)
Feyerabend, P.: Farewell to reason, Verso, London (1993)

Fiedermutz-Laun, A.: Adolf Bastian. in: Marschall, p. 109-136 (1990)

FIS94: First Conference on Foundations of Information Science 1994, BioSystems 38/2,3 (1996)

FIS96: Second Conference on Foundations of Information Science Vienna, 1996, BioSystems 46/1,2 (1998)

Flattery, D. S., Schwartz, M.: Haoma and Harmaline, Univ. of California Press, Berkeley Los Angeles London, (1989)

Floyd, C., Budde, R. Keil-Slavik, R., Züllighoven, H.: Software Development and Reality Construction, Springer, Berlin (1992)

Flusser, V.: Die Schrift, Immatrix, Göttingen (1990)

Fog, A.: Cultural Selection, Copenhagen (1997)
Available under URL: http://announce.com/agner/cultsel/cultsel0.html

Fontaine La, J.S.: Initiation, Manchester Univ. Press, Manchester (1985)

Forbes, R.J.: Studies in ancient technology, Brill, Leiden (1972)

Ford, P.: Der Orientteppich und seine Muster, Bechtermünz, Augsburg (1997)

Foster, Mary LeCron: The reconstruction of the evolution of human spoken language, Ch. 25, p. 747-775, in: Lock, A. (ed.): Handbook of Human Symbolic Evolution, Clarendon press, Oxford (1996)

Foucault, M.: Überwachen und Strafen (1969)
Foucault, M.: Archäologie des Wissens, Suhrkamp, Frankfurt/M (1973a)
Foucault, M.: The Order of Things: An Archeology of the HumanSciences. New York: Vintage, (1973b)

Franko, M: Dance as Text, Cambridge Univ. Press, Cambridge (1993)

Frehn, B., Krings, T.: Afrikanische Frisuren, DuMont, Köln (1986)

Frobenius, L.: Weltgeschichte des Krieges, Thüringer Verl.-Anst., Jena (1900)

Fuller, Buckminster: Synergetics, Macmillan, New York (1975)

Gabora, L.: Culture as a Second Form of Evolution, Journal of Memetics - Evolutionary Models of Information Transmission,
http://www.cpm.mmu.ac.uk/jom-emit/1997/vol1/gabora_l.html (1997)

Gadamer, H.G. (ed.): Um die Begriffswelt der Vorsokratiker, Wissenschaftliche Buchgesellschaft, Darmstadt (1989)

Galinski, Christian; Schmitz, Klaus-Dirk: Terminology and Knowledge Engineering, Indeks, Frankfurt (1996)

Gamst, F., Norbeck, E. (eds.): Ideas of culture, Holt, Rinehart, Winston, New York (1976)

Gay, P.: The cultivation of hatred, Norton, New York (1993)

Gazzaniga, Michael S.: Das erkennende Gehirn: Entdeckungen in den Netzwerken des Geistes. Junfermann, Paderborn (1989)

Gebhart-Sayer, A.: Die Spitze des Bewusstseins, Renner, Hohenschäftlarn (1987)

Gebser, J.: Ursprung und Gegenwart, DTV, München (1973)

Gehlen, A.: Urmensch und Spätkultur, Frankfurt/Main (1964)

Gelb, J.J.: A study of Writing: The Foundation of Grammatology, Univ. of Chicago Press, Chicago London (1952)
dt: Von der Keilschrift zum Alphabet, Stuttgart 1958

Gellner, E.: Pflug, Schwert und Buch, DTV, München (1993)
engl: Plough, Sword, and Book, Collins Harvill, London 1988

Gennep, A.v.: The rites of passage, Univ.of Chicago Press, Chicago (1960)

Genz, H.: Die Entdeckung des Nichts, Hanser, München (1994)

Geschmack: Geschmack Sache, Kunst & Ausstellungshalle BRD, Steidl, Göttingen (1996)

Giedion, S.: The eternal present: the beginnings of art. A contribution to constancy and change
New York, Bollingen Foundation (1962)

Gimbutas, M.: Old Europe, Jrnl of Indo-European Studies 1, 1-21 (1973)
Gimbutas, M.: The Goddesses and Gods of Ancient Europe, UCal. Press, Berkeley, CA (1974)
Gimbutas, M.: Die Sprache der Göttin, Zweitausendeins, Frankfurt/M (1995)
engl: The language of the goddess, San Francisco 1989

Goepper, R. (ed): Das alte China, Hirmer, München (1995)

Goethe, J.W.: Faust, (Hrsg. Erich Trunz), Beck, München (1972)

Goetsch, P.: Der Übergang von Mündlichkeit zur Schriftlichkeit, in: Raible, p. 113-130 (1991)

Gombrich, E.: Ornament und Kunst, Klett-Cotta, Stuttgart (1982)

Goodman, F., Henney, J., Pressel, E.: Trance, healing and hallucination, Wiley, New York, (1974)

Goodman, F.: Ecstasy, ritual, and alternate reality : religion in a pluralistic world, Indiana Univ. Pr., Bloomington (1988a)

Goodman, F. : How about demons? : possession and exorcism in the modern world, Indiana Univ. Pr., Bloomington (1988b)

Goodman, F. (ed.): Where the spirits ride the wind : trance journeys and other ecstatic experiences, Indiana Univ. Pr., Bloomington (1990)

Godwin, J. (ed.): Cosmic music, Inner Traditions, Rochester (1989)

Goodland, R.: A bibliography of sex rites and customs, Routledge, London (1931)

Goody, J.: The domestication of the savage mind. Cambridge Univ. Press, Cambridge (1977).

Goody, J, Watt, I, Gough, K.: Entstehung und Folgen der Schriftkultur Suhrkamp, Frankfurt/M (1986)

Goody, J.: The interface between the written and the oral, Cambridge Univ. Press, Cambridge (1987)

Goppold, A.: Die Inter-Aktor Shell ACsh, GUUG-Tagung Wiesbaden 14.-16.9. 1993, (1993: 95-100), Network GmbH, Hagenburg
    http://www.uni-ulm.de/uni/intgruppen/memosys/lpl09.htm

Goppold, A.: Lingua Logica Leibnitiana: Ein computerbasiertes Schriftsystem als Fortführung von Ideen der Characteristica Universalis von Leibniz, Leibniz und Europa, Leibniz-Gesellschaft, Hannover, p. 276-283, 18.-23. Juli (1994)
    http://www.uni-ulm.de/uni/intgruppen/memosys/lpl12.htm

Goppold, A.: Object Code vs. Metacode, Forth Dimensions, Oakland, Vol. XVI, No. 4, (1995a)

Goppold, A.: Onoma homoion to pragmati: The Kratylos Hypothesis and the Semephonic Aoide Thought Structures, paper presented at: Semiotics of the Media, Kassel (1995b)

Goppold, A.: The Leibniz TLSI: A secondary macro programming interface and universal ASCII User Interface Shell for Hypermedia, CALISCE, Donostia, (1996a)
    http://www.uni-ulm.de/uni/intgruppen/memosys/symbol05.htm

Goppold, A.: Data Processing Infrastructures for Knowledge Filtering: The TLSI Approach, PAKM: First International Conference on Practical Aspects of Knowledge Management, Basel, Oct 30-31, (1996b)
    http://www.uni-ulm.de/uni/intgruppen/memosys/symbol06.htm

Goppold, A.: Polycontexturality, Society, and the Distribution of Subjectivity, Günther-Symposion Universität Klagenfurt, Inst. f. interdisziplinäre Forschung und Fortbildung IFF, 14.12.-15.12. (1997)
    http://www.uni-ulm.de/uni/intgruppen/memosys/poly.htm

Goppold, A.: Information and Third Order Ontology, FIS96, Vienna, BioSystems, Vol 46, April (1998: 169-173)
    http://www.uni-ulm.de/uni/intgruppen/memosys/inform.htm

Govinda, A.: Die innere Struktur des I Ging, Das Buch der Wandlungen, Aurum Freiburg (1983)

Gottschalk-Batschkus, C.; Rätsch, Christian: Ethnotherapien, VWB, Berlin (1998)

Granet, M.: Danses et légendes de la Chine ancienne, Presses Univ. de France, Paris (1994)

Graebner, F.: Vorwort, Adolf Bastians 100. Geburtstag. Ethnologica III, (1927)

Graves, R.: Die Weiße Göttin, Medusa, Berlin (1981)

Graves, R.: The Greek myths, Moyer Bell, Mt. Kisco, N.Y. (1988)

Grössing, K.: Geschmückte Haut, Frederking & Thaler (1997)

Guérer, A.: Ist der moderne Mensch geruchsbehindert? In: Riechen, p. 37-47 (1995)

Günther, G.: Beiträge zur Grundlegung einer operationsfähigen Dialektik, Meiner, Hamburg (1976)
    Band 1: Metakritik der Logik - nicht-Aristotelische Logik Reflexion - Stellenwert-Theorie - Dialektik Cybernetic Ontology - Morphogrammatik - Transklassische Maschinentheorie

Günther, G.: Idee und Grundriß einer nicht-Aristotelischen Logik, Meiner, Hamburg (1978a)

Günther, G.: Grundzüge einer neuen Theorie des Denkens in Hegels Logik, Meiner, Hamburg, (1978b)

Günther, G.: Beiträge zur Grundlegung einer operationsfähigen Dialektik, Meiner, Hamburg (1979)
    Band 2: Wirklichkeit als Poly-Kontexturalität - Reflexion - Logische Paradoxie Mehrwertige Logik -
    Denken - Wollen - Proemiale Relation - Kenogrammatik - Dialektik der natürlichen Zahl -
    Dialektischer Materialismus
Günther, G.: Beiträge zur Grundlegung einer operationsfähigen Dialektik, Meiner, Hamburg (1980)
    Band 3: Philosophie der Geschichte und der Technik - Wille - Schöpfung - Arbeit - Strukturanalyse
    der Vermittlung - Mehrwertigkeit - Stellen- und Kontextwertlogik - Kenogrammatik - Theorie der Zeit

Gumilev, Lev: Searches for an imaginary kingdom: the legend of the kingdom of Prester John, Cambridge
    Univ. Pr., Cambridge (1987)
Gumilev, Lev: Ethnogenesis and the Biosphere, Progress, Moskau (1990)

Haarmann, H.: Language in Its Cultural Embedding, de Gruyter, Berlin (1990)
Haarmann, H.: Universalgeschichte der Schrift, Campus, Frankfurt (1992a)
Haarmann, H.: Die Gegenwart der Magie, Campus, Frankfurt (1992b)
Haarmann, H.: Geschichtsschreibung der Semiotik, in: Posner, p. 668-709 (1997)

Haase, Rudolf: Johannes Keplers Weltharmonik, Diederichs, München (1998)

Haberland, E., Schuster, M., Straube, H.: Festschrift f. Ad. E. Jensen, Renner, München, p. 385-396 (1964)
Haberland, E. (ed.): Leo Frobenius: 1873 - 1973; an anthology, Steiner, Wiesbaden (1973)

Haken, H.: Erfolgsgeheimnisse der Wahrnehmung, DVA (1992)

Halbwachs, M.: Das Gedächtnis, Suhrkamp, Frankfurt/M (1985)

Hall, E.T.: Die Sprache des Raumes, Schwann, Düsseldorf (1976)

Hamilton, E.: Mythology, Mentor, Boston (1942)

Hanna, J.L.: To Dance is human, Univ. of Texas Press, Austin (1979)

Harris, M.: Kulturanthropologie, Campus, Frankfurt/M (1989)

Harth, D.: Die Erfindung des Gedächtnisses, Keip, Frankfurt/M (1991)

Hartmann, T., Coelho, V. P., eds.: Contribuções à Antropologia em homenagem ao professor Egon Schaden,
    Col. Museu Paulista, série ensaios, vol 4: 55/84 (1981)

Havelock, E.: Preface to Plato, Harvard Univ. Press, Cambridge (1967)
Havelock, E., Hershbell, J.(eds.): Communication arts in the ancient world, Hastings House, New York (1978)
Havelock, E.: The muse learns to write, Yale Univ. Press, New Haven (1986)
Havelock, E.: Schriftlichkeit, VCH, Weinheim (1990)
    engl: The literate revolution in Greece and its cultural consequences, Princeton Univ. Press, Princeton
    1982

Heidegger, M.: Heraklit, Klostermann, Frankfurt/M (1970)
Heidegger, M.: Was heisst Denken?, Niemeyer, Tübingen (1971)
Heidegger, M.: Zur Sache des Denkens, Niemeyer, Tübingen (1976a)
Heidegger, M.: Wegmarken, Klostermann, Frankfurt/M (1976b)
Heidegger, M.: Sein und Zeit, Klostermann, Frankfurt/M (1977a)
Heidegger, M.: Holzwege, Klostermann, Frankfurt/M (1977b)

Heraklit: Fragmente. Übers. Bruno Snell, Heimaran, München (1976)

Herder, J. G.: Sprachphilosophische Schriften, ed. Erich Heintel, Meiner, Hamburg (1975)

Herrigel, E.: Zen in der Kunst des Bogenschiessens, Barth, Bern (1988)

Herrmann, J.: Spuren des Prometheus, Pahl-Rugenstein, Köln (1977)

Hertz, A.: Die Kultur um den persischen Golf und ihre Ausbreitung, Dieterich, Leipzig (1930)

Hesiodos: Theogonie, Hrsg. Karl Albert, Henn, Kastellaun (1978)

Heuer, H.: Der taktile Kanal, in: Posner, p. 300-305 (1997)

Heuser, H.: Als die Götter lachen lernten, Piper, München (1992)

Hölscher, Uvo: Anaximander und die Anfänge der Philosophie, in: Gadamer (1989: 95-176)

Hoffman, K.: Von Göttern besessen, München, (1986)
Hoffman, K.: Das Arbeitsbuch zur Trance, München (1996)

Hoffmeyer, Jesper: Signs of meaning in the universe, Indiana Univ. Press, Bloomington, (1996)
Hoffmeyer, Jesper: The Global Semiosphere, 5th IASS congress in Berkeley, June 1995. In: Irmengard Rauch
        and Gerald F. Carr (eds.): Semiotics Around the World. Proceedings of the Fifth Congress of the
        International Association for Semiotic Studies. Berkeley 1994. Berlin/New York: Mouton de Gruyter
        (1997), pp. 933-936.
Hoffmeyer, Jesper: Semiosis and biohistory: A reply, Semiotica 120-3/4 (1998), 455-482

Hoffmeister, J.: Wörterbuch der philosophischen Begriffe, Meiner, Hamburg (1955)

Hofkirchner, Wolfgang (ed.): Vernadsky, Vladimir I., Der Mensch in der Biosphäre, zur Naturgeschichte der
        Vernunft, Lang, Frankfurt/M (1997)

Hofmacher, J.: Teppiche und Kelims, Dissertation in progress, Universität Frankfurt, (???)

Homer: Werke, Vol 1: Illias, Vol 2, Odyssee, Weltbild, Augsburg (1994)

Holenstein, E.: Von der Hintergehbarkeit der Sprache, Suhrkamp, Frankfurt/M (1980)

Humboldt, W. v.: Über die Verschiedenheit des menschlichen Sprachbaus und ihren Einfluß auf die geistige
        Entwicklung des Menschengeschlechts
        Werke in 5 Bänden, Bd. III, Hrg. Andreas Flitner und Klaus Giel
        Wissensch. Buchgesellschaft, Darmstadt, p. 368-756. (1963)

Hummel, S.: Die meroitische Sprache, Fabri, Ulm (I: 1992, II: 1995, III: 1996, IV: 1997)

Hunger, H.: Genitale Emissionen, Sexualmedizin 4, p. 232-259; (1990)
Hunger, H.: Kollektiv-Verpaarung als Kult, Sexualmedizin 19, p. 518-524 (1990)

IFG: Internationales Forum für Gestaltung Ulm: Mensch Masse Medien, Anabas, Frankfurt/M (1997)

Ifrah,G.: Universalgeschichte der Zahlen, Campus, Frankfurt/M (1991)

Illich, I., Verne, E.: Imprisoned in the global classroom, Writers and Readers, London (1976)
Illich, I.: Fortschrittsmythen: Schöpferische Arbeitslosigkeit oder Die Grenzen der Vermarktung, Rowohlt,
        Reinbek (1978)
        engl: The right to useful unemployment
Illich, I.: Schulen helfen nicht: über d. mythenbildende Ritual d. Industriegesellschaft, Rowohlt, Reinbek
        (1980)
Illich, I.: Entschulung der Gesellschaft: Entwurf e. demokrat. Bildungssystems, Rowohlt, Reinbek (1984)
        engl: Deschooling society, Harmondsworth : Penguin Books, 1977
Illich, I., Sanders, B.: The alphabetization of the popular mind, North Point Pr., San Francisco (1988)
Illich, I.: Guarding the eye in the age of show: Marion Boyars, London (1998)

Illius, B: Ani Shinan: Schamanismus bei den Shipibo-Conibo, Lit, Münster, Hamburg (1987)
Illius, B. (ed.): Circumpacifica, Lang, Frankfurt/M (1990)

Immoos, Thomas: Japan - archaische Moderne, Kindt, München (1990a)
Immoos: Ein bunter Teppich, die Religionen Japans, Styria, Graz (1990b)

Innis, H. A.: Changing concepts of time, Univ. of Toronto press, Toronto (1952)
Innis, H. A.: Empire and communications, Univ. of Toronto press, Toronto (1972)
        first printing 1950
Innis, H. A.: The bias of communication, Univ. of Toronto press, Toronto (1991)
        first printing 1951

Iyengar, B.K.S.: Light on Yoga, Schocken, New York (1966)

Jahoda, G.: Crossroads between culture and mind, Harvester, New York London Toronto, (1992)

James, Jamie: The Music of the Spheres, Grove Press, New York (1993)

Jantsch, E.: Die Selbstorganisation des Universums, DTV (1982)

Jaspers, K.: Vom Ursprung und Ziel der Geschichte, Fischer, Frankfurt/M (1955)

Jaynes, J.: The Origin of Consciousness in the Breakdown of the Bicameral Mind, Houghton Mifflin, Boston
        (1976)

Jeschke, C.: Tanzschriften Ihre Geschichte und Methode, Dissertation LMU München, Comes, Bad
        Reichenhall (1983)

Johnson, G.: In den Palästen der Erinnerung, Droemer Knaur, München (1991)
        engl: In the Palaces of Memory

Jones, Owen: Grammatik der Ornamente, Delphi, Nördlingen (1987)

Jünger, H.D.: Die kulturelle Krise, Matthes & Seitz, München (1998)

Kaiser, G.: Mutter Nacht - Mutter Natur, in: Kittler, p. 87-141 (1980)

Kayser, Hans: Der hörende Mensch, Lambert Schneider, Berlin (1930)
Kayser, Hans: Akroasis, Benno Schwabe, Basel (1946)
Kayser, Hans: Lehrbuch der Harmonik, Occident, Zürich (1950)

Kamper, Dietmar; Wulf, Christoph: Lachen - Gelächter - Lächeln, Syndikat, Frankfurt/ M (1986)

Kampis, G.: Self-modifying systems: a model for the constructive origin of information, in: FIS94, p. 119-125
        (1996)

Kant, I.: Beantwortung der Frage:Was ist Aufklärung?, Berlinische Monatsschrift, Dezember-Heft, p. 481-494
        (1784)
Kant, I.: Kritik der Reinen Vernunft, Meiner, Leipzig (1930)

Karbe, L.: Venedig oder Die Macht der Phantasie, Diederichs, München (1995)

Kauffman, S.A.: The Origins of Order: Self-organization and Selection in Evolution. Oxford University Press,
        New York (1993)

Kepler, Johannes: Harmonices mundi - Weltharmonik, München (1982)
        Orig. Linz 1619

Kerckhove, D., Lumsden, C. (eds.): The Alphabet and the Brain, Springer, Berlin (1988)
Kerckhove, D.: Schriftgeburten, Fink, München (1995a)
    french: La civilization vidéo-chretiénne
Kerckhove, D.: The Skin of Culture, Sommerville, Toronto (1995b)

Khing, H. D.: Quelques témoignages de expériences de recherche sur la littérature d'expression orale et écrite du Cambodge, OBM: Objets et mondes, la revue du musée de l'homme: Vol 23, fasc 1-2, printemps-été, p. 111-116 (1983)

King, R.: Korean Writing, in: Daniels, p. 218-227 (1996)

Kipling, R.: Kim, Wordsworth, Ware, (1994)

Kittler, F.: Austreibung des Geistes as den Geisteswissenschaften, Schöningh, Paderborn (1980)
Kittler, F.: Memories are made of you, in: Koch, p. 187-205 (1997)

Klaffke, C.: Mit jedem Greis stirbt eine Bibliothek, in Assmann, p. 222-230 (1983)

Klages, Ludwig: Sämtliche Werke, Bouvier, Bonn (1981)

Klosinski, G. (ed): Pubertätsriten: Äquivalente und Defizite in unserer Gesellschaft, Huber, Bern (1991)

Kluckhohn, Clyde: Culture and Behavior, The Free Press, New York (1962)
Kluckhohn, C.; Kelly, W. H.: The Concept of Culture, (orig: 1945) In: Linton R. (ed.): The science of man in the world crisis, Octagon, New York, p. 78-106 (1980)

Kobayashi, T. & P.: T'ai chi ch'uan, Hugendubel, München (1983)

Koch, P., Krämer, S.(eds.): Schrift, Medien, Kognition, Stauffenberg, Tübingen (1997)

Koch, W. A. (ed.): The Nature of Culture, Brockmeyer, Bochum (1989)

Köhler, W.: The task of gestalt psychology, Princeton Univ. Press, Princeton (1969)

Kohl, K.H.: Geordnete Erfahrung, wissenschaftliche und literarische Darstellungsformen und literarischer Diskurs in der Ethnologie, in: Schmied-Kowarzig, p. 407-421 (1993)

König, W. (ed.): Propylän Technikgeschichte, 5 Vols, Propylän, Berlin (1997)

Kohl, J.V., Francoeur, R. T.: The scent of eros: Mysteries of odor in human sexuality, Continuum, New York (1995)

Koizumi, T.: Kata and kata-thinking in eastern and western thought, Intersymp, Baden-Baden, Aug. (1997) International Institute for Advanced Studies in Systems Research and Cybernetics, University of Windsor, Windsor, Ontario, Canada, Prof. George Eric Lasker

Kolata, G.: Studying learing in the womb, Science, 225, 302-3, (1984)

Kornwachs, K. (ed.): Offenheit - Zeitlichkeit - Komplexität, Campus, Frankfurt/M (1984)
Kornwachs, K.: Information. New questions to a multidisciplinary concept, Akademie, Berlin (1996)
Kornwachs, K.: Pragmatic Information and the Generation of Knowledge, Villa Vigoni, 9-12 June (1997)

Korvin-Krasinski, C.v.: Trina Mundi Machina. Die Signatur des alten Eurasien, Grünewald, Mainz (1986)

Krämer, S.: Symbolische Maschinen, Wiss. Buchges. Darmstadt (1988)
Krämer, S.: Berechenbare Vernunft, Kalkül und Rationalismus im 17. Jahrhundert, Habilitationsschrift, De Gruyter (1991)
Krämer, S. (ed.): Geist-Gehirn-Künstliche Intelligenz, Zeitgenössische Modelle des Denkens, De Gruyter (1994a)
Krämer, S.: Künstliche Intelligenz - Der Aufstieg des Computers zum Modellbaukasten des Geistes, Information Philosophie, Mai (1994b)

Krätz, Otto: Goethe und die Naturwissenschaften, Callwey, München (1998)

Krampen, M.: Models of Semiosis, in: Posner, p. 246-287 (1997)

Kressing, F.: Wer sind indigene Völker?, in: Muth, H., Seithel, F. (eds.): Indigene Völker, zwischen
        Romantisierung und Vernichtung, Infoe, Mönchengladbach, p. 9-24 (1994)
Kressing, F.: Candidates for a theory of shamanism, Shaman, Szeged (1997)
        personal preprint copy given to the author by F. Kressing.

KRI: Kundalini Yoga Sadhana Guidelines, Kundalini Research Inst., Pomona (1976)

Kröller, J.: Chemical channels, in: Posner, p. 306-315 (1997)

Kuhlen, R.: Hypertext, Springer, Berlin (1991)

Kuhn, Thomas S.: The Structure of Scientific Revolutions, Chicago (1962)

Kyriatsoulis, A. (ed.): Die Geschichte der hellenischen Sprache und Schrift, Verein zur Förderung der
        Aufarbeitung der Hellenischen Geschichte, Weilheim (1996)

LaChapelle, Dolores: Sacred land, sacred sex, Finn hill arts, Silverton, (1988)

Lamb, W., Watson, E.: Body code, Routledge & Kegan, London (1979)

Lambert, M.: Purquoi l'ecriture est nee en mesopotamie, Archeologia 12, p. 24-31 (1966)

Landow, G. P.: Hypertext, Johns Hopkins, Baltimore, London (1992)
Landow, G. P. (ed): Hyper / text / theory, Johns Hopkins, Baltimore, London (1994)

Landwehr, K.: Der optische Kanal, in: Posner, p. 288-293 (1997)

Laszlo, E.: Introduction to systems philosophy, Harper Torchbook, New York (1973)

Latacz, J.: Homer. Tradition und Neuerung. Wiss. Buchgesellsch., Darmstadt 1979
Latacz, J.: Homer. Der erste Dichter des Abendlandes, München 1989
Latacz, J.: Homer. Die Dichtung und ihre Deutung, Wiss. Buchgesellsch., Darmstadt 1991

Laughlin, C., Aquili, E.: Biogenic structuralism, Columbia University Press, New York (1974)

Laurel, Brenda: Computers as Theatre, Addison-Wesley, Reading (1991)

Leclerc, G.: Anthropologie und Kolonialismus, Hanser, München (1973)

Lehmann-Nitsche, R.: Die Sammlung Boggiani, Rosauer, Buenos Aires (1904)

Lem, S.: Vergangenheit der Zukunft, Insel, Frankfurt/M (1992)

Lennon, J.; Maurer. H.: MUSLI - A MUlti-Sensory Language Interface, ED-MEDIA 94, AACE,
        Charlottesville, p. 341-348 (1994)
Lennon, J.: Mental imagery and visualization. From the mind's machine to the computer screen, ED-MEDIA
        95, AACE, Charlottesville, p. 27-32 (1995)

Leroi-Gourhan, A.: The dawn of European art, Cambridge Univ. Press, Cambridge (1982)
Leroi-Gourhan, A.: Hand und Wort, Suhrkamp, Frankfurt/M (1984)

LeVay, S: Keimzellen der Lust, Spektrum, Heidelberg (1994)

Levi-Strauss, C.: Indian Cosmetics, VVV, Nr. 1 New York (1942)
Levi-Strauss, C.: Strukturale Anthropologie II, Suhrkamp, Frankfurt/M (1975)
Levi-Strauss, C.: Strukturale Anthropologie I, Suhrkamp, Frankfurt/M (1977)
Levi-Strauss, C.: Traurige Tropen, Suhrkamp, Frankfurt/M (1978)
        orig. Tristes Tropiques 1955

Levy, Steven: Hackers: Heroes of the Computer Revolution, Anchor/Doubleday, Garden City (1984)

Lévy, P.: The second flood, Report to the council of Europe, CC-CULT (96) 27 B, (1996)

Liedloff, J.: Auf der Suche nach dem verlorenen Glück, Beck, München (1983)
        engl: The continuum concept. Knopf, New York

Lightfoot-Klein, H.: Das grausame Ritual: sexuelle Verstümmelung afrikanischer Frauen, Fischer, Frankfurt/M (1993)
        engl: Prisoners of ritual : an odyssey into female genital circumcision in Africa, Hayworth, New York 1989

Lindqvist, C.: Eine Welt aus Zeichen, Droemer Knaur, München (1990)

Lippe, Rudolf z.: Neue Betrachtung der Wirklichkeit, Europ. Verl. Anst., Hamburg (1997)

Lock, A. (ed.): Handbook of Human Symbolic Evolution, Clarendon press, Oxford (1996)

Loftus, Elizabeth: Memory, Addison-Wesley, Reading (1980)

Lorenz, Konrad: Die Naturwissenschaft vom Menschen, Piper, München (1992)

Lotman, Y. M.: Kunst als Sprache: Untersuchungen zum Zeichencharakter von Literatur und Kunst / Juri . [Hrsg. von Klaus Städtke], Reclam, Leipzig (1981)
Lotman, Y. M.: Universe of the mind: a semiotic theory of culture, Tauris, London (1990)

Lucadou, W.v., Poser, M.: Geister sind auch nur Menschen, Herder, Freiburg (1997)

Luchins, A.: The place of Gestalt theory in American psychology, in: Ertel, p. 21-44 (1975)

Luhmann, Niklas: Soziale Systeme: Grundriß einer allgemeinen Theorie, Suhrkamp, Frankfurt/M. (1993)

Lumsden, C., Wilson, E.O.: Genes, Mind, and Culture, Harvard Univ. Press, Cambridge (1981)

Lynch, A.: Thought contagion. How Belief Spreads Through Society. The New Science of Memes, Basic Books, New York (1996)

MacMahon, M.K.C.: Phonetic notation, in: Daniels, p. 821-846 (1996)

Macri, M.: Maya and other Mesoamerican scripts, in: Daniels, p. 172-182 (1996)

Macy, J.: Mutual causality in buddhism and general systems theory, State Uni New York Press, Albany (1991)

Mandersen, Leonore (ed.): Sites of desire, economies of pleasure, Univ. of Chicago Pr., Chicago (1997)

Margulis, L, Sagan, D.: Mystery Dance, Summit, New York, London, Toronto (1991)

Marijuán, P., First Conference on Foundations of Information Science, in: FIS94, BioSystems 38/2,3, p. 87-96 (1996)
Marijuán, P., Information and the "fluid" nature of life, FIS96, Vienna. to appear in BioSystems (1997)

Markman, R.H. and P.T.: The flayed god: the Mesoamerican mythological tradition; sacred texts and images from pre-Columbian Mexico and Central America. Harper, San Francisco (1992)

Marschall, W. (ed.): Klassiker der Kulturanthropologie. Beck, München (1990)

Marshack: The Roots of civilization, McGraw Hill, New York (1972)

Marvin, C.: Innis, McLuhan and Marx, Visible Language, 20, 3, p. 355-359 (1986)

Maturana, H. R.: Erkennen, Vieweg, Braunschweig (1982)

Maturana, H. R.; Varela: Der Baum der Erkenntnis, Scherz, Bern (1987)

Maturana, H. R.: Zur Biologie der Kognition, Frankfurt/M (1990)

Maturana, H. R.: Biologie der Sozialität. In: Schmidt, Siegfried J. (Hrsg): Der Diskurs des Radikalen
       Konstruktivismus. 4. Auflage, Suhrkamp, Frankfurt/M., S. 287-302 (1991)

Maturana, H. R.: Was ist Erkennen, München (1994a)

Maturana, H. R.: ; G. Verden-Zöller, Liebe und Spiel, Auer (1994b)

Maurer, H.; Carlson P.: Computer Visualization, Collegiate Microcomputer, 10(2), p. 110-116, May (1992)

Mause, Lloyd de (ed): History of childhood, New York (1974)

McClain, Ernest: The Myth of Invariance. The Origin of the Gods, Mathematics and Music from the Rg Veda
       to Plato, Shambala, Boulder & London (1978)

McLuhan, M.: The Gutenberg Galaxy: The Making of Typographic Man, Univ. of Toronto, Toronto (1972)

McLuhan, M.: Wohin steuert die Welt? Europaverlag, Wien (1978)

McLuhan, M., Powers, B.: The global village, Oxford Univ. Press, New York (1989)

Meister, M.: 30000 Jahre vor Picasso, Geo 6, Jun., p. 10-41 (1997)

Mellaart, J.: Catal Hüyük: A Neolithic Town in Anatolia, London (1967)

Mellaart, J.; Hirsch, U., Balpinar, B.: The Goddess from Anatolia, Vol I-IV, Eskenazi, Milano, (1989)

Mendelssohn, K.: Das Rätsel der Pyramiden, Fischer, Frankfurt/M (1976)

Menninger, Zahlwort und Ziffer, 2 Vols, Göttingen (1957, 1958)

Merkel, R.F.: Leibniz und China, (Leibniz zu seinem 300. Geburtstag: 1646 - 1946), deGruyter, Berlin (1952)

Merne, J. G.: A Handbook of Celtic Ornament, Mercier, Cork (1974)

Merriam, A. P.: The anthropology of music, Northwestern Univ. Press, Chicago (1964)

Meyl, Konstantin: Potentialwirbel, INDEL, Villingen-Schwenningen (1990)

Michalowski, P.: Mesopotamian cuneiform, in: Daniels, p. 33-72 (1996)

Miller, Alice: "Schrebers mörderische Kinder" Wie Haß entsteht: Die schwarze Pädagogik der Deutschen oder
       die Erziehung der Menschen zu willigen Helfern Hitlers. Südwestprese, No. 61, 14/15.3. (1998)

Mittelstraß, J. (ed.): Enzyklopädie Philosophie und Wissenschaftstheorie, Bibliograph. Inst., Mannheim (1984)

MM-Encyc: Multimedia Software Encyclopedia, The Software Toolworks Multimedia Encyclopedia, Software
       Toolworks, Groliers, Novato (1992)
       cited as: (MM-Encyc: keyword)

Moller, P.: The electric and magnetic channels, in: Posner, p. 316-324 (1997)

Montagu, A.: Culture: Man's Adaptive Dimension, (1969)

Montagu, A.: Körperkontakt, Klett, Stuttgart (1974)

Montagu, A.: The Nature of Human Aggression, Oxford Univ. Press, New York (1976)

Moore: Beyond Words, Gordon & Breach, New York (1988)

Morris, E.: Fragrance, Scribner, New York (1984)

Morris, W.: Kunst und Schönheit der Erde, Stattbuch, Berlin (1986)

Mountford, C.: Ceremonial head ornaments and body decorations of the Aranda tribe of Central Australia, in: Haberland, E., Schuster, M., Straube, H.: Festschrift f. Ad. E. Jensen, Renner, München, p. 385-396 (1964)

Mühlmann, H.: Die Natur der Kulturen, Springer, Wien, New York (1996)

Müller, E.W (ed).: Geschlechtsreife und Legitimation zur Zeugung, Alber, Freiburg München (1985)

Münzel, M. (hrsg): Die Mythen sehen, Bilder und Zeichen vom Amazonas, Bd. 14,/15 Mus. f. Völkerkunde, Frankfurt/M (1988)

Mumford, L.: Technics and Civilization, New York (1934)
Mumford, L.: Mythos der Maschine, Frankfurt/M (1977)
        engl: Myth of the Machine, Vol.1, Technics and Human Development, New York 1967, Vol.2: The Pentagon of Power, New York 1970

Munn, N.: Walbiri Iconograpy, Cornell Univ. Press, Ithaca (1973)

Muth, H., Seithel, F. (eds.): Indigene Völker, zwischen Romantisierung und Vernichtung, Infoe, Mönchengladbach (1994)

Nakamura, K.: Memoiren einer Geisha, Europaverlag, München (1997)

Naslednikov, M.: Tantra oder die Kunst der sexuellen Extase, Goldmann, München (1990)

Needham, J.: Ling, W.: Science and Civilization in China, Cambridge (1959)

Nefzaoui: The perfumed garden of the sheikh Nefzaoui, Wordsworth, Ware (1995)

Neirynck, J.: Der göttliche Ingenieur, Expert, Renningen (1994)

Nettl, Bruno: The study of ethnomusicology, Univ. of Ill. Pr., Urbana (1983)
Nettl, Bruno: Comparative musicology and anthropology of music, Univ. of Ill. Pr., Chicago (1991)

Neuburger, A.: Die Technik des Altertums, Voigtländer, Leipzig (1919)

Niane, D. T.: Soundjata Keta, Reclam, Leipzig (1986)

Nicola, N. (ed): Arte Plumária do Brasil, Fundação Nacional Pró-Memória, Brasilia (1980)

Nietzsche, F.: Nietzsche Werke, Gesamtausgabe, deGruyter, Berlin (1969)
        Genealogie der Moral, orig. 1887

Noeth, W.: Handbuch der Semiotik, Metzler, Stuttgart (1985)

Norcia, V.: Of stone, books and freedom, Visible Language, 20, 3, p. 344-354 (1986)

Norman, Donald A.: Models of human memory, New York (1970)
Norman, Donald A.; Lindsay, Peter H.: Human information processing , New York (1972)
Norman, Donald A.: Explorations in cognition, San Francisco (1975)
Norman, Donald A.: Memory and attention, New York (1976)
Norman, Donald A.: Perspectives on cognitive science, Cognitive Science Society, Norwood, NJ (1981)
Norman, Donald A.: Learning and memory, San Francisco (1982)

Nye, L.J.J.: Man the Fool (Homo insipiens), Smith & Paterson, Brisbane (1970)

OBM: Objets et mondes, la revue du musée de l'homme, Paris

O'Connell, R.: Of Arms and Men, Oxford Univ. Press, (1989)

O'Connor, M.: The alphabet as a technology, in: Daniels, p. 787-794 (1996)

Ong, W.: Rhetoric, romance, and technology, Cornell Univ. Press, Ithaca (1971)
Ong, W.: Interfaces of the word, Cornell Univ. Press, Ithaca (1977)
Ong, W.: Fighting for life: Contest, sexuality, and consciousness, Cornell Univ. Press, Ithaca (1981)
Ong, W.: Orality and literacy: the technologizing of the word, Methuen, London (1982)
        dt: Oralität und Literalität, Opladen, 1987

Orpheus: Orpheus, altgriechische Mysterien, Diederichs, München (1992)

Ortega Y Gasset, José: Gesammelte Werke, I-VI, Bechtermünz, Augsburg (1996)

Otto, Frei (ed): Naturverständnis, SFB 230, Heft 3, Univ. Stuttgart (1985)

Paglia, Camille: Sexual Personae, Vintage, New York (1991)

Parmenides: Die Anfänge der Ontologie, Logik und Naturwissenschaft, (Ernst Heitsch ed.), Heimeran Verlag,
        München (1974)

Pape, H.: Erfahrung und Wirklichkeit als Zeichenprozess, Suhrkamp, Frankfurt/M (1989)

Paque, R.: Afrika antwortet Europa, Ullstein, Frankfurt (1967)

Pearce, J.C.: The crack in the cosmic egg, Lyebird, London (1973)

Peirce, C.S.: The collected papers of Charles Sanders Peirce, Hartshorne, Weiss, Burks, eds., Harvard Univ.
        Press, Cambridge (1931-1958),
        Vols. I-VI ed. Charles Hartshorne and Paul Weiss, Harvard Univ. Press, Cambridge, MA (1931-1935)
        Vols. VII-VIII ed. Arthur W. Burks, same publisher, (1958)
        the citation scheme is according to standard usage as CP [vol].[paragraph]

Penrose, R.: Shadows of the Mind, Oxford University Press, Oxford, pp. 411-414 (1994)

Picht, Georg: Aristoteles' "De Anima", Klett-Cotta, Stuttgart (1987)

Pinker, S.: The language instinct, Harper Perennial, New York (1995)

Pirsig, R.: Zen and the Art of Motorcycle Maintenance, Bantam, New York (1975)

Platon, Werke: Sämtliche Dialoge, Band VI: Timaios, Kritias, Sophistes, Politikos, Briefe; Meiner, Hamburg
        (1988)
        quotations according to philological usage.

Pleger, W.: Die Vorsokratiker, Metzler, Stuttgart (1991)

Pöppel, Ernst: Time Perception, In: Handbook of Sensory Physiology, R. Held, H.W. Leibowitz, H.-L. Teuber,
        eds., pp. 713-729, Springer, Heidelberg (1978)
Pöppel, Ernst: Grenzen des Bewußtseins: Über Wirklichkeit und Welterfahrung. 2. Auflage, DVA, Stuttgart
        (1985)
Pöppel, Ernst: Mindworks: Time and Conscious Experience, Harcourt, Boston (1988)
Pöppel, Ernst: The measurement of music and the cerebral clock: A new theory, Leonardo 22, 83-89 (1989)
Pöppel, Ernst: Das Drei-Sekunden Bewußtsein. Psychologie Heute, 10/93, S. 58-63 (1993)
Pöppel, Ernst: Lust und Schmerz, Goldmann, München (1995)

Popkin, R.H., Stroll, A.: Philosophy made simple, Allen, London (1956)

Popp, F., Becker, G., König, H., Peschka, W. (eds.): Electromagnetic Bio-Information, Urban &
        Schwarzenberg, München (1979)

Popp, V.: Initiation, Suhrkamp, Frankfurt/M (1969)

Popper, K.: Die Logik der Sozialwissenschaften, Kölner Zeitschrift für Soziologie und Sozialpsychologie 14 (1962)

Popper, K.R., Eccles J.C.: The self and its brain, Springer, Berlin (1977)

Portmann, A.: An den Grenzen des Wissens, Econ, Wien (1974)

Posner, R.: What is culture? Toward a semiotic explication of anthropological concepts. in: Koch W.A. (ed.): The Nature of Culture, Brockmeyer, Bochum, p. 240-295 (1989)

Posner, R. (ed.): Warnungen an die ferne Zukunft, München (1990)

Posner, R. (ed): Semiotik: ein Handbuch zu den zeichentheoretischen Grundlagen von Natur und Kultur, de Gruyter, Berlin (1997)

Postman, N.: Wir amüsieren uns zu Tode, Fischer, Frankfurt/M (1985)
        engl: Amusing ourselves to death

Postman, N.: Das Verschwinden der Kindheit, Fischer, Frankfurt/M (1987)

Powell, B. B.: Homer and the origin of the Greek alphabet, Cambridge Univ. Press, Cambridge (1991)

Prahl, H.: Gesellschaftliche Funktionen von akademischen Abschlussprüfungen und Graden, (Sozialhistorische u. ideologiekrit. Unters. zur akad. Initiationskultur), Diss. Univ. Kiel, (1974)

Pribram, K.: Toward a holonomic theory of perception, in: Ertel, p. 161-184 (1975)

Prigogine, I.; Stengers: Order out of Chaos, Bantam, New York (1984)

Radermacher, F.J.: Intelligenz-Kognition-Bewußtsein, Systemtheoretische Überlegungen, technische Möglichkeiten, philosophische Fragen. Kleine, Bielefeld (1998)

Rätsch, C.: Naturverehrung und Heilkunst, Bruno Martin, Südergellersen (1993)

Raible, W.(ed.): Erscheinungsformen Kultureller Prozesse, Narr, Tübingen (1990)

Raible, W.(ed.): Symbolische Formen - Medien - Identität, Narr, Tübingen (1991)

Rancour-Laferriere, Daniel: Signs of the flesh, Mouton, Berlin (1985)

Randaria Shalini: Brahmans, kings and pariahs, Das arabische Buch, Berlin (1992)

Rangachari, Dewan Bahadur: The Sri-Vaishnava Brahmans, Gian, Delhi (1985)

Raum, J.: Julian Haynes Steward, in: Marschall, p. 248-276 (1990)

Rawson, J.: Die rituellen Bronzegefäße der Shang- und Zhou-Perioden, in: Goepper, p. 76-94 (1995)

Read, M.: Children of their fathers, Holt, Rinehart, Winston, New York (1968)

Reale, G.: Zu einer neuen Interpretation Platons, Schöningh, Paderborn (1993)

Rebling, E.: Ballet, Henschel, Berlin (1957)

Reich, W.: Der Einbruch der sexuellen Zwangsmoral, Fischer, Frankfurt/M (1981)

Reinsberg, C.: Ehe, Hetärentum und Knabenliebe, C.H. Beck, München (1989)

Rentschler, Ingo et al.: Beauty and the Brain. Birkhäuser, Basel (1988)

Reps, P.: Zen Flesh, Zen Bones, Doubleday, Garden City, (no date)

Ribeiro, D., Ribeiro, B.: Arte Plumária dos Índios Kaapor, private publ., Rio de Janeiro (1957)

Ribeiro, D.: Kadiwéu, Vozes, Petrópolis, Brasil, (1980)

Ribeiro, D.: G.Boggiani: Sull'arte dei Caduvei, in: Zevi, F. (ed): Indios del Brasile, Museo preistorico ed etnografico Luigi Pigorini, Roma, p. 67-78 (1983)

Ribeiro, B. G.: La vannerie et l'art décorativ des Indiens du Haut Xingu, Brésil, OBM: Vol 24, fasc 1-2, p. 57-68 (1987)

Ribeiro, B. G.: Semantische Zeichnungen und ethnische Identität, in: Münzel, p. 391-450 (1988)

Ribeiro, B.: Bases para uma classificação dos adornos plumários dos índios do brasil, in: Ribeiro, B.: Suma Etnologia Brasileira, Vol 3, Arte índia, Vozes, Petropólis, p. 189-226 (1987)

Ridley, M.: The red queen: sex and the evolution of human nature, Penguin, New York (1995)

Riechen: Das Riechen, Kunst & Ausstellungshalle BRD, Steidl, Göttingen (1995)

Riedl, R.: Die Strategie der Genesis: Naturgeschichte der realen Welt, Piper, München (1976)

Riedl, R.: Biologie der Erkenntnis, Paul Parey, Berlin (1980)

Riedl, R.: Die Spaltung des Weltbildes: biolog. Grundlagen des Erklärens u. Verstehens, Parey, Berlin (1985)

Riedl, R.: Begriff und Welt: biologische Grundlagen des Erkennens und Begreifens, Parey, Berlin, (1987a)

Riedl, R. (ed.): Die Evolutionäre Erkenntnistheorie, Parey, Berlin (1987b)

Riedl, R.: Kultur - Spätzündung der Evolution?: Antworten auf Fragen an die Evolutions- und Erkenntnistheorie, Piper, München: (1987c)

Riedl, R.: Die Ordnung des Lebendigen, Piper, München (1990)

Riedl, R.: Darwin, Zeus und Russells Huhn, Gespräche im Himmel und auf Erden, Wien: Kremayr & Scheriau, (1994)

Riedl, R.: Goethe and the Path of Cognition: An Anniversary. In: Evolution and Cognition, Vol. 1, No. 2, p. 114-120 (1995)

Rupert Riedl (1995a): "Goethe and the Path of Discovery: An Anniversary". http://www.kla.univie.ac.at/Journal.html

Riedl, R.: Mit dem Kopf durch die Wand : die biologischen Grenzen des Denkens, Klett-Cotta, Stuttgart (1996a)

Riedl, R.: Cognition of evolution: can causal explanation overrule cognition? In: Evolution and Cognition, Vol. 2, No. 2, p. 88-107 (1996c)

Rifkin, Jeremy: Entropy, Viking / Bantam, New York (1980)

Riegas, V.; Vetter, C. (Hrsg): Zur Biologie der Kognition. Suhrkamp, Frankfurt/M. (1990)

Rock, I., Palmer, S.: Das Vermächtnis der Gestaltpsychologie, Spektrum der Wissenschaft, Feb., p. 68-75 (1991)

Roeder, J.: Bilder zum Megalith-Transport, p. 84-111, in: Paideuma, Bd. 3, Bamberger, Meisenbach (1944/49)

Röder, B.; Hummel, J.; Kunz, B.: Göttinnendämmerung: das Matriarchat aus archäologischer Sicht, Droemer Knaur, München (1996)

Rösing, I.: Mundo Ankarri (1-5), Zweitausendeins, Frankfurt (1990, 1991, 1993)

Roheim, G.: The eternal ones and the dream, Intl. Univ. Press, New York (1945)

Root, D.: Cannibal culture, Westview, Boulder (1996)

Roscher, W.: Sinn und Klang, Müller-Speiser, Anif/Salzburg (1997)

Rost, F.: Griechisch-Deutsches Wörterbuch, 2 Vols, Westermann, Braunschweig (1862)

Roth, Gerhard: Das Gehirn und seine Wirklichkeit, Suhrkamp, Frankfurt (1996)

Rothenberg, J.: Die Konservierung digitaler Dokumente, Spektrum der Wissenschaft, Sept., p. 66-71 (1995)

Rotter, E. & G.: Venus, Maria, Fatima, Artemis & Winkler, Zürich (1996)

Rouget, G.: Music and Trance, Univ. of Chicago Press, Chicago (1985)

Rudhyar, D.: Die Magie der Töne, DTV, München (1988)

Sacks, O.: Anthropologist on mars, Picador, London (1995)

Safranski, R.: Mephisto oder die Verkörperung des Realitätsprinzips, Basler Zeitung, 13.6., p. 31 (1999)

Sahlins, M.: Stone age economics, Aldine Publ., Chicago (1976)

Said, E. W.: Orientalism, Vintage Books, New York (1979)
Said, E. W.: Culture and imperialism, Vintage, London (1994)

Salthe, S.: Evolving hierarchical systems, Columbia Univ. Press, New York (1985)
Salthe, S.: Science as the basis for a new mythological understanding, Uroboros, No. 1, 25-45. (1992)
Salthe, S.: Development and evolution, MIT Press, Cambridge (1993)

Samuel, G.: Mind, body and culture, Cambridge Univ. Press, Cambridge (1990)

Sandermann, W.: Papier - Eine Kulturgeschichte. Springer, Heidelberg (1997)

Sapir, Edward: Die Sprache, Max Hueber, München (1972)

Scarre, C. (ed.): Weltatlas der Archäologie, Südwest, München (1990)
        engl: The Times Atlas Archeology

Schärli, O.: Sinnliche Wahrnehmung als Lebens- und Erkenntnisprozess, in: Polyaistesis Jahrbuch V,
        Katzbichler, München, p. 22-31 (1996)

Scharlau, B. Münzel, M.: Qellqay, Campus, Frankfurt, New York (1986)

Schildbach, S: Perle über der Klitoris, Sexualmedizin 1:15-18 / 2:38-42 (1997)

Schillings, A., Hinterthür, P.: Qi Gong, Windpferd, Aitrang (1989)

Schinz, A.: Cities in China, Vol 7 of "Urbanization of the Earth", Borntraeger, Berlin (1989)
Schinz, A.: The magic square, Menges, Stuttgart (1997)

Schleidt (1995) Riechend in der Welt: Die Bedeutung von Gerüchen in verschiedenen Kulturen. in: Riechen
        (1995) p. 86-96

Schlott, A.: Schrift und Schreiber im Alten Ägypten, C.H. Beck, München (1989)

Schmandt-Besserat, D.: Vom Ursprung der Schrift, Spektrum der Wissenschaft, p. 5-12, Dec. (1978)
Schmandt-Besserat, D.: Before writing, Vol 1, Univ. of Texas Press, Austin (1992)

Schmidt, H.: Der Paragraphenwust tötet den Unternehmergeist. Die Zeit, Nr. 15, S. 3, 4.4. (1997)

Schmidt, S. J. (ed.): Der Diskurs des Radikalen Konstruktivismus, Suhrkamp, Frankfurt/M. (1987)
Schmidt, S. J. (ed.): Gedächtnis, Suhrkamp, Frankfurt/M, (1991)
Schmidt, S. J. (ed.): Kognition und Gesellschaft, Suhrkamp, Frankfurt/M, (1992)

Schmied-Kowarzik, W., Stagl, J.: Grundfragen der Ethnologie, Reimer, Berlin (1993)

Schmölzer, H.: Die Frau, das gekaufte Geschlecht, Tau, Bad Sauerbrunn (1993)

Schneider, M.: Die historischen Grundlagen der musikalischen Symbolik, in: Die Musikforschung, IV, Kassel,
        Basel, (1951)
Schneider, M.: Die Bedeutung der Stimme in den alten Kulturen, in: Tribus, Jahrb. d. Lindenmuseums,
        Stuttgart (1952)
Schneider, M.: Singende Steine, Kassel/Basel (1955)

Schneider, M.: Die musikalischen Grundlagen der Sphärenharmonie, in: Acta Musicologica, 32, (1960)

Schneider, M.: Das Morgenrot in der vedischen Kosmogonie, in: Symbolon, Vol. 5, Basel (1966)

Schneider, M.: Klangsymbolik in fremden Kulturen, Beiträge zur harmonikalen Grundlagenforschung, Heft 11, Wien (1979)

Schneider, M.: Urweltmythos und Sphärenharmonie, in: Festschrift Rudolf Haase, Eisenstadt (1980)

Schneider, M.: Kosmogonie, in: Jahrb. f. musik. Volks- und Völkerkunde, Vol. 14, p. 9-51 (1990)

Schneider, M.: Kosmogonie, unpublished manuscript, 2000 typewritten pages, Inst f. Völkerkunde, LMU München, Prof. Laubscher, (xxxx)

Schönfeld, W.: Körperbemalen, Brandmarken, Tätowieren, Hüthig, Heidelberg (1960)

Schopenhauer, A.: WWV: Die Welt als Wille und Vorstellung, Werke in zwei Bänden, Hrg. Werner Brede, Hanser, München (1977)

Schrenk, F.: Alte Zeugen der Zukunft, Die Zeit, 22. August, p. 35 (1997)

Schrödinger, E.: What is life? Cambridge Univ. Press, Cambridge (1946)

Schrödinger, E.: Naturwissenschaft und Humanismus, Deuticke, Wien (1951)

Schulz, A.: Shunga, Sexualmedizin 12, p. 602-603 (1991)

Schulz, A.: Phallus cum vulva, Sexualmedizin 7/8, p. 220-221 (1995)

Schunk, Axel; Hägele, Peter: Auf der Suche nach Ordnung, Univ. Verlag Ulm, Ulm (1996)

Schwarz, Richard: Adolf Bastians Lehre vom Elementar- und Völkergedanken, Dissertation, Borna, Leipzig (1909)

Schweizer, Thomas; Schweizer, Margarete; Kokot, Waltraud (eds): Handbuch der Ethnologie, Reimer, Berlin (1993)

Seashore, C. E.: The psychology of music. Dover, New York (1967)

Semiotica, Special issue on paleosemiotics, Vol. 100-2/4 (1994)

Severi, C.: Struktur und Urform, in: Schmied-Kowarzik, p 309-330 (1993)

SFB-511.: Antrag auf Einrichtung eines Sonderforschungsbereichs "Literatur und Anthropologie", Universität Konstanz, Konstanz (1995)
http://www.sfb511.uni-konstanz.de/

Sheets-Johnstone, M.: Consciousness: a natural history, Journal of Consciousness Studies, 5, No 3, (1998: 260-294)

Shenk, D.: Data smog, Harper Collins, New York (1997)

Shukla, H. K.: Semiotica Indica: Encyclopaedic dictionary of body-language in Indian art & culture. 2 volumes. Aryan Books International, New Delhi (1994)

Shunga: (authors and title in Japanese), ISBN4-309-90142-5, ISBN4-309-90143-3, ISBN4-309-90166-2, ISBN4-88532-723-7

Sieveking, G., Longworth, I., Wilson, K.: Problems in economic and social archeology, Westview, London (1974)

Silverman, G: Tejido andino, / El lexico grafico. Banco central der reserva del peru, (1991)

Simon, H. A.; Sumner, R. K.: Pattern in music. In Kleinmuntz B: The formal representation of human judgement. Wiley, New York (1968)

Singer, Wolf: Hirnentwicklung und Umwelt. In: Gehirn und Kognition. Spektrum der Wissenschaft Sonderausgabe, Heidelberg, S. 50-65 (1992)

Sirat, C.: The material conditions of the lateralization of the ductus, in: Kerckhove, p. 173-201 (1988)

Siu, R. G.: Panetics, Vol I-III,The International society for Panetics, Washington (1993)

Skoyles, J.: Right hemisphere literacty in the ancient world, in: Kerckhove, p. 362-380 (1988)

Smith, C. S.: A search for structure, MIT Press, Cambridge (1981)

Smith (Shibamoto), J.: Japanese writing, in: Daniels, p. 209-217 (1996)

Smith, M.R.; Marx, L.: Does Technology drive history? MIT Press, Cambridge (1994)

Snow, C.P.: (Encarta: Snow, C.P)

Spencer, P. (ed.): Society and the dance, Cambridge Univ. Press, Cambridge (1985)

Spengler, O.: Der Untergang des Abendlandes, DTV, München (1980)
        orig. C.H. Beck, 1923

Spitzer, M.: Geist im Netz, Spektrum, Heidelberg (1996)

Sprondel, W. (ed.): Die Objektivität der Ordnungen und ihre kommunikative Konstruktion, Suhrkamp, Frankfurt/M. (1994)

Staal, F.: The science of ritual, Bhandarkar Oriental Research Inst., Poona (1982)
Staal, F.: The fidelity of oral tradition and the origins of science, in: Mededelingen der koninklijke Nederlands Akademie van Wetenschappen, afd. Letterkunde, Deel 49 - No 8, North-Holland, Amsterdam p. 249-288 (1986)
Staal, F.: Rules without meaning, Lang, New York, (1989)

Stanford, Peter: The devil, a biography, Holt & Co. New York (1996)

Stoll, C.: Die Wüste Internet, Fischer, Frankfurt/M (1996)
        engl: Silicon snake oil, 1995

Stonier, T.: Beyond Information : the natural history of intelligence, Springer, London (1992)
Stonier, T.: Information and the internal structure of the universe: an exploration into information physics, Springer, London (1994)

Stratmann, N.: Bazon Brock, der Selbstfesselungskünstler: Einführung in eine Ästhetik des Unterlassens, Verl. und Datenbank für Geisteswiss., Weimar (1995)
        http://www.uni-wuppertal.de/FB5-Hofaue/Brock/

Straub, Dieter: Eine Geschichte des Glasperlenspiels, Birkhäuser, Basel (1990)

Straube, H.: Leo Frobenius, in: Marschall, p. 151-170 (1990)
Straube, H.: Beiträge zur Sinndeutung der wichtigsten künstlichen Körperverstümmelungen in Afrika, in: Haberland, p. 671-722 (1964)

Strecker, I.: The social practice of symbolization, Athlone, London (1988)

Strehlow, T.: Aranda Traditions, Melbourne Univ. Press, Melbourne (1947)
Strehlow, T.: Personal monototemism in a polytotemic community, in: Haberland, E., Schuster, M., Straube, H.: Festschrift f. Ad. E. Jensen, Renner, München, p. 723-754 (1964)
Strehlow, T.: Songs of central Australia, Angus and Robertson, Syndey (1971)
Strehlow, W.: Wüstentanz : Australien spirituell erleben durch Mythen, Sagen, Märchen und Gesänge, Strehlow, Allensbach am Bodensee (1996)

Strube, G., Lazarus, G.: Der akustische Kanal, in: Posner, p. 294-299 (1997)

Struck, P.: Neue Lehrer braucht das Land, WB-Forum Bd 88, Wiss. Buchgesellsch., Darmstadt (1994)
Struck, P.: Zuschlagen, Zerstören, Selbstzerstören, WB-Forum Bd 100, Wiss. Buchgesellsch., Darmstadt
       (1995)

Sung, Z.D.: The symbols of Yi King, Ch'eng Wen Publ. Comp., Taipei (1971)

Suzuki, D.T.: Zen Buddhism, Doubleday, Garden City, (1956)

Symons, D.: The Evolution of Human Sexuality, New York (1979)

Symington, D.: Late bronze age writing boards and their uses", Anatolian studies 41: 111-123, (1991)

Tasten: Das Tasten, Kunst & Ausstellungshalle BRD, Steidl, Göttingen (1996)

Taylor, Timothy: Die Sexualität der Vorzeit, Pichber, Wien (1997)

Tembrock, G.: Biokommunikation, Akademie-Verlag, Berlin (1971)

Thom, Rene: Structural Stability and Morphogenesis, Benjamin/Cummings, Reading, Mass. (1975)

Thompson, D'Arcy W.: On growth and form, Cambridge Univ. Press, Cambridge (1966)

Thompson, R.: Vedic Cosmography and Astronomy, Bhaktivedanta Book Trust, Los Angeles, (1989)

Thompson, W. I.: Der Fall in die Zeit, Rowohlt, Reinbek (1987)

Toynbee, A. J.: A study of history, 12 Vols, Oxford Univ. Press, London (1934-1961)

Tresmin-Tremolieres: Yoshiwara: die Liebesstadt der Japaner, Marcus, Berlin (1919)

Tufte, E. R.: Envisioning Information, Graphics Press, Cheshire, Conn. (1990)
Tufte, E. R.: The visual display of quantitative Information, Graphics Press, Cheshire, Conn. (1992)

Turner, V. W.: The forest of symbols : Aspects of Ndembu ritual. Cornell Univ. Pr., Ithaca (1973)
Turner, V. W.: From ritual to theatre: the human seriousness of play. Performing Arts Journal Publ., New York
       (1982)
Turner, V. W. (ed.): The anthropology of experience, Univ. of Illinois Press, Urbana (1986a)
Turner, V. W.: The anthropology of performance, PAJ Publ., New York (1986b)
Turner, V. W.: The ritual process: structure and anti-structure. Cornell Univ. Press, Ithaca, New York (1987)
Turner, V. W.: Vom Ritual zum Theater, Campus, Frankfurt/M (1989)
       German transl. "From ritual to theatre"
Turner, V. W. : Dramas, fields, and metaphors: Symbolic action in human society, Cornell Univ.Pr., Ithaca,
       New York (1990)

Ulanowicz, Robert: Ecology, the ascendent perspective, Columbia Univ. Press (1996)

Vajda, L.: Greulmärchen und Wunderland. Geschichten im Dienste des Fernhandels in vorindustrieller Zeit,
       in: Breuninger, H.; Sieferle, R.: Markt und Macht in der Geschichte, DVA, Stuttgart, p. 20-44 (1995)

Varela, Francisco, Thompson, Evan, Rosch, Eleanor: The Embodied Mind: Cognitive Science and Human
       Experience, MIT Press, Cambrigde, MA (1991)

Vatsyayana: Kamasutra, transl. R. Burton, Dutton, New York (1964)

Veblen, Thorstein B.: The vested interests, Kelley, New York (1964)
Veblen, Thorstein B.: The theory of the leisure class, Penguin, Harmondworth (1967)

Vec, Milos: Das elektronische Buch - Pyramidal, FAZ, Nr. 109, S. N5, 12.5. (1999)

Veltman, K.: Linear perspective and the visual dimensions of science and art, Deutscher Kunstverlag, München (1986)
Veltman, K.: Why Computers are Transforming the Meaning of Education, ED-Media and ED-Telecomm Conference, Calgary, June 1997, ed. Tomasz Müldner, Thomas C. Reeves, Charlottesville: Association for the Advancement of Computing in Education, vol. II, pp. 1058-1076 (1997)
Veltman, K.: Frontiers in conceptual navigation, Knowledge Organization 24, No. 4, p. 225-245 (1998) http://www.sumscorp.com/articles/

Vernadsky, Vladimir I.: Geochemie in ausgewählten Kapiteln, Akad. Verl.-Ges., Leipzig (1930)
Vernadsky, V: The Biosphere, Springer, New York (1997)

Vidal, L.: Contribution to the concept of person and self in lowland South American societies: body painting among the Kayapo-Xikrin, in: Hartmann, p. 291-303 (1981)
Vidal, L., Müller, R.: Pintura e adornos corporais, in: Ribeiro, B.: Suma Etnologia Brasileira, Vol 3, Arte índia, Vozes, Petropólis, p. 119-150 (1987)

Villeneuve, R.: Grausamkeit und Sexualität: sadistisch-flagellantische, pathologische, gesellschaftlich-machtpolitische und religiöse Hintergründe der Leibes-und Todesstrafen, Hinrichtungsarten, Martern und Qualen bis in die Gegenwart in Wort und Bild, Rixdorfer Verl., Berlin (1988)
Villeneuve, R.: Histoire du cannibalisme, Le Livre Club du Libraire, Paris (1965)

Virilio, Paul: Ereignislandschaft, Hanser, München (1998)

Visser, Edzard: Homerische Versifikationstechnik, Peter Lang, Frankfurt/M (1987)

Volk, T.: Metapatterns, Columbia Univ. Press, New York (1995)

Waal, Frans: Bonobo sex and society, Scientific American, March (1995: 82-88)

Walker, B.: Das geheime Wissen der Frauen, Zweitausendeins, Frankfurt/M (1993)

Watt, G.: Codes, in: Posner, p. 404-413 (1997)

Watzlawick, P.: Wie wirklich ist die Wirklichkeit? : Wahn, Täuschung, Verstehen, Piper, München (1976)
Watzlawick, P.; Beavin, J.; Jackson, D.: Menschliche Kommunikation : Formen, Störungen, Paradoxien, Huber, Stuttgart (1980)
Watzlawick, P. (ed).: Die erfundene Wirklichkeit: wie wissen wir, was wir zu wissen glauben? Piper, München (1981)

Weidtmann, Niels: Kann Schriftlichkeit fehlen? Polylog 1 (1998: 74-78)

Weischedel W.: Über Philosophen, Robugen, Esslingen (1975)

Wenegrat, B.: The divine archetype, Lexington Books, Lexington (1990)

WER: Whole Earth Review, Sausalito, CA

Wertime, T. A.; Muhly, J. D.: The coming of the Age of Iron, Yale Univ. Press, New Haven (1980)

White, L.: The Evolution of Culture, McGraw-Hill, New York (1959)
White, L.: The Concept of Cultural Systems, Columbia University Press, New York (1975)
White, L., (eds: Beth Dillingham, Robert L. Carneiro): Ethnological Essays, University of New Mexico Press, Albuquerque (1987)

Whitehead, A. N.: Symbolism, its meaning and effect, Cambridge University Press, Cambridge, (1927)
Whitehead, A. N.: The function of reason, Beacon Press, Boston, (1929)
Whitehead, A. N.: Adventures of ideas, Penguin, Harmondsworth, (1932)
Whitehead, A. N.: Nature and life, Greenwood Press, New York , (1934)

Whitehead, A. N.: Science and the modern world, The Free Press, Macmillan, New York (1967)
          Lowell Lectures 1925
Whitehead, A. N.: Modes of thought, The Free Press, Macmillan, New York (1968)
Whitehead, A. N.: Process and reality, The Free Press, Macmillan, New York (1969)
          first edition: 1929

Whorf, B. L.: Language, thought and reality, Cambridge. Mass. (1956)
Dt. Sprechen, Denken, Wirklichkeit

Widmaier, R.: Die Rolle der Chinesischen Schrift in Leibniz' Zeichentheorie, Franz Steiner, Wiesbaden (1983)
Widmaier, R. (ed.): Leibniz korrespondiert mit China, Vittorio Klostermann, Frankfurt/M. (1990)

Wieger, L.: Chinese Characters, Paragon-Dover, New York (1965)
          reprint of 1915, 1925

Wiener, N.: Cybernetics, MIT Press, Cambridge (1982)
          orig. 1948

Wilhelm, R.: Der Mensch und das Sein, Diederichs, Jena (1931)
Wilhelm, R.: The I Ching, Bollingen, Princeton Univ. Press, Princeton (1961)

Williams, R.: The geometrical foundation of natural structure, Dover, New York (1979)

Wilson, E.O.: On Human Nature, Harvard Univ. Press, Cambridge, (1978)
Wilson, E.O.: Sociobiology, Harvard Univ. Press, Cambridge, (1975)

Wittgenstein, L. Schriften 1, Suhrkamp, Frankfurt/M (1969)

Woehlcke, Manfred: Soziale Entropie, dtv, münchen (1996)

Wright, R.: The moral animal: evolutionary psychology and everyday life, Pantheon, New York (1994)

Wright, R.H.: The science of smell, Allen & Unwin, London (1964)
Wright, R.H.: The sense of smell, CRC Press, Boca Raton (1982)

Wrolstad, M, Fisher, D. (eds.): Toward a new understanding of literacy, Praeger, New York (1986)

Yates, F.: Giordano Bruno in der englischen Renaissance, Wagenbach, Berlin (1989)
          engl: Giordano Bruno and the Hermetic Tradition, London, 1938, 1981
Yates, F.: Gedächtnis und Erinnern, VCH, Weinheim (1990)
          engl: The Art of Memory, Routledge&Kegan, London 1966

Young, A.: The geometry of meaning, Robert Briggs, Mill Valley (1976)

Young, J.Z.: Philosophy and the brain, Oxford Univ. Press, Oxford (1987)

Zangger, E.: Ein neuer Kampf um Troia, Droemer Knaur, München (1995)

Zenz, G.: Kindesmisshandlung und Kindesrechte: Erfahrungswissen, Normstruktur und
          Entscheidungsrationalität, Suhrkamp, Frankfurt/M (1981)

ZFS: Zeitschrift für Semiotik, Stauffenberg, Tübingen

Zuidema, R. T.: A quipu calendar from Ica, Peru, with a comparison to the ceque calendar from Cuzco. in:
          Aveni, p. 341-351 (1986)

Analytical Table of Contents