

9 CULTURAL CONDITIONS SELECT SUPPOSITIONS

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§ 39 CULTURE SUPPOSES SHARED REPRESENTATIONS AND PHYSICAL CONDITIONS

PHYSICAL CONDITIONS

Our earthly environment provides Abiotic conditions (chapter 6) for unlikely Biotic possibilities of metabolism, reproduction and enclosure (chapter 8). Some of the resulting living organisms became the unlikely bearers of culture.

Plants can not move. They are therefore each bound to a specific environment. They have recipes to survive limited fluctuations in that environment ('ecological tolerance', *Fig. 50* p55). Their cells receive messages with which they choose the recipe from their genetic library for appropriate adaptation. They can specialize.

They also send each other messages with a distribution of tasks as a result ('cell differentiation', *Fig. 235* p221).

Animals can move. They can therefore also search for an environment in which the ingredients for their specific recipe are available. In addition to the chemical informatics that the plants already have, they have advanced organs to receive rapidly changing information and to respond conformingly.

To transmit signals, they also use movements and sound (mainly to lure or chase away).

TECHNICAL CONDITIONS

In addition to these means for survival by limited own adaptation, people and some animals have the ability to supplement their recipe with technical means ('adaptation') or to adapt the environment itself ('accommodation').

With these facilities they create technical conditions to survive in different environments.

The discovery of utensils is therefore a proof for archaeologists of human presence in the past.

The art or skill ('technè' in Greek) to imagine a 'means' between the immediate need and its fulfillment, requires an ability to provide that 'provision' *between* two actions or states and to oversee these three (p58).

That imagination is possible, by means of many previously learned or developed (largely unspoken) *assumptions*, gradually built up in a *conditional* sequence (chapter 5).

CULTURAL CONDITIONS SUPPOSE A TECHNICAL-ECONOMIC BASIS

'Culture' is already simply defined on p52 as 'set of shared suppositions and technical conditions'. What is 'shared' within a culture was once handed over to the participants ('tradition'). However, this is not always and completely communicated in verbal language. The representation, the image and its (re)construction (§ 41 p243) precede the verbal language (§ 42 p250). A symbolic game can be played without language (p71).

There are provisions and customs that are unconsciously accepted as 'self-evident'. These are unspoken suppositions that involve more than the 'norms and values' or 'language' that are often used in sociology and philosophy as an immaterial foundation of 'culture'.^a Archeology, technology, economics and cultural anthropology also involve prior physical and technical conditions.^b

Most cultures do not have shared representations of their physical conditions of life as described in chapter 6 and 8 (and their necessary assumptions). Their place is usually occupied by mythical and religious representations without many suppositions. More substantiated representations only exist in scientific subcultures and interested laypeople.

CULTURE SELECTS INDIVIDUAL IDENTITY

'Culture' has different meanings on different scale levels. You can not compare family cultures with a national culture. You can check to what extent they are part of it and derive conditions from it. A family counts on a national defense, legal protection and a technical infrastructure on a larger scale. An urban culture supposes a commercial-industrial culture that includes nurturing rural cultures.

The Latin origin of the word 'culture' means 'care', 'building' and in particular 'agriculture'. Agriculture is a 'neolithic' invention with major consequences. The local ('sedentary') way of life demanded more defense and planning for sowing and harvesting, breeding and slaughtering. The country was brought 'in culture' and

a Doorn(1969)Moderne sociologie(Utrecht)Spectrum Aula for example, follow Durkheim's rule that social phenomena can only be explained by other social phenomena. I do not share that circular view, as well as the linguistic limitation of language philosophy: Boomkens(2011)Erfenissen van de verlichting Basisboek Cultuurfilosofie(Amsterdam)Boom p209 and the limitation to an upperclass of Elias(1939)Über den Prozess der Zivilisation. Soziogenetische und psychogenetische Untersuchungen(Basel)Haus zum Falken. More attention to material, technical and economic conditions has Gurvitch(1967)Traité de Sociologie(Paris)Presses Universitaires de France .

b Daryll Forde(1934)Habitat, Economy and Society(London 1968)Methuen already suggests in his title (according to me rightly) a conditional sequence. His 'ecological anthropology' sets the material ('habitat') and technical conditions first, as preconditions for divergent human cultures without becoming deterministic. Levi-Strauss(1955)Tristes tropiques(Paris)Librairie Plon , Mead(1959)People and Places(New York)The World Publishing Company , or Grottanelli ed(1965)Ethnologica - l'uomo e la civiltà(Milan)SpA Edizioni Labor, give mostly separate descriptions of different cultures ('ideographic'), albeit sometimes per theme. Levi-Strauss(1962)La pensée sauvage(Paris)Librairie Plon then interprets 'culture' as a collection of unconsciously applied social rules such as the common incest prohibition ('structuralism', 'structuralist anthropology'). Kloos(1972)Culturele antropologie(Assen)Van Gorcum already has a more materialistic basis. Diamond(1997)Guns, Germs and Steel(New York)Norton is, however, a more recent example of ecological-cultural anthropology, which beautifully explains the environment and technology as a practical condition for still very different cultures.

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regarded as occupied 'possession' ('territory'). It was more closed off from a otherwise little known 'barbarous' outside world.

Individual identity ('difference with the rest and continuity in itself') is well defined in a small family of hunter-gatherers or farmers. In a small community (say 30 people) there are sufficient differences between origin, age, gender, form and behavior to be able to 'place' and distinguish somebody.^a

A common habitat and origin also gives a *group* identity ('tribe') compared to other tribes.

A commercial-industrial culture reaches higher densities. In a massive, mobile population that individual identity is divided over different roles in different groups with different subcultures when living, working, learning or recreating together. Own property gains significance as a mobile territory^b ('prestige'). Identification with self-chosen idols reduces origin and provenance (name and address) to an administrative identity.

Migrants with an agricultural background are, precisely as the etymology of the German (and Dutch) word 'Elend' (misery), 'out of the land' in an as yet unintelligible, barbaric world. Without an origin (family), provenance or property, the own culture remains as an identity ground. Forced 'integration' is then identity destruction. It leads to a reaction of convulsively adhering to its own ancestral culture. Radicalization is then the last straw for an undermined self-image.

Within the current commercial-industrial culture, there are similar identity-seeking remains from primordial cultures with a prehistoric tribal bond ('blood and soil'). Following the example of their idols (the scoundrels in the parliament), they sow hatred against the new competitors and then harvest hate again. Ascending conflicts set the clock back, but help the lost identity in the saddle.^c

This two-sided resurrected prehistoric relic can be explained by the dramatic transition from a more than 3 000 000 year old hunter-gatherer living to an agricultural existence ('neolithic revolution', some 10 000 years ago) and the resulting commercial-industrial culture in which the small communities disappeared. That period covers less than 1% of human evolution. In such a short time the human nature has not yet been fully adapted to those revolutions.

HUNTERS AND COLLECTORS MAP THEIR SPACE, FARMERS THEIR TIME.

Mobile hunter-gatherers live day to day in a wide *space* ($R = 10\text{km}$) in which they have to know the way. Within the agricultural, smaller, isolated, uncluttered space of the occupied or inherited land ($R = 300\text{m}$) and the larger own 'property' acquired

a I associate the "I" with a continuously repeated neural cycle (p50) with a consecutive set of assumptions of the self-image around a virtual point in which all subjective perspectives come together (p153).

b Jong(1978)Autoriteit en territorium(De As) zesde jaargang, nummer 31,

[http://www.taekemdejong.nl/Publications/1970tot1980/Jong\(1978\)AutoriteitEnTerritorium\(Rotterdam\)AS.pdf](http://www.taekemdejong.nl/Publications/1970tot1980/Jong(1978)AutoriteitEnTerritorium(Rotterdam)AS.pdf)

c Identity, for example, also plays an important role in Elias(1965)The established the outsiders(London)Frank Cass & Co

therein, there was more need for *time* division: a representation of seasons, storage for times of scarcity^a, an instructive past and a desirable future.

The division of space has a lower priority in a local agrarian culture. In the annual flooding Nile delta of ancient Egypt, the land covered with divinely fertile sediment had to be reallocated, scaled, mapped and allocated each year.

The farmers did not do that themselves. They had to leave that to the surveyors of the godly Pharaoh.

This prevailing subculture is more reminiscent of the fighters, hunters and collectors of the large space.

The (analytical) distinction between spaces and their division into different survival possibilities is more important for scattered hunter-gatherers than the division of their time.

You could presume between the two 'original cultures' a different acquired capacity for *overview* or *foresight*, a preferred development of *analytical* or *causal* imagination (**Fig. 246**).^b

In the usually 'analytical' representation of hunters and gatherers, the backward insight in periods of *time* is reduced to a synchronous, spontaneous 'sui-causal' culture. In addition to the 'causal' representation of farmers, on the other hand, the insight into *space* is limited 'holistically' to its own small world.

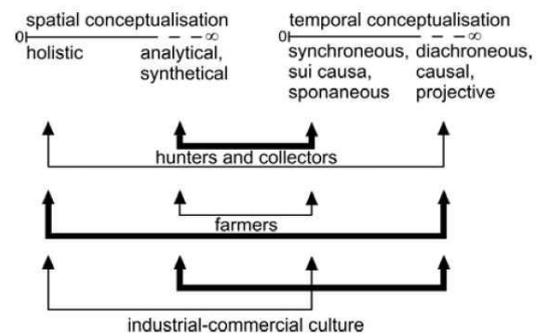


Fig. 246 Analytical and causal imagination

A COMMERCIAL-INDUSTRIAL CULTURE DIVIDES TIME AND SPACE

Sedentary agriculture promotes the exchange of surpluses, products and thus trade with an increasing role for reliable, precise *calculation* and recording, *writing*. The commercial-industrial culture that follows combines the classifying power from both original cultures. This way of life requires a development of analytical-causal representations: 'if I buy this *here now*, then I will be able to sell it *there later on* with a profit'.

This does not mean that in a commercial-industrial culture the holistic-suicausal representations play no role.

In it (in free time and space) is provided by what I would call an 'artistically-religious

^a This is especially true for seasonal grain harvests. In tropical conditions, many crops can be harvested all year round, but droughts can work like seasons again.

^b This thought emerged from my own observation of the great differences between Indian and Creole villages and their inhabitants in Surinam around 1970. I assumed a recent past as hunters and gatherers among the Indians and a centuries-old agricultural background at the Creoles. There was no observable greeting or farewell with the Indians, but no reservations at meeting, at the Creoles though. These invited you for the meal in order to go preparing it. The Indians gave me a beautifully decorated boat without reserve and turned around without seeing how I would deal with them, as if they were not interested in whether they would ever get it back. Did the time to make a new boat play no role for them? Did 'possession' have so little meaning for them? They were also less concerned with death than the fears that the Creoles shared with me. Making appointments was also more difficult than with the Creoles.

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counterculture'.^a

For hunters and gatherers, this was a parallel causal-holistic counterculture of medicine men who can exorcise spirits, for farmers in the suicidal-analytical world of preachers and interpreters (*Fig. 246*).

The commercial-industrial culture offers many environments. *Fig. 246* schematises ideal types that you can still find mixed. They are reminiscent of the three survival strategies of plants at Grime (note iiiiiiiiiiiiiii p229): 'grow fast, reproduce and clear the field' ('ruderals'), 'slowly build up capital to overshadow the neighbors and then reproduce' ('competitors') and 'specialize in locations where others can not survive' ('stress tolerators'). Michelson distinguishes comparable 'lifestyles' in the urban environment: 'consumers', 'careerists', 'familists'.^b

You can situate the 'calculating and reasonable' commercial-industrial culture roughly in coastal areas with overseas trade and both primitive cultures in the interior^c. The origin of western civilization is generally situated in ancient Greece. The large coastal length there made the trade culture everywhere contrasting with relics of the original cultures in the interior. Harvest parties have then provided an annual confrontation.

I associate the elated, wine-drenched ancient Greek Bacchus cult with this crucial confrontation with a holistic-suicausal counterculture for Western culture: "Bacchus (Dionysus) turned Apollo's head".^d The Bacchus cult brought resignation, ecstasy (ekstasis, p13). Masks separated the bacchant from their work on top of the land and the company down the coast. This primal form of theater made daily life visible externally.

This annual exerc

ise to move you into another became useful in the lessons of the Greek sophists.

They first taught you to play the role of the opposing party before you make your own plea.

This objectivation also became the basis for Plato's dialogues and the scientific debate: an arbitrary division of roles between defender and opponent, regardless of whether you agree with the statement that needs to be defended or not.^e

IDEAL TYPICAL CULT OF COLLECTORS, FARMERS, PRODUCERS AND TRADERS

In the ideal-typical hunter-gatherer, the deceased are good and evil spirits, who are still (synchronously) wandering around or taking place in physically present plants, animals or people. Only the medicine man (the counterculture) knows their origins and can provide a good relationship with magic. The killing and eating of 'inspired'

a Roszak(1968)The making of a counter culture(New York)Doubleday&Company Inc describes how (in the 1960s) this counterculture could rebel.

b Michelson(1970)Man and his urban environment(Reading)Addison Wesley

c Fishery cultures take an ambivalent position.

d I do not share the interpretation of Nietzsche(1878)Die Geburt der Tragödie(Leibzig)Fritsch.

e Jong(2001)De functie van stellingen bij het proefschrift(Delft)TUD http://www.taekemdejong.nl/Publications/2001/De_functie_van_Stellingen_bij_het_proefschrift.htm In academic promotions and court cases, people are still dressed to play a role that is separated from the person.

animals could have the sacral meaning within that representation to provide better housing for the deceased.

The Scarab is an example of worship in agricultural Egypt as a result of assumed spontaneous generation. It had never been seen that this beetle also lays eggs. Gods have no cause, they are their own cause ('sui causa'). For the ideal-typical farmer, plants, animals and people on earth are in a causal time series of parents and ancestors who have started something suicausal. The deceased then move to that timeless space ('eternity').

That religion plays a role in almost all cultures can not be explained solely by such conceptual representations.

The loss of parents is an experience that will affect almost every person in every culture. This is particularly drastic in times when parents died relatively young and left young children. Religion is then the denial associated with a mourning process: the consolingly continuing life of ancestors in nature or in the eternity of 'our Father'.

From both primitive cultures I recognize remains in the current religious practice. The role of miracles (magic) as a counterculture of causally compelling daily life, the representation of God and His earthly representatives as Al-father (holistic 'atavism'), praying as talking to your deceased (for)father, the sense of guilt, the sacrifice, the Communion as physical incorporation into yourself, the Biblical genealogies, explanatory time series to one beginning.

Monotheism (one Al-father) ended conflicts between tribes, each with their 'only real' own primal father.

New wars arose when spokesmen of the common God after the first revelation themselves were given a sacred status with interpreting and regulating authority (Catholics, Shiites). If that authority and its rules are challenged, a conflict arises with those who appeal to the original sources (Protestants, Sunnites).

§ 40 IMAGES SPECIFY, WORDS GENERALIZE

The oldest prehistoric remains of culture and cult are images.

With which constructed representations and in which words they were shared remains uncertain.

Difference as first impression

An image first shows itself as a set of differences. When we look around us in the bedroom, we all see smaller differences, but when we walk to the bathroom, everything changes by itself.

These are different diversities in scale. If you look in a different direction, the diversity is also different.

So there are different differences. Change is the difference that occurs through your own or external movement.

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Images do not require words

Words generalize what images specify. We think first of all in images before we hear or invent words for them.

From the unimaginable diversity that we see in our lives next to and after each other, little remains in our memory. Numerous images are disappearing, details are fading, and we have by no means 'noticed' (given a mark, marked, made aware by features, named).

What stays with us is what we see, feel, hear and so on more often and that is especially relevant to our survival. Such a set we give a noun ('mother', 'house', 'tree'). If we hear or pronounce such a word, then some examples from that set will come up again, but in others those words will evoke other examples. I mistrust words as a means of communication more than images.

Images can be read in all directions

Language is a linear sequence of words with rules for the sequence ('grammar').

You can not read a sentence in reverse order without losing its meaning.

Images are non-linear, but at least two-dimensional. You can read them in all directions. This applies to visual images from your retina, but also to the sense of touch that is distributed over the surface of your skin.

Our demonstrable innate visual ability registers continuous shape and color with over sixty million rods and cones per eye on a curved surface ('retina'). Most of them are in the middle, especially the color-sensitive cones.^a

Other senses add impressions of touch, pain, temperature, smell, taste and own movement with around 30 million sensors. They can partially replace visual impressions if the eyes fail.

We become aware of the third and fourth dimension only through our own motor skills. In doing so, the fourth dimension (time) forces an sequence that does not allow return, other than in our imagination ('time travel').

Words are beacons in an image

Anyone who wishes to describe this multitude in words must choose a route in the recollected image that allows a little side roads in order not to lose 'the line of argument'. No matter how many routes you choose, the image is never completely covered with words before your listeners or readers lose their patience.

The audience constructs its own images from the succession of words. An image, a video or virtual reality helps, but whether the spectator also selects the same as the speaker, writer or programmer, remains uncertain.

a Silbernagl(1979)Taschenatlas der Physiologie(Stuttgart)Georg Thieme Verlag p312

§ 41 CONSTRUCTIONS EXTEND THE POSSIBLE

'NOW', AN IRRETRIEVABLE ONCE

The actual, 'workable' reality^a is bound to an indivisible moment (pFout! **Bladwijzer niet gedefinieerd.**). The rest is (re)construction.

Remembrance and expectation, disappointment and hope are conceptions extending the possibilities of human survival. Learning to think a past is apparently the easiest way to 'see through' the circumstances of your actions, to get overview by looking back and ahead, making use of the remembered consequences of actions.

Without a representation of the past and future, skill, knowledge, choice, or desire have no meaning.

The past cannot be 'true' otherwise than in a *language* of exchangeable memories. Past and future are constructions that are only partly shared with others in a culture. I must therefore act as if the past 'really happened', even though I can not perceive it anymore and even though I can not *do* anything in it (the past is not 'workable').

Time

What is 'time' then? Time can not be observed. What you observe is change. Change stimulates to think of something on both sides of a difference, a 'before' and an 'after'. It is a construction of 'equal changes' just as 'space' is constructed out of 'equal differences'. Kant claimed that you can not perceive changes without an innate ('a priori') representation of time.^b I think it's the other way around. You have to construct a representation of 'time' from changes such as movement.

Children do not need a conception of time yet in order to observe changes and to act. The cat of my neighbors is immediately gone when I appear in my garden. Do I have to suppose that this cat has an innate idea of time?

A biological clock is a mechanism such as breathing, heartbeat or digestion, steered by periodic shortages.

A mechanism of repetition requires no abstract a priori of time.^c It may be even an unconscious part of the senses.^d

The learned representation of space and time has already been seriously affected by Lorentz^e and Einstein^f, though that has not yet penetrated in all (sub)cultures philosophizing about 'time'.^g

Moving is an evolutionary condition for 'thinking' (co-acting)

Animals (and therefore people) are distinguished from plants by their ability to move freely.

a 'Reality' is translated in German and Dutch as 'wirklichkeit' and 'werkelijkheid' relating it to 'workability'.

b Kant(1787)Critik der reinen Vernunft I§4-5(Frankfurt am Main1976)Suhrkamp p78-80

c Whitrow(1961)The Natural philosophy of time(London)Thomas Nelson and Sons Ltd is largely not yet out of date.

d Butterflies can have a biological clock in their antennas for their orientation, see for example Shlizerman et al(2016)Neural Integration Underlying a Time-Compensated Sun Compass in the Migratory Monarch Butterfly(Cell Reports)0426 15 4 p683–691

e Lorentz(1892)The Relative Motion of the Earth and the Aether(Zittingsverlag Akad. V. Wet.)1: 74–79

f Einstein(1905)Zur Elektrodynamik bewegter Körper(Annalen der Physik)17 p891–921

g Bergson(1888)Essai sur les données immédiates de la conscience(Paris)Alcan; Heidegger(1967)Sein und Zeit(Tübingen)Niemeyer

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This movement must have targeted results in search, fighting and eating in order to survive.

To this end, numerous internal muscles must be coordinated into one external activity or action.

For example, a human has to 'select' from about 600 muscles which must come into action for a intended activity, determining in which sequence and intensity. In order to determine this effective direction and coordination for any action, a neural system must have a laboriously learned (stabilized) program of all necessary muscular movements ('actions') to allow the rest of the organism to be directed in a reflex to one targeted activity.

Perhaps we therefore only distinguish ourselves from animals because people can simulate a slightly larger series of such actions in one current representation between the existing situation and the end result ('a third object in the representation' p58). With two actions in mind there is only room for direct action, such as searching and eating, fleeing or fighting. If a neural system primarily records actions, then the verb should also be in the forefront of the wording.

With three actions in one representation, there is room for an indirect, 'inter-functional' action that does not perform the function itself, but facilitates or makes it possible at all. This is comparable to a catalyst that accelerates a reaction in the background, or an enzyme without which a protein can not grow or can not function. This already starts to resemble a full sentence with a verb as an interaction between two nouns.

A third action in the representation makes human language possible

A third action in the representation (p58) provides space for a term that summarizes two actions and then again gives space to stand as a unity between two other actions. If {searching + grabbing := hunting} and {making fire + roasting := cooking}, then you may string together longer series of action such as {hunting, cooking, eating}. These verbs represent neural co-actions as images that may not yet have the names used here.

Summarizing and stringing such summaries opens up many new possibilities that are usually concerned as 'human'.

Within one representation, an action as 'making an arrow and bow' be can inserted. Making and using tools are such inter-functionally added actions. The representation can thus become a future-oriented plan or 'proposal'.

Language is such a tool representing more actions than the im-mediate action. It can coordinate actions of more people.

Actions may have an inter-mediate function ('interfunction') within a series of actions of which only the first is directly feasible and only the last has external effect. Our lives largely consist of such 'interfunctional' actions: schooling, earning money and so on. These loose verbs may be flanked by a stable subject and targeted object or effect

in order to specify who and what you mean (I go to school, I earn money, and so on), but that is a matter of detailing.

In a prehistoric situation 'go hunt' may have been sufficient. The extension with an actor (subject) and effect (object) may be clear in a simple context: 'I, go, hunt, there'. The additions on both sides of the verb may contain other word types, but these can be represented as a 'stabilized verb'. Even the pronoun 'I' can be composed of two actions.

Thinking can after all be included as co-action in the image (co-action + action := effect).

This actual effect is to recognize your thoughts in your actions stabilized as a self-awareness called 'I', the actor, the primary subject in your first sentences. Descartes claimed as a proof of existence: 'cogito ergo sum' (I think, so I am)^a, but what is your 'ex-sistence' else than your actions realizing your thoughts. Then you may realize: 'That's me!'.

In a sentence (a sequence of words) any verb (referring to an action) can be preceded by a stabilized actor (such as 'I') and it can be followed by an effect as a re-action in the environment. This way, however, any word type can be derived from actions. Actions 'stabilize' in pronouns, nouns, adjectives, adverbs, conjunctions (logical operators) and so on.

'And' between verbs

The conjunctions used as logical operators are represented in *Fig. 39* p35 as a result of *adding* and *subtracting* parts of overlapping sets. Their stabilized verbal origine is clear: to add and to subtract.

'Or' *adds* A to B (without doubling the overlap), but 'and' subsequently *subtracts* what is *not* A or B, resulting in the overlap itself. 'And' between verbs, however, resembles the logically inclusive 'or': 'both A and B'.

'Hunting *and* eating' suggests both in succession, similar to the inclusive 'or'. You could say 'Hunting and then eating'. That is, however, not 'If hunting, then eating' (the necessary logical implication \Rightarrow). You may say 'If you hunt, then you can eat', 'Hunting makes eating possible' (the practical \Uparrow) or 'Eating supposes hunting' (the practical \Downarrow).

For simple predator animals these distinctions are of no use. Their life is mainly to alternate hunting and eating.

If humans can include a third term in their image, then they can insert 'cooking': hunting, cooking, eating. This may extend the limits of food resources, give rise to task division ('I hunt, you cook, we eat') and to more abstract distinctions ('hunting \wedge eating', 'hunting \vee eating', 'hunting \Rightarrow eating', 'hunting \Uparrow eating', 'eating \Downarrow hunting').

^a Descartes(1637)Discours de la methode pour bien conduire sa raison, & chercher la verité dans les sciences(Leiden)Maire p33 'je pense, donc je suis' <http://objects.library.uu.nl/reader/index.php?obj=1874-21863&lan=en#page//79/05/80/79058089957088409423471920636672221607.jpg/mode/1up>
Descartes(1637)Vertoog over de methode(Amsterdam1937)Wereldbibliotheek vierde gedeelte p126 en Descartes(1644)Principia philosophiae(Amsterdam)Elzevir of (Frankfurt1729) Knochii https://archive.org/details/bub_gb_8lue9Xxbmq8C/pars_prima_p2.

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Moreover, the third term as a summary of the other two gives rise to imagine sequences of actions about which appointments about sequence, task division and so on can be made. In short, foresight, culture and language enter the scene.

A generalizing *abstraction* is a third representation of at least two objects. Two objects form the smallest set that can be summarized with a third representation (label or symbol). These primitive representations do not yet require the naming words that I use here to indicate them.

Exclusive 'or' as a reflex

A *dilemma* such as 'flight or fight' is often solved reflexively without a conscious insertion of an exclusive 'or'.

If the opponent is small and seems weaker than you, then you can imagine a reflex 'go on it!', otherwise 'get out!'.

Environmental factors evoke new dilemmas on 'get out', such as 'turn around and run' or 'hide'.

That in itself is not more complicated than a yes-no switch, driven by the filling of the field of view that gives an impression of size. This filling is of course smaller by a greater distance and vice versa, so that some power of distance estimation is a condition for this 'choice'. However, there are many other conditions such as object distinction and recognition as edible. I leave it as an extension of a neural circuit diagram.

Either alternatives such as 'hide, near, foliage' require new actions in the representation in which a conscious or unconscious choice is possible. The number of alternative actions that can be combined in one representation is perhaps a better measure of 'intelligence' than the IQ.

TIME IS LEARNT

A sense of time develops when you remember enough *changes* that look alike. Then you can generalize them in a set, with a verb to name and remember. If you regularly encounter a series of similar changes (day and night for example), then you have a clock that classifies something and you can call that time.^a This is useful for appointments and for coordinating activities. You can count with it too.

A sense of time can be learnt by sequence in space

Despite Kant, some people lose their sense of time. The psychiatrist Sivadon^b found a remedy. Set up a round clinic as a round clock: from the bedroom you enter the bathroom, then the breakfast room, then the office, then the lunch room, then another office, then the dining room, then the television room at finally ending up in your bed again.

^a The architect Aldo van Eyck once said: "Whatever time and space mean, place and occasion mean more."

^b Sivadon in Proshansky(1970)Environmental Psychology Chapter 42(New York)Holt, Rinehart and Winston, Inc

This way, the patient's sense of time was restored by daily repetition of that cycle on the basis of an apparently still present sense of space. Cicero was also able to remember the line of his speeches by presenting the subjects as rooms in a house that had to be visited in succession.^a

Even the sense of space is learnt

According to Piaget^b, that sense of space is slowly developed during the early years of a baby on the basis of its own movements, coupled with changes in the environment, as a result of its own movements.

Since then children in the classroom can stand up unsolicited and get more sport.

If you make that own motor skills impossible, then even the sense of space can not develop.

Held and Hein^c, for example, had a young cat spinning around in a merry-go-round without using its paws.

That mill was driven by another cat with its own legs so that they both received the same visual impressions.

The released cat without motor impressions turned out to walk and fall down from the table, apparently because it had not yet seen a difference in depth. The cat with the simultaneous experience of walking, stopped on the edge.

There is little innate or 'a priori'

Space and time are human abstractions derived from observed repeatedly equal differences and changes. Space and time are not innate or 'a priori' present in the human mind, but learnt constructions. There is little innate, but Kant supposed a sense of space and time in the senses and even 24 other innate ('a priori') 'judgment forms' and 'categories' in the mind (*Fig. 247* p248) in order to make our judgment and cognition possible.^d I think, however, that these are learnt as well.

a Cicero(-55)De oratore Book II 350-360(Cambridge Mass 1959)Harvard University Press Loeb Heinemann p462

b Piaget(1948)La representation de l'espace chez l'enfant(Paris)Presses Universitaires de France

c Held;Hein(1963)Movement-produced Stimulation in Development of visual Guided Behavior(Journ. Comp. Physiol. Psychology)56

d Kant(1787)Critik der reinen Vernunft I§9, §10(Frankfurt am Main1976)Suhrkamp p111-121

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	Judgement forms	Categories
1 Quantity	General Special Singular	Unity Multitude Allness
2 Quality	Confirming Negative Infinite	Reality Negation Restriction
3 Relation	Categorical Hypothetical	of inherence and subsistence (substantia et accidens) of causality and dependence (cause and effect)
4 Modality	Disjunctive Problematic Assertorical Apodictic	of community (interaction between active and passive) Possibility, Impossibility Existence, Non-existence Necessity, Coincidence

Fig. 247 A priori categories according to Kant

A 'judgment' gives an 'object' a 'attribute' or 'category'. According to Kant our understanding requires a 'judgmental power' in order *to be able* to choose an appropriate adjective with a given noun. In addition to our understanding, an overarching 'reason' must also be assumed to determine what is 'appropriate' from self-selected ideas and principles.

That multitude of instances in our head should form a unity: the subject 'I'. That unity of the subject is always a crucial assumption at Kant's 'proofs' (including the meaning and the unspoken assumptions of the concept of 'unity' itself).

In schizophrenics, however, it can also be a multitude.^a This 'unity' can be lacking. It is therefore not present a priori. This 'own identity' must be learned and maintained from a multitude of possibilities, simply in order to remain recognizable and credible to others. If you were alone in the world, you would not need that unity and continuity.

Unlikely many mutations simultaneously

If Darwin^b and other evolutionists after Kant are right, then those categories, transcending ideas and institutions of the human mind, would all have appeared simultaneously through numerous mutations in the genes and brains of an animal, changing it into a human with unprecedented cognition. That is even more unlikely than the emergent origin of life itself.

^a Minsky also assumes a *multitude* of individual judging actors within one individual in the very readable and even exciting:

Minsky(1985)*The Society Of Mind*(New York 1988)Simon Schuster

^b Darwin(1859)*The origin of species*(London)John Murray

I think they are all *taught*. Then Kant's question remains, what has made possible that far-reaching learning itself.

I consider that question easily solved by the one mutation: a third object in the representation (p58).

That the culturally shared representations have been learned (or to speak with Hume 'have become customary') has largely been demonstrated by experiments. However, it would also be useful to *unlearn* a number of suppositions.

DIALECTIC

If two disparate impressions are to be compared (for example, 'redder than round'), Kant would assume that above that perception a second ('transcending', 'transcendental') authority is necessary to make this comparison possible.

His list of categories has been constructed that way: a comparison of multiplicity and unity (for example, the mathematical awareness of '*more than one*') requires a comprehensive awareness of allness.

Such a reasoning is not called 'logical', but 'dialectic'.

Hegel's dialectic^a describes a very common process: each thesis gives rise to an antithesis. From this opposition follows a synthesis that can serve as a thesis again. You can now distinguish three types of dialectics: parent (Kant), consecutive (Hegel) and underlying. For example, a statistical 'relationship' between **x** and **y** does not have to be causal, but may have an underlying common cause.^b

a Hegel(1807)Phänomenologie des Geistes (Bamberg und Würzburg)Goebhardt

b An example. An epidemiological-statistical relationship has been demonstrated between smoking and cancer. Suppose that excessive and prolonged stress reduces resistance and increases the chance of cancer. Suppose further that smoking reduces quarrel and stress (as we learned from the Indian peace pipe). Smoking can then be regarded as a medicine against stress. Stress is the underlying cause of cancer and of smoking as a medicine. It would then have been possible to establish a statistical relationship between the use of morphine and cancer (and prohibit morphine). In the extensive investigation into the harmful effects of smoking on which anti-smoking activism is based on credulity, stress does not occur as a possible common cause. The positive effects of smoking have not been investigated. The diversity of people and their response to medicines and other poisons has been statistically neglected. The chemical pathways are not clear. All that research is epidemiological research. In principle, this can not conclude cause-effect relationships. That discussion was then conducted, see Chapter 1, p51 in: Development of the Criteria for Causation Used in the 1964 Report in: Surgeon General (2014) The Health Consequences of Smoking (Rockville) USPublic Health Service <https://www.surgeongeneral.gov/library/reports/50-years-of-progress/full-report.pdf> , but that collective error is simply accepted. Of course, this does not alter the fact that tobacco produces the dozens of chemical additives to cigarettes to improve the taste of toxic substances when burned. This results in a negative balance for many, but perhaps a positive one for some.

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§ 42 WORDS GENERALIZE

Animals mainly produce decoy and alarm signals^a, but people have developed a more differentiated language with their vocal cords and tongue. What for?

LANGUAGE SERVES PRIMARILY THE COORDINATION OF ACTIONS

In prehistoric times language probably did not only have to lure or warn, but above all to coordinate joint actions. Actions are described in verbs, the actors in names or (pro)nouns.

The intended result of an action may require more word types such as adverbs: "Come *here*, you!", "Go *away*, you!".

The actor and the result can flank a verb (the action), but they are not strictly necessary for expressions such as 'Come!' or 'Go!' to be understood. *Who* should come or go may become clear from the context. It then does not always need words. Much is assumed tacitly, communicated by body language and behavior. The 'imperative' is perhaps the simplest form of language and, I assume, the most original form. It can be 'dressed up' with nouns.

In my view, the action, the verb, is central. Nouns seldom contain a message in themselves. Without a verb they are only used when pointing an object if you want to teach children its name.

Nouns are not independent, but verbs are (with the little exceptions below).

Nouns are mainly added to a verb to specify an action naming the actor and the direct object or result of the action.

Words generalize

A proper noun ('John') or a personal pronoun ('you') refers to an unicum of which no other case is known or intended.

All other words generalize. They are 'denominators' for sets of 'equal' phenomena.

Within that, you can differentiate, adding further details (with adverbs for verbs, with adjectives for nouns or with conjunctions to construct compound sentences). In words, however, you cannot detail or specify otherwise than with generalizations.

Additions are not independent

With 'is' you add another, partly overlapping, set. Logic sets things in order in these overlaps (chapter 3 p34).

Adjective sets generalize also. They only limit the scope ('extension') of the original set. The verb 'to be' is then used to assign an 'attribute' to a set. A *definition* with 'is' supposes that *all* defined objects 'have' equal properties.

'To be' and 'to have' are not independent

'Being' does not represent a change, an action or operation. The same applies to 'having' and some other verbs.

^a Tinbergen(1965)Social Behaviour In Animals(London)Methuen

At "They are diligent" you can still argue that 'being' is a 'work word'^a, but the work itself is in the zeal.

At "She is beautiful" you do not have to assume that she makes a lot of work of her appearance.

With "This swan is black" you will not see any work at all.

However, if you realize that the swan absorbs the sunlight almost completely without reflection, then there is still an 'operation'. The blackness or in general the color is not a 'characteristic' of the object, but an effect of that object on our eye as an actor. Colored glasses change such a 'characteristic', although the *difference* in color is preserved.

An attribute is not *in* the object

The word 'property' can be misleading. 'Attribute'^b is perhaps a better word. It shifts the action to the knowing subject.

In grammar, a distinction is made between subject ("Who does something?" asked the teacher) and predicate.

By doing so, the verb, the doing, is smuggled away, whereas that verb is crucial in every sentence.

The distinction 'subject, verb, direct object' is already better, but there is not always a direct object or result, and even not necessarily an active subject. A result of action and its description can, as said, require more word types than a noun.

An attribute is not independent

It becomes doubtful if an adjective as an attribute is made independent of 'zeal', 'beauty', 'blackness', as if it were things ('reification') that existed in themselves ('ideas').

Socrates surrounded by young fans, could have fun on the street if he asked a passing magistrate what 'virtue' actually 'is'. The passenger then started to mention all kinds of examples of 'virtue', but remained embarrassed to everyone's hilarity when he was asked what 'virtue' *itself* really is.

That shyness ('aporia') was labeled as the beginning of all wisdom by Socrates.

Adjective is not independent

In my opinion (and in this case also according to 'cognitive science'^c), replacing adjectives with nouns is not the beginning, but the end of all wisdom. This also applies to the concept of 'truth'. An assertion can be 'true' or 'false', but without a verbal claim 'truth' or 'falsehood' do not exist on themselves.

Popper also hated looking for the 'essence' of 'truth', 'beauty' or 'virtue' ('essentialism').^d

a In Dutch 'verb' is called 'werkwoord' ('work word').

b The Latin origin 'attribuere' concerns an action of the subject: to assign, to allocate

c As if non-cognitive sciences exist! Apart from that stupid naming, I also see little news happening in science or cognition, other than exploring the dubious assumption that brains can be considered as a computer.

d Popper(1974)Unended quest, an intellectual autobiography(Glasgow)Fontana/Collins p25

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'To be' is not independent

Words are created from verbs by putting an article for them, for example 'the being'. You can write thick books about it ('ontology'), such as Heidegger with his 'Seinsfrage'^a and the existentialists afterwards. This then concerns Being, Non-Being, The Not, the border between them, with care and fear as border experiences.^b It becomes very profound when you treat conjunctions as verbs like "The Not nots".

WRITTEN WORDS

The invention of writing probably made a great impression at the time. The people went, the written words remained.

The ideas behind those words seemed to lead a life of their own. They became 'flesh' in anyone reading them.

This undeniable repetition of ideas without humans gave written words something superhuman. What had been written from time immemorial seemed to be the evidence of ideas as an immortal higher reality preceding mankind.^c

Surviving ideas

A predecessor of that belief is, that human spirits being freed from a body by death, can stay alive as good or evil spirits. An agricultural ('neolithic') variant is, that unconsciously sleeping ideas are passed on to future generations as seed, once awakening somewhere if they fall in good soil. Failing mortals then can at least gain comfort and hope from their descendants. In their turn, these are saddled up with the expectations and written prophecies of their ancestors.

Idealists and empirists

The thought that our brains get all ideas from the very beginning led Socrates to believe that he, like a midwife, could deliver those sleeping ideas from people. For example, by asking the right questions ('anamnesis'), he made an illiterate slave prove the Pythagorean theorem.^d But who determines the direction in such questions?

With his pupil Plato it led to a doctrine, which puts the ideas as a higher reality out of the people and only gives us a glance at their shadows ('idealism').^e This was gratefully accepted in the Jewish-Christian tradition, given John's summary of the first sentences of her Holy Scripture: "In the beginning was the Word."

a Heidegger(1967)Sein und Zeit(Tübingen)Niemeyer

b I think that every minute you spend on the anxiety and worry of dying is subtracted from the rest of your life. That only makes sense if you would still be there if you are no longer there. Opinions are divided on that, but when I am no longer there, I am not worried. Why then worry about that worry-free phase? I think you just have to take into account that you can die tomorrow every day. You get used to it, and it motivates to make the most out of today anyway. The past only exists in our memory. We only have to deal with that when others say that they 'remember' something alike. It is 'now' what the clock strikes. You live in an indivisible moment, and 'moment' is Latin for movement.

c Kraak(2006)Homo loquens en scribens Over natuur en cultuur bij de taal(Amsterdam)University Press, argues that the writing does not follow your thoughts as is generally assumed ('display myth'). Your thoughts follow the way you can write them down. We have become 'literate' at school.

I do not share his claim that the alphabet is not based on sound reproduction, but that our thinking is forced into a straitjacket as soon as we learn to read and write in lines and rules, seems plausible to me. It is the straitjacket of verbs that require an actor and a causal result. There is little room for the *conditions* of action, the context, the image that you can not describe as an action. However, precisely that context is the object of spatial *design*.

That does not mean, of course, that this limited way of thinking has not yielded impressive results from the Old Greeks onward. The invention of writing is in that light an unrivaled human achievement and a revolution, but through its success it has obstructed other parts of our imagination.

d Plato(-382)Meno 82B(Cambridge Mass 2006)Harvard University Press Loeb p305 e.v.

e Plato(ca-380?)Republic VII 514A e.v.(Cambridge Mass 2006)Harvard University Press Loeb p119 e.v.

Plato's pupil Aristotle partly returned to the pre-Socratic reliance on his own observation (empiricism).^a

He put together collections of what his pupil Alexander the Great^b sent to him as a conqueror from distant countries for observation. If that are changing shadows of eternal ideas, then there are a lot of ideas inside and outside of us.

Since then, idealism has been in constant debate with empiricism. More than two thousand years later Kant thought it would be possible to put an end to this debate.^c He remained idealist, however. He restricted only the number of innate ('a priori') ideas to a few 'categories' (**Fig. 247** p248) in which the infinite diversity of impressions can be given a form that makes 'true knowledge' possible. I think, however, that these 'categories' are *acquired* suppositions.

'Truth' exists only in a verbal language. There is no truth without assertion. The truth of an assertion proves itself, if the intended is repeatedly observed, preferably by others. Not only that observation, but also 'the intended', when translated in communication, must pass questionable barriers: the choice of words for an experience by the sender and the interpretation of the same words by the receiver (p100).

§ 43 TRADITION AND HISTORY REDUCE

The transfer ('tradition') of culture to a child stumbles after about 15 years on a natural resistance that partly reverses existing standards and makes generations^d different. This can result in a synchronous cultural wave with a period of about 15 years (especially with a baby boom or large-scale migration).^e If the next puberty neutralizes the previous, the norms of the generation before those of the educators, grandparents or ancestors may return.

The roughest extremes that can be distinguished in such a cultural phase change is a transition from 'traditional' to 'experimental' and vice versa (**Fig. 248**). The administrative context layer that accompanies it varies with changes of government between 'following' and 'driving'. Culture itself goes up and down with economic waves of growth and crisis. Economic decline brings war, migrations, birth waves and innovations, but also a rise of conservatism.

a Aristoteles(ca-323)Metaphysics A,I,e.v.(Cambridge Mass 1996)Harvard University Press Loeb p3 e.v.

b Arrianus(160)Arrian's life of Alexander the Great(Harmondsworth1958)Penguin Classics

c Kant(1787)Critik der reinen Vernunft(Frankfurt am Main1976)Suhrkamp , largely in response to the empirist Hume(1748) An Enquiry Concerning Human Understanding(London)Millar (more familiar to my argument)

d Becker(1992)Generaties(Amsterdam)Meulenhof distinguishes for example generations born between 1910-1920, 1930-1940, 1940-1955, 1955-1970.

e Roszak(1968)The making of a counter culture(New York)Doubleday&Company Inc describes the protest generation after WWII of the 1960s.

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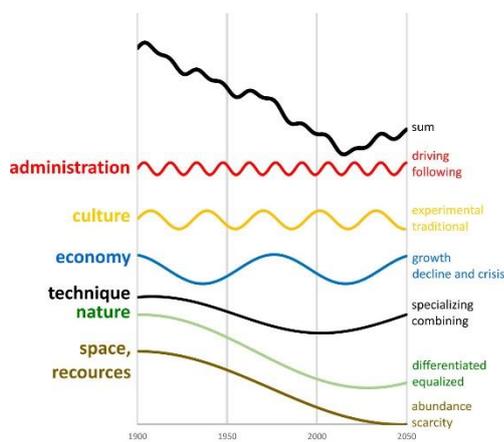


Fig. 248 Fluctuating context layers^a

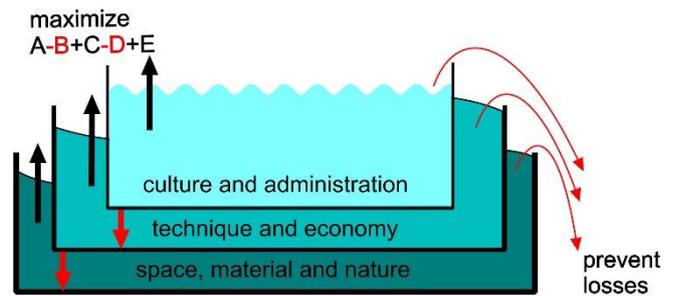


Fig. 249 Context: pressure and carrying capacity
 A increase carrying capacity (more and heavier ecological capital)
 B decrease pressure (decoupling)
 C increase carrying capacity (economic capital)
 D decrease pressure (social efficiency)
 E increase quality (social capital)

The driving technique and the science that follows and produces it, has long periods of specialist innovations in the order of magnitude of a century (eg until 1960), followed by a period of diligent combination in commercial applications ('implementation') such as the iPhone. But one day one will have to return to the specializations in order to be able to cope with the decline of nature from which one alienates and the exhaustion of raw materials.

The sum of all wave movements ('zeitgeist') moves and depends strongly on the influence (the amplitude) that you assume for each context layer. As far as I am concerned, the technique, the technè, the design, is an underestimated driving force in history. Her influence is only surpassed by the decline of our abiotic and biotic basis (Fig. 248).

Fig. 249 symbolizes their finite bearing capacity under the pressure of shaky containers with increasingly lighter liquids.

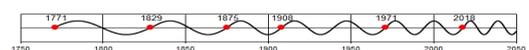
Culture is mobile and vulnerable. The movement of Fig. 248 is still a coarse simplification of the wave ridges that come rolling up from all directions. Crossing each other they form a chaotic moving landscape with a changing image that each looks different from its own position. Every culture is also vulnerable because of the conditions that bear it (Fig. 249). Some forms of increasing scarcity can no longer be solved by technology.

Poverty is confronted daily with those conditions and their scarcity. They become out of the picture in a culture with growing prosperity. 'The technology has solved everything so far and will also solve new problems.'

The horizon of risks that you oversee becomes smaller. Insurers are selling fear and you should not think that your car will stop on the highway without quick help or that the wine will be up tonight.

Half of your income is spent on securing your future: army, police, a legal system, pension, health insurance, ensuring home and household defects. The remaining

^a With variations such as the Schumpeter-Freeman-Perez paradigm for the economy:



number that the bank keeps can be reduced or hacked due to a crisis.

For all that you have spent hours every day building up the stress that stops physical resistance functions in order to escape or fight. And that is only allowed outside working hours (holidays, sports or crime).

This culture-pessimistic image of an industrial-commercial society individualizes itself within its own hard-won and secured house with safe friends. On another scale level it is the call for walls around the own fort: 'own people first'.

The newspaper selects what its readers want to read and readers in turn deny what they do not want to read. This way every period in history also selects its own history.

§ 44 ART AND SCIENCE PRODUCE

Visual arts, poetry or music shift the boundaries of your imagination with images, words or sounds.^a

They not only bring about the enthusiasm^b or even 'ek-stasis' ('ecstasy' p13), which we experience with 'beauty' (the swing of Aesthetic quality perception in *Fig. 51* p55), but also the ex-sistential (out-standing) experience with which you step out of the boring daily life for a moment. They are parts of the artistic-religious counterculture, a counterweight to chaos or monotony in everyday routine of production and consumption.

Between boredom and overload stands the balance between recognition and surprise. Too much repetition demands surprise, too much differences demand recognition. The fluctuation is visible in the architectural heritage. The turbulent, early Middle Ages full of uncertainty demanded strict, Romanesque architecture. The later Middle Ages brought more peace, wealth and boredom. The reaction was a more flamboyant Gothic architecture.

The discovery of America opened a world full of uncertainties. It meant a return to 'the ancients' with renaissance architecture. Science then also wanted to 'know for sure'. When the pendulum moved again to carefree abundance, Baroque architecture counteracted its boredom. In the storm surge of the industrial revolution, it switched to familiar neoclassicism. When the revolution was gone and the sciences self-confident, the art nouveau brought something new.

The world wars called for modernism, the peace for post-modernism. On a much smaller scale one finds more differences, ornaments and colors in the interior of those who are doomed to annoying work than in the businesslike, 'nice tight', quiet interior of those who have a busy job. There are also differences between old, young and very young. The cross, the Buddha statue and the pop idols recall the religious component in the artistic-religious counterculture.

a A 'verbal definition' of 'art' does not show what it *is*, but what it *does*.

b 'Enthusiasm' is originally Greek for 'the god entering' and 'ecstasy' for 'step out', apparently out of yourself. They were probably both experienced in the Bacchus cult. The Latin equivalent for 'step out' (ex sistere), is literally the same, but probably has a very different emotional value, connected with 'birth' and 'existence'.

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An example of the way in which artistic imagination can also shift boundaries in the scientific representation are the precise anatomical drawings of Leonardo da Vinci (**Fig. 250**). He and Vesalius first had to carefully observe and have drawn the anatomy before Harvey (**Fig. 251**) could even imagine a circulatory system and then prove how it works.

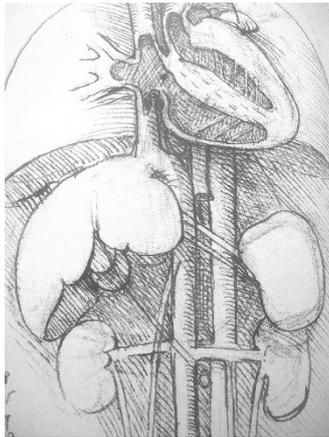


Fig. 250 Leonardo da Vinci's drawing of the heart in 1509^a

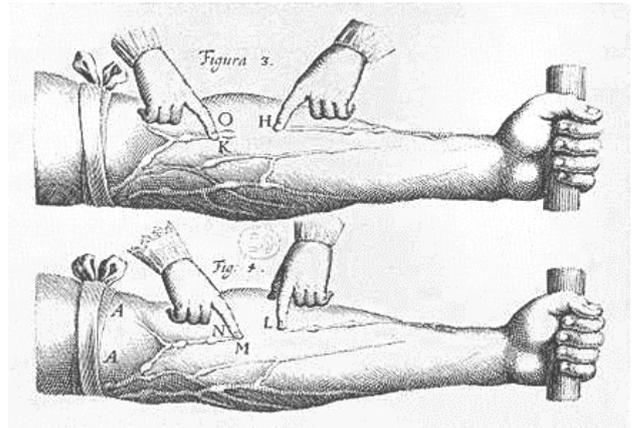


Fig. 251 Proof of blood circulation through Harvey in 1628^b

Since the invention of photography overloads us with realistic images, we stepped aside to non-figuration through impressionism and expressionism. That is also a form of withdrawal. The poetry frees itself from the boundaries of everyday linear language and thus puts us on a different footing with metaphors that connect chaotic or rationally separate experiences, with or without rhyme. Rhythm and measure (rap) creates a bridge to the music.

In the music, recognition and surprise alternate as themes and variations (Fig. 51 p55). The compositions as a whole mutually vary between the rare extremes from monotone to chaotic, more or less restrained by rhythm and measure.

The *order* of sounds ('melody') settles remarkably easily in the memory, even if it fuses in fugues, or if the key changes. This sensitivity to sequence indicates an important neural capacity, comparable to that of muscular action for movement.

Every production such as cooking according to recipe, language, counting, mathematical formulas, steps in administration and management, in education, in scientific research, of a scientific experiment, of their reporting, the construction of an argument, the telling a story, reconstructing history, all require a strict linear sequence of actions, words, numbers or operations.

After the recognition of objects, 'sequence' may also be the first developmental psychological step towards discrimination of size, distance, place and quality (p81).

^a Zöllner(2016)Leonardo da Vinci(Keulen)Taschen p446-448

^b Harvey(1628)Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus(Springfield1928)Thomas p100-101
<https://ia902704.us.archive.org/12/items/exercitatioanato00harv/exercitatioanato00harv.pdf>

The human imagination can rethink: if you want z, then first y, so start with x. You then have to see xyz first as an image to be able to formulate zyx. To a reversal of causality (*Fig. 47* p53) that is necessary for design and planning, only humans are for the time being demonstrably able to do so.

§ 45 CULTURAL IMAGINABILITY

In order not to get trapped in clichés, designers should be aware of reductions that culture imposes on our imagination. That context requires no erosion with more of the same, but new possibilities beyond the most probable.

Each modality, scale, context and object layer of design requires separate attention and summary in one concept that offers different possibilities and interpretations.

DESIGN DIMENSIONS (FIG. 46 P51)

As a designer you are included in the context of a culture and a subculture (client and stakeholders) with their own specific representations. That subculture asks you for an appropriate, supplementary facility. In order to create an object that enriches that context with surprising possibilities, you have to analyze that context.^a You can first ask the following questions about its modality, scale levels, and context layers. Then you can alternately fill these object levels and layers.

Modality

What do you expect, what do you want and what can you do? If you subtract the **desirable** from the **expectation**, then you are left with a problem field (*Fig. 3* p11). Where the expectation overlaps the desirable, no action other than preservation is required. The not expected desirable is a target field. What is beyond the **possible** can be deleted as unrealizable. To sharpen this, you have to specify the answer to these questions according to scale and context layer.

Levels of scale

Which effects on your own, larger and smaller **scale** do you want and could you accept? Each design has, in addition to the intended effect, side effects on different scales. From the smallest scale (materials) to the largest (environment), these effects must also be weighed on their probability, desirability and possibility.

To make that sharper, the answer must also be specified to context layer.

Context layers

How do you weigh your effects of physical (abiotic and biotic), technical, economic, cultural and administrative nature?

These are very different effects on space, raw materials, biodiversity, health, technosphere, the budget and the yield, the social appreciation of the object and the legal and administrative consequences at different scales. These are again divided by scale into whether or not likely desirable and possible.

^a Jong(2007)Operational context analysis as a part of design related study and research(Zoetermeer)WSEAS EEED '07
<http://www.taekemdejong.nl/Publications/2009/FutureImpact.pdf>; <http://www.taekemdejong.nl/Publications/XLS/FutureImpact04.zip>

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Object layers

In addition to those three dimensions with different assessments of the client and those involved, the design object can have its own intention, a vaguely directional idea or concept. In this way the function, structure, form and content of the design to be elaborated will be given a search direction. If the function is narrowly defined ('mono-functional'), then you can start aiming and then shift that focus to function to other object layers ('functionalism').

In a mono-functional technical design, your attention quickly shifts from **function** to **structure**, the separations and connections between often already structured part functions that have to function as a whole. With this, the **form** and **content** (choice of materials) are quickly determined. However, a design is always more or less multifunctional.

The manufacturability and marketability of large masses are also features that require a different focus in design.

Other designers start with the **form** in different alternatives. In one-off, context-sensitive designs (such as architecture) the environment already suggests a circumference. The division into components, the composition, can give rise to images of **structure** with a vague notion of sub**functions**. Conversely, lines can also be drawn from the **structure** of the environment or concept into the still empty object. The form follows then structure ('structuralism').

CONSTITUTION (FIG. 52 P63)

Cultures **differ**, that is the wealth of words, images and technical facilities to be combined in a design.

They **change**; that gives chances to escape clichés gradually or in contrast.

Which **coherence** can you make?

Which **selections** can you make?

Which **combinations** can you group into different compositions?

Which **metabolism** is possible between the components?

How do you **regulate** changes in that metabolism?

Which **organization** is needed for this?

Which **specializations** can arise?

Which **production** can this yield?

Is that **something new** in the metabolism of products?

What **security** does that offer?

How **attractive** is that?

How **recognizable**?

What **influence** can that have?