Course 9.3. Scientific cultures.

Location

9. Courses from after 2000

9.1. Logic Course 2007 (LOG1-LOG422)

9.2. Biblical themes (BT1-BT179)

9.3. Scientific cultures (WEC1-WEC144)

9.4. Notes from a number of lessons

Note: *This course has been spaced larger than the text of the original course. References in the older version of this text therefore do not correspond to the current 'Word' pagination. For this reason, the original pagination is displayed each time with the letters 'WEC'. They stand for 'WEtenschappelijke Culturen', and are derived from the old page number.*

Introduction *: This course examines the many aspects of science in a philosophical manner.*

Content : *Click on the text you want to read*

WEC1

Scientific cultures.

1. The alpha and beta culture

Library St.: *P. Courtois, Snow and the two-culture debate* (*thirty years later*), in *The Owl of Minerva* (art) 11 (1994): 2 (Wouter, 121/132).

In 1959, PC Snow, himself a physicist, gave lectures in Cambridge entitled " *The Two Cultures and the Scientific Revolution* ". Following a publication in *Encounter* , a revised edition followed in 1964: *The Two Cultures and a Second Look* , Cambridge.

Snow's Theorem.
Within the Western world, two cultures have grown apart.

1. ***The alpha culture***
in English 'Humanities' - of which the literary scholar is the prototype.

2. ***The science culture***
In English 'sciences'—of which, according to Snow, the physicist is the prototype.

Snow, apparently unilaterally designating the natural sciences as the sole source of modern-understood progress, sees traditionalism in the culture of the humanities and a belief in progress in the culture of the sciences.

Historical note
In Germany, *Joh. Adelierig, *Versuch einer Geschichte der Cultur des mensch-lichen Geschlechtes* *, *Liepzig*, 1782, upheld an analogous dichotomy, for for him 'Cultur' is a characteristic of the privileged class.

E. Hobb, culturgeschichte der Menscheit, Pfarzheim, 1843, and *G. Kleruni, Allgemeine Culturwissenschaft* , Leipzig, 1855-2, adopt a broader view that includes, for example, material prosperity.

Culture at Snow.

For Snow, for example, one speaks of “the culture” by which one understands 'Humanities'. Culture then encompasses philology (history and linguistics) as well as a philosophy of culture.

1. Snow also claims the property of 'culture' for the 'sciences'. This, although the natural sciences overlap with engineering (technology), economics (Industrial Revolution), political life, and national defense.

2. But Snow laments that both branches of that single culture—e.g., at universities—“live together apart.” He himself wants to see—what he calls—“the irrationalism” of the Humanities and—what he calls—the specialization—call it, with others, 'specialized obsession'—of the Sciences overcome as a fusion of the two.

Note - As becomes apparent elsewhere in this course, we have defined 'culture' as grasping data and subjects (= tasks - usually referred to by the collective name 'nature') and solving them in all possible domains of human life. The discussion regarding the aforementioned 'specialities' then disappears.

WEC2

2. The complex method according to Edgar Morin.

Library St.: *L. Debraine, Edgar Morin* (inter...) in, *Le Temps* (Geneva), 24.11.01.5.

Steller conducted an interview with the French sociologist *Edgar Morin* (b. 1921) regarding his latest book *l'Identité humaine* , vol. 5 (*La Méthode*).

At first glance, Morin is an encyclopedic thinker: he studied philosophy, history, sociology, law, economics, political science, thermodynamics, microphysics, and the like. We will consider his 'complex' method.

1. ***Method.***

Morin does not discuss R. Descartes' programmed method. He does, however, discuss 'methodos' in the archaic sense of 'approach'.

2.1. *Sub-methods,*

His thinking reflects the hologram principle. A hologram is an image of something in which every point contains the total information regarding the depicted object. The part is always in the whole and vice versa: the whole is always in the part.

Furthermore: the principle of the recursive loop: the consequences act back on the causes.

Finally; the dialogical principle, which resembles dialectics insofar as both the dialogical method à la Morin and dialectics view opposites inclusively of one another, but differs from dialectics insofar as the latter reconciles opposites in a 'synthesis', whereas Morin's dialectics allows those opposites to continue to exist.

Note: these three aspects of Morin's complex method are a kind of introduction to his interpretation of complexity as a method.

2.2. *Complex method.*

Complexity is omnipresent: in the world, in life, in humanity. Strictly speaking, it comes down to viewing everything that is an object of knowledge including the rest, the immediate rest and the mediated rest of the total reality.

Morin - The term comes from the Latin 'complexus' meaning interwoven.

Thus: man is

1. a biological tissue of organs and cells, which in turn are a physical (or chemical) tissue of molecules which in turn are a microphysical tissue;

2. that same human being is a fabric of psychic life, language, society, culture, history, etc.

Complex thinking is a comprehensive view of the distinct aspects of knowledge.

Note: the current usage contains a pejorative note, namely; people call anything 'complex' that appears so intricate—interwoven—that it becomes opaque and unclear, and degrades knowledge instead of building it up. Morin's knowledge of complexity is thoroughly meliorative.

WEC3

3. Complexity of a personality.

Morin uses the figure of former French President Mitterand as an application: interpreted exclusively, to some he is a great politician, to others

a Machiavellian Florentine full of tricks; viewed inclusively, as Morin's complexity sees it, he is all those opposites simultaneously in one and the same person.

What Morin sees as an example of the dialogical principle.

Objection:

What to do with the current hyper-specialized approach in the specialized sciences?

Morin observes that this fragmentation of specialized scientific knowledge has been reversing since the 1960s. Take the earth sciences, for instance. From 1960 onwards, following the understanding of plate tectonics (*note* : visible in earthquakes and volcanic eruptions), a regrouping takes place: meteorology, seismology, volcanology, and geology merge, whereby all these sciences permeate one another so that the Earth emerges as “a complex system.”

Morin attempts to overcome the fragmentation of hyperspecializations in the human sciences by prioritizing his “human threefoldness”—namely, man as the individual, humanity as a society, and as a species—as a fundamental insight. That basic complex exhibits terms that 'produce' one another (as he literally states). He briefly illuminates each aspect of “the complex system” of man, namely the enterprise.

Today's companies find themselves amidst the opaque enigmas of the global market, such that top managers no longer perceive any true predictability and are forced to pursue a flexible policy.

Note: In physics, 'complex' is any process that, although objectively determined, appears so complicated that cognitive unpredictability is the result. Morin briefly touches upon this complexity of the process in the interview.

Note: - In response to the remark that the concept of 'complex' has now become fashionable and is frequently misused in a degenerate sense, Morin replies that this applies to all basic concepts. For instance, the ideas of Freud and Marx are also in circulation in degenerate interpretations.

Note: - Morin interprets 'God' both as an all-encompassing explanation that inhibits the search, and as a non-explanatory explanation that stimulates the search: he is a follower of negative theology. “I love the fundamental mystery of the universe, of reality, – the mystery also of the origin of life and of man.” For the more we know, the less we understand.

4. Alpha, beta, and also gamma sciences.

Library St.:

-- *P. Cortois, Snow and the two-culture debate* , in: *De uil van Minerva* (Ghent) 11 (1994): 2 (...), 121/132;

-- *C. Maes, Chaos at the Edge of the Sciences* , in *Onze Alma Mater* (Leuven) 50 (1996): 3 (Aug.), 379/408 (Fri. 393/403 (chaos: God of confusion).

Three cultures.

In Germany, *W. Lepenies* talks about *Drei Kulturen* (*Soziologie zwischen Literatur und Wissenschaft*).

In other words, there are Humanities, Sciences, and Social Sciences (linguistics (including structural studies), psychology and sociology, economics). This is not without posing serious problems.

People rightly complain about the highly improper use of terms from the natural sciences in the humanities: the physical concept of 'chaos', for example, is, according to him, not incompatible with determinism: nature is objectively, in itself, deterministic, but cognitively we often lack exact insight into it, such that “determined course” and “(for us) predictable course” are not the same. In environments outside of physics, people do not seem to realize this.

The humanities.

Since the 1950s, the term 'humanities' has emerged instead of the traditional term “moral and political sciences” descending from the ancient Greeks—and also instead of the Geisteswissenschaften as Dilthey conceived them.

Foi et valeurs in *Dimanche* , the French-language parish magazine, gives the floor to UCL sociologist Rudolf Rezsohazy. Our Cardinal: “I am not alarmed. But concerned,” in other words, the new methods in, for example, the sociology of religion, which are rather borrowed from the natural sciences and adapted (to be mathematical). That demonstrates one case of social science.

D. Villey/Col. Nême, Petite histoire des grandes doctrines économiques , Paris 1992-2 (fl. 315/ 346: *l'apport des disciplines voisines* : *économie …. Psychology en sociologie*) states what follows:

1. Economic science aims to construct an overarching theory (Keynesian, ne-Keynesian).

2. That same science knows—besides economics (matrix mathematics, linear programming, game theory (?), macroeconomics)—the integration of, for example, psychology and sociology, but then as social behavioral sciences.

Unlike classical psychology and sociology as humanities sciences.

Conclusion:

Culturally speaking (to stay within Snow's terminology), there are currently three culture types that, as Maes underlines, can pose problems when mixed.

Note: - The gamma type is strongest in cognitivism as it has gradually emerged since the 1950s. More on this elsewhere.

WEC5

5. Religious obscurantism today.

Library st.: *Alex Mauron, Obscurantistes de tous les pays* in : *Le temps* (Genève) 12.06 2001,6. Mauron is an ethicist at the University of Geneva. We reproduce his observations as literally as possible.

1. ***The current position of biology*** .

The current theory of evolution, which springs from both Darwinism and population genetics, demonstrates the fundamental genetic unity of the human species, in which so-called racial differences are merely superficial.

2. ***What religious foundationalisms 'make' of it.***

Steller connects to two facts.

a. Sharon Broome, Republican representative, proposed a resolution to the Louisiana (USA) Legislative Assembly deploring all situations and ideologies (note: thought constructs) that are racist in origin, and immediately denouncing the basic tenets of that Darwinism which posits that some human races and classes are substantially superior to others.

b. A creationist (*note:* rejecting the theory of evolution) foundation in Istanbul was convicted of defamation after it instigated anonymous threats against five Turkish biologists, who were charged as 'Darwinists' and 'Maoists'.

The Virtue Party, an Islamic organization, is incidentally pushing for the banning of the theory of evolution in secondary education.

Behold two remarkable “writings on the wall.” Mauron continues. In *Le Temps* (07.09.1999), the efforts of some—primarily American—religious circles to scrap the theory of evolution were already denounced.

Globalization

Mauron. Attacks of that type were increasingly carried out by globalists and 'ecumenists' (*note:* bringing religions together). This globalization is facilitated by the vast resources at the disposal of American fundamentalist (*note:* authoritarian conservative) Protestant organizations. These enjoy the support of willing allies in President Bush Jr.'s administration and in the ultraconservative *think tanks* (note: ideological vanguards) that inspire them.

Ecumenism.

The kind of ecumenism that is in the worst state today is the ecumenism that brings together all integrists (*note:* authoritarian conservatives) of all religions.

WEC6

6. If one knows what follows: the Calvinist fundamentalists

The Calvinist fundamentalists who for a long time independently substantiated the anti-evolutionary struggle came to the realization that their theological and cultural isolation (*note:* from other churches that are open-minded) put limits to their influence.

Consequence: their organizations attempt to obscure their message by stripping their opponents of their honor. Furthermore, they insidiously equate Darwinism and racism.

They also cover it up by providing ideological support to fundamentalists from other religions.

For example, the Turkish creationist foundation (mentioned briefly above) is supported by the Californian Creation Science Institute.

Incidentally: Mount Ararat, mentioned in the Bible, where Noah's ark is said to have landed after the flood, is an archaeological site that fascinates such circles: they would like to find the remains of Noah's ark there.

The relationship 'science/religion'

Such exchanges of methods among the enemies of secularism (*note:* a movement that seeks to ban every religion as a personal choice from public life) should prompt us to reflect on what needs to be thought regarding the relationship between "science and religion" in our culture.

1. We are told ad nauseam that there is no conflict between the two forms of culture.

2. But the following.

2.a. This applies grosso modo to the European Christian churches that are nourished by a university theological tradition that usually testifies to an open mind.

2.b. Outside that context, however, science is often only acceptable if it simply submits to the absolute dominion of what religions claim. No contemporary fundamentalist will admit the existence of a "science/religion" conflict as a fact. He "solves it" either by wiping off the map elements in science that are troublesome or by reducing science to a set of technical instruments and skills.

Note: - It is visible:

1. the indisputable results of current biology

2. are interpreted by some (fundationalist, integrist, fundamentalist) axiomatics

3. such that what Prof. Mauron has briefly outlined above is pronounced as "absolute religious truth".

The schedule again and again:

(a) what biology says,

(b) seen through the fixed lens of foundationalist religions,

(c) makes what they claim understandable but reprehensible for the reason of (b).

WEC7

7. Ch.SS. Peirce's theory of science.

Ch.S.S. Peirce , in his **Fixation of Belief**, in: *Popular Science Monthly* XII (1878), 1/15, sketches out what science is not and what science is.

a. *What refutes is disregarded in order to form the following opinions.*

1.1. *Stubbornness Method*

As an example, Peirce mentions someone who was a rabid supporter of free trade. To keep his opinion intact, he read only texts pro-free trade. The 'truth' is reduced to the cherished, individual notion that is axiomatically put forward.

1.2. *Orthodoxy method*

What others who appear authoritative predict in the past (e.g., tradition) and the present (e.g., charismatic leaders) is echoed in an orthodox manner (do not confuse with sincerity). According to Peirce, ecclesiastical circles (e.g., Rome) and also political circles activate this opinion formation among their followers.

2. *Preferred method*

'Rational' people readily embrace the method of free discussion, in which every individual or viewpoint asserts what is advocated "a priory," that is, preferably, but without testing it against reality outside the closed sphere of discussion. However, in contrast to both previous forms of opinion formation, the opposing opinion is accepted.

b. *Scientific method.*

Whatever refutes upon testing against reality is taken seriously. Peirce calls himself a scholastic realist. Hence, he allows science to arise from reality itself insofar as it is objective comprehensibility. Specifically: whoever encounters an objectively given 'reality' (it is Peirce's English word) as a cognitive being, susceptible to knowledge ('cognition'), will, upon testing, encounter the same given and its 'forma' (understand: concept) time and again.

That is why Peirce lists "external permanency"—external (i.e., situated outside and independent of our opinion) durability—as the main characteristic of scientific rigor. Discussion, yes; testing (with refutation), too; but also "in the long run"—that is, in the long run! The latter means: in the long run, objective reality prevails.

Note: - William James (1842/1910) once said: "Every new doctrine goes through three phases:

1. they are attacked as absurd;

2. they are accepted as truth without importance:

3. one realizes "in the long run" its true scope and, although initially very dismissive, claims the honor of having discovered it.

In other words, the first three opinions are also—sometimes vigorously—at work in scientific circles until the fourth refutes them as false: “in the long run”.

WEC8

8. The foundations crisis. Acting as rational with sufficient reason.

3. “If there is sufficient reason, then my commitment to something rational.” That is the theme of this little chapter.

Bibl. Sample: *E. Oger, literature study* (*Rationality, its foundation and its monsters* , in: *Tijdschr. V. Filosofie* 54 (1992):1 (Mar), 87/ 106.

Postmodernism presents itself as a critique, or at least an investigation into the foundations, of all possible foundationalisms, including modern foundationalism.

Fundationalism.

This is the firm and decidedly decisive conviction that our behavior, understood as commitment to an ideal (a design in more neutral terms), is rationally justifiable. Through the application of reductionism, our 'reason' is capable of making our commitment rationally demonstrable as thoroughly justified.

The last reason.

The very last reason is, of course, the axiom of reason itself, namely: “All that exists has a sufficient reason in or outside itself or the two; as J. Derrida puts it, that axiom is common at all our universities.

But, if there is talk of a final reason, then one means that interpretation of the very last axiom which must serve as a pedestal, a 'justification', or a fully rational justification for our life projects.

An application .

Someone dedicates themselves to the poor. When this person wants to take some responsibility, they must ask themselves the question: “On what grounds do I actually dedicate myself to the poor?”

The interpretation is clear: “Everything I do as a commitment to the poor has, within itself or outside itself, or the two, a sufficient reason.” That

sufficient reason is the “ultimate reason” as the motive for acting on the part of my behavior.

Discussion.

Karl Popper designates the axiom of reason as a form of faith; Karl Otto Apel sees it as a condition of pragmatic communication; Jacques Derrida believes that it has no 'ground' but is based on an 'abyss'. So much for the very last foundation.

Existentialism put to the test by critical reason.

E. Oger focuses on two works by *H. Albert* , namely *Traktat über kritische Vernunft* (1969) and *Die Wissenshaft und die Fehlbarkait der Vernunft* (1982). We present the most important points because Albert discusses the strictly rational-critical justification—the foundation—of every existential commitment.

WEC9

9. Basic positions.

H. Albert (1921) is a critical rationalist in the sense that he adopts the neutral scientific attitude adopted by the positivists:

1. the facts, the bare facts without value judgments regarding them,

2. a theoretical formulation that is physically (preferably), logically (logistically and/or mathematically), or similarly testable by the research community of academic scientists.

Corrective:

He paradoxically combines this detachment from practical life, characteristic of the cool, scientific man, with a deep commitment to values such as existentialism, understood as a philosophy of commitment ('engagement') to some kind of design (call it, for example, a life ideal).

Note: - The basic couple of existential life that finds its origin with the Danish writer Søren Kierkegaard (1813/1855) is “thrownness/design”. For we are all 'thrown' onto this earth as human beings, but in such a way that we can interpret that thrownness freely and make a design of our lives—call that a thought for which one lives and dedicates oneself.

Note: - H. Albert calls the established and traditional forms of our culture (e.g. our religion, morality, politics) 'dogmatic', i.e. “resistant to anything that constitutes critical scrutiny.”

The axiom of reason in existential interpretation.

Everyone who pursues a personal project in life desires a strong degree of certainty. Well, certainty regarding one's commitment to life presupposes a 'final,' decisive, convincing reason or ground that justifies, 'founds,' or 'justifies' the commitment to a project.

The evidential value of existential foundations.

In this regard, according to Oger, Albert formulates a trilemma, that is, a choice that sees three possibilities to safeguard a final reason as an application of the very last reason, namely the axiom of reason in general.

If (pursuant to the axiom of reason) there is a final reason of my own, then my own effort is rationally justifiable.

a.1. ***Regressus in infinitum.***

In the broad sense, 'regression' is a return, a return of a concluding clause from a … preceding clause, or sufficient reason.

Applied - e.g.: “I am very much in favor of helping the poor through alms and especially structural reforms regarding the economy.”

WEC10

10. Psychoanalysis and “regressum ad infinitum”

A psychoanalyst friend would delve into the regressum ad infinitum and, for example, attempt to expose unconscious tendencies in order to ground the 'ultimate' reason for “feeling so strongly for it.” In his own way, for then the question arises: “How valid is that psychoanalytic reasoning which goes back (regressus) from a ‘good feeling’ to the depths of the soul?” From this, one can again seek the justification that is a return to the 'ultimate' reason of the entire enterprise called psychoanalysis.

“In infinitum” means that one can thus fall back on the reasons or grounds of the reasons or grounds “without end”.

From the concluding clause—to put it logically—“I am very much in favor of it…” one can trace infinitely many preceding clauses as reason or basis!

H. Albert considers that method unfeasible because it is never-ending. Endless.

a.2. ***Circulus vitiosus.***

An invalid circular argument. - I. Kant defines a vicious circle as follows:

1. one wants to prove something, 'found' it,
2. To prove that, one starts from that which is to be proven.

So concrete: “I am very keen to help the poor. Because it makes me feel good.” Oger calls that a zero foundation. With good reason.

b. ***The statement of a final reason.***

One no longer reasons in terms of reliance on a ratio, a rational justification, and abandons that form of rationality.

But the last (and the very last) foundation is considered certain on the basis of direct experience and intuition.

Like this: I am very keen to do something for the poor, because it makes me feel good. This good feeling gives me a great, beneficial certainty regarding the justification or foundation of my commitment to the poor.

For Albert's critical rationalism, 'reasoning' in this way is establishing a foundation on arbitrariness or even dogmatism.

Decision:

Since, in a critical rationalist sense, a final (and even the very final, axiomatic) foundation is impossible, the 'existential' solution remains: “Continue with merely provisional certainties, not final or very final ones.”

Note: It is clear that this manner of rational or existential action is that of most people. That is why we dwelled a little longer on Albert's critical rationalist theory. However, the axiom remains: “Only if there is a sufficient reason, then all that exists, is rational”.

An axiom that is susceptible to many valid and, above all, partially or wholly invalid interpretations. One can call this 'irrationalism'.

WEC11

11. Method and ideology.

Joh . *Fischl, Materialismus und Positivismus der Gegenwart* , Graz, 1953,40: “Lange readily acknowledges materialism as a method of scientific inquiry but denies it the right to become a philosophical worldview.

As a philosophical worldview, it has – according to Lange – long been refuted by physiology and especially by Kant's philosophy. This refers to the Neo-Kantian *Fr.A. Lange* (1828/1875), known for his * *Geschichte des Materialismus und Kritik seiner bedeuting in der gegenwart** (1866-1; 1873/1875-2).

1. *Methodological materialism/ideological materialism.*

The scholastics state that a single given is susceptible as—what they call—a material (understand: undefined) object or given as given to a multitude of formal objects, those aspects of the material object that become apparent if one approaches it from one form or another (here in the sense of perspective, standpoint, viewpoint).

Thus: to view the totality of all that is (or diachronically: all that ever was, now is, ever will be) as a materialist, di as one who pays attention (observes) only to what – in any case – is (coarse) matter. Lange's distinction is an application of the scholastic adage “material/formal object”.

1.1. *The methodical materialist*

The methodical materialist indeed focuses first and foremost, and as a consciously defined standpoint (= formal object), on everything that is material within everything that is, but does not exclude attention (= formal object) to what is non-material. He merely methodically neglects all that is non-material.

1.2. *The ideological materialist*

The ideological materialist (also called a “metaphysical materialist”) focuses on the material—not in the inclusive sense like the methodical materialist, but in the exclusive sense.

Even if what he establishes as beyond his grasp of the reality that is his own is experienced and interpreted by others in a non-materialistic manner, he still attempts to explain that non-materiality materially.

The immaterial soul, all that is sacred in the strictly religious sense (God, for example), are expressed in purely material terms, reduced to the purely material. This reduction leads to exclusive materialism being labeled as a reductionism.

Behold what Lange, in the 19th century, albeit as a Kantian, very clearly perceived and articulated.

12. Materialist ontology.

Traditional ontology addresses two questions that are typically ontological: “How real is something?” and “How is that same something real?”.

The answer is the opposing pair “existence/essence”. The materialist reframes these questions: “How material is something?” and “How is it material?”

1. *The reduction:* - A concrete ***application.***

Human consciousness is one of the sticking points of current materialism. It is a unique sight to see how materialist interpretation neglects all metaphorical or similarity models, indeed categorically rejects them, and accepts only metonymic or coherence models that are interpreted reductively.

For the spiritualist, consciousness is “the light that our mind casts upon all that is”. 'Light' is a metaphorical model: whoever is unaware of something is groping in the dark regarding that something, which is the opposite of light.

Whoever receives a blow to the head and falls into a swoon, that absence of consciousness, demonstrates that the head —the brain or the cerebrum as part of the whole body—is connected with consciousness. The spiritualist fully acknowledges these connections, and thus defines consciousness in terms of the brain: “Consciousness, if not hindered by brain injury and the brain therefore still functions properly, illuminates the data of our experience” (and even the whole body: whoever drank too much alcohol undergoes a change in consciousness and even the whole body can show changes), illuminates the data of our experience”.

In other words: the brain, indeed the entire body, is a metonymic or coherent model of conscious life.

The materialist systematically avoids consciousness as light and reduces everything as its model to the metonymic or coherence model: consciousness is the brain but with a certain illusion, which the spiritualist calls 'consciousness'.

2. *Axiomatic experience.*

The exclusive materialist can be characterized as follows, formulated axiomatically:

2.1. There are certainly material facts and immediately material presuppositions. Logically expressed in ABC terms: “If (A) is given and (B) only material interpretations, then (C) the given, and indeed the entire given, is understandable.

Note: - As briefly outlined above, consciousness is represented solely in coherence models derived from purely material data, both as experience and as a presupposition (sufficient reason, explanations).

In an analogous manner, the exclusively materialist deals with the immaterial soul or with the sacred (e.g., God): matter, matter alone, is the source of models for speaking about those things—fictions. Hence, physics, and indeed the natural sciences, play such a role in explaining facts, indeed, in perceiving or becoming aware of them: axiomatic experience.

WEC13

13. Mathematical thinking

That mathematics is applied logic is so clear that we will not dwell on the argument for it. That mathematics in its current form—or rather, its wealth of forms—is “a logically coherent system of objective sentences” is not so immediately clear.

1. Its rapid development means that a single person can hardly grasp the whole.

2. The problem is the term 'objective'. Opinions differ regarding the metaphysics revealed in it.

The nominalist will easily call them a construction of the mind that, as it were, “hangs in the air”, unless there are additional mathematical applications.

The abstractionist views them as a distinct form of reality in themselves, while the ideatist sees in them a realization of ideas. In any case, the founders of logistics were primarily Platonists.

Quantity:

Ch. Lahr, Logique , Paris, 1933-27, 559/569 (*Les sciences mathématiques*) states: “Mathematics is the science of quantity”.

Lahr defines 'quantity' as both numerical and spatial mathematical quantity.

Note: - Briefly considering the enormous number of mathematical equations that take the differential “greater than/ equal to/ less than” as their basic form. Which is clearly to be understood quantitatively. For geometry or spatial mathematics, the quantitative aspect is clear in its own way.

A new definition.

PH. Davis/ R. Hersh, l'Univers mathématique , Paris, 1985, 6 says: a naive definition, belonging in the dictionary and suitable as a first approximation, reads: “Mathematics is the science of quantity and space”.

1. The proposers add to this: “… as well as of the system of symbols that connects quantity and space”.

2. They further state that

a. that definition “rests on actual historical grounds” and that they make it their starting point, but then to

b. to depict the developments of mathematics since the last centuries and the various interpretations of mathematics in the broadening definition.

It remains the case that arithmetic (quantitative aspect) and geometry (spatial aspect) remain the starting point for Davis and Hersh for historical and practical reasons.

A substantive definition of mathematics in its current forms is therefore better regarded as some lemma or other, which is a provisional definition.

WEC14

14. Deceptive summative induction.

The general 'forma', formula, of summative induction reads: “From each individual decision to all collectively”.

Summarizing a multiplicity (set, system) based on a common property.

For example: a boy has counted a marble, each one individually, and concludes: “I have twenty, which is the summary or summa (sum), marbles, which is the common property.

When he has taken apart an old alarm clock and counts the number of parts, he 'summarizes', i.e., makes the sum: “I have forty-four alarm clock parts in total”, (“forty-four in total” is the summary; 'alarm clock parts' is the common characteristic).

In the first case, the sum is distributive (each instance is a marble, all instances make up the entire set); in the second case, collective (each part belongs to, together with the rest (dichotomy) makes up the whole set).

High-quality jumps during summer training.

Pinch. The heap of grain.

One grain does not make a heap of grain, nor do two, three, or four, or any grain like that. So, a hundred or ten thousand grains do not make a heap of grain either.

Where lies the sophism, that is, the deliberately practiced invalid reasoning? First of all, the property “(not yet) a heap of grain” is attributed to a single grain. Which is true. But with increasing quantitative change in the number (summa or sum) of accumulated grains, one deliberately skips the qualitative leap. Three grains is already “a tiny heap”. Ten thousand is already an impressive heap of grains.

The concept of 'hope' encompasses two characteristics:

1. a sufficient number to show, compared to exactly one grain or at most a few that at a glance provide a manageable number of grains,

2. to evoke the concept of a 'grain heap' with a qualitative leap.

Incidentally: “the heap of grain” is attributed to Eubolides of Miletus (-380/ -320), of the Minor Socratic school of Megara.

At a gas station.

“How much does one drop of petrol actually cost, madam?” –“A pittance, of course.” –“Then just fill my tank (sum), Madam.”

Note: - Compare the drop of petrol to Eubolides' grain of wheat and “the tank full” to his 'heap of grain'! Once again, with quantitative change, a qualitative leap (here: the price) occurs that is playfully denied.

As humor, it is a synecdoche: people do say “Just fill my tank (for a trifle),” but humorously, they also mean that a full tank entails a price that takes the qualitative leap (full tank) into account (which is quantity in terms of money).

15. Mathematics as set theory.

T.H. Heath, A Manual of Greek Mathematics , New York, 1963, 38, states that the first definition of arthmos (Greek translation), number form, is attributed to the first famous Greek thinker, Thales of Miletus.

It reads: “Mon a don s u stema”, a system of units. Euclid of Alexandria (-323/-283) in his Elements of Geometry defines: “Plèthos harism e non”, a well-defined set. Let us note that 'sustèma' can also mean 'set'.

Mathematics as set theory.

D. van Dalen, Philosophical Foundations of Mathematics , Assen/Amsterdam, 1978, begins with a first chapter:

“Set Theory, a Platonic Paradigm”, (oc 1/18)

1. *Naive practice today:*

“Anyone who opens a mathematics textbook nowadays gets the impression that mathematics cannot be practiced without sets.” Steller complains about “the fashionable terminology” and “sets as mere handy aids.”

2. *Abstract mathematics today.*

In 'higher' mathematics, essential use is made of the concept of a set: 'modern' mathematics, which thinks abstractly, after all, designates 'sets' as 'the elementary building blocks' of its object.

For example, a single 'group' is one type of set in which terms such as “ordered quartet” and 'map' occur. Even old acquaintances such as natural numbers, integers, rational numbers, and real numbers “are difficult to reduce to sets with little effort”, according to Van Dalen.

Conclusion

This experience of more than half a century of 'extrapolating', i.e. generalizing, leads one, like Van Dalen, to the standpoint “Everything is a set” or “mathematics is set theory”.

Which implies that there are no irreducible 'primordial elements', to be understood as “separate, individual things” that are not sets. Indeed: one instance ('element') of a set is “a set with exactly one element”.

Note: - Formulated scholastically: if quantity and space are the material objects of mathematics, then sets are its formal object.

Singular: quantity and space viewed insofar as sets are present within them. The term 'set' determines (in other words) the perspective from which quantity and space are approached.

WEC16

16. Mathematical analysis (François Viète).

Library St.: *Otto Willmann, Geschichte des Idealismus* , III (*Der Idealismus der Neuzeit*), Braunschweig, 1907-2, 48 ff..

François Viète (Lat: Vieta) (1540/1603), a Platonizing mathematician, introduced letters to denote known quantities (consonants) and unknown quantities (vowels).

1. *Calculation. - Logistica numerosa.*

Before Viète, Western mathematics knew practically only arithmetic. For example: “3 + 4 = 7”.

2. *Literal arithmetic. - Logistica speciosa.*

In his “ *In artem analyticam isagoge* ” (Introduction to Analysis), Viète wanted to work with Platonic ideas, in Latin 'species'. Hence “Logistica speciosa”. This is an ideative arithmetic that, instead of working with singular or particular numbers—which is what using digits is—worked with universal numbers. This is: sets. Diagram.

colloquial language	numerical language	literal language
The sum of two (or more) Ideas interpreted as numbers And thus regulatory models.	3+4=7 figures as application models.	a+b=c letters as regulatory models
Non-surgical universal	Surgical Non-universal	Surgical Universal

From eidetic (semantic) signs to syntactic signs.

JM Bochensky, Philosophical Methods in Modern Science , Utr.: Antw., 1961, 55ff. (Eidetic and operative sense) says the following.

1. A sign, if one knows the reality to which it refers, has an eidetic or semantic content.

2. A sign, if one knows how to handle it (without thinking of the eidetic (semantic) meaning), has only an operative or syntactic meaning. - "We do not know what (*note:* in the reality structured outside of it, semantically) the sign means, but we do know how we can operate with it (note: perform logically justified operations)". (Oc, 55).

The relationship.

If the eidetic meaning is known —e.g., 3 + 4—then an operative sense is immediately available (e.g., 3 + 4 = 7). Not the other way around: one can assign an operative meaning to a sign without any semantic meaning (e.g., a + b = c).

Logical syntax.

Thus, Viète founded a syntactic (= operative) mathematics using his letters as lemmas. Analysis is therefore the elaboration of what can be done with those lemmas (empty shells) regarding mathematical operations—logically justified. This is how, for example, analytical geometry originated. The name testifies to the lemmatic analytical method.

WEC17

17. Further description of the lemmatic-analytical character.

Whoever works purely operatively works with lemmas of a particular type: the general content (e.g. a as a known number) is indeed known, but as an empty shell awaiting filling (e.g. a as 3). - Viète's process is twice Platonic.

1. The process is ideatative, because it works with ideas as empty shells with universal scope (e.g. a stands for all possible digits as substitutions) and thus with sets.

2. The ideas are ipso facto lemmas, applicable in the course of an analysis precisely on the basis of the substitutions and the associated operations (which demonstrates the operative character of the mathematical ideas).

Viète himself says: "Analysis is working with the subject ('queaesiteria') as if the given ('concescum') were such that, on the basis of the inferences derived from it, the subject itself is revealed."

Note: - The rule of three shows this: “If 100% (the universal idea) is 25 and if 1% (the singular instance) is 25/100 then 10% is 10.25/100”.

The query itself is the result of 10.25/100; the lemma is 10% that is revealed via 100% and 1%. It also appears that the analysis consists of situating the query in the form of the lemma (the "as if" given; here 100%) within a network of relations, here the structure of the rule of three.

Note: Heath's formula (n.(n+1))/2 is the idea as a lemma for the visualizing models of the Pythagoreans with their triangular numbers, while the formula a to the power of (m+n) is the lemmatic idea for their square numbers.

The endless richness of interpretations of the abstract-universal idea compared with the limitations of numerical models, however visual.

Extensions

O. Willmann, oc, 48ff. -Steller quotes.

1. *Function theory.*

The unknown is replaced by a variable unknown: instead of a, namely x.

Incidentally: “function of” means “dependent on”. (Thus “ x = y + z, d x is a function (dependent on) Y and z as dependent variables.

2. *Analytical geometry.*

R. Descartes (Géométrie (1637)) and P. Fermat (161/1665) founded analytical geometry in Viète's footsteps. Thus, $r^2 = x^2 + y^2$ as the formula for circles with r as the radius within the Cartesian coordinate system (x-axis and y-axis).

3. *Infinitesimal arithmetic;*

G.W. Leibniz (1682) founded this branch of mathematics which deals with differentials and integrals (limits of sums).

WEC18

18. Syntactic rules in mathematics.

Library St.: *IM Bochenski, Philosophical methods in modern science* , Utr./Antw., 1961, 52/54.

For simple operations that are still visually understandable, we can do without syntactic rules. “When dealing with somewhat complicated operations, we must limit ourselves to the syntactic rule.” By understanding: the syntactic rule is the visual aspect.

Mathematical operations.

Let us consider the application of the syntactic rules.

1. *Logical analysis. –*

27
x 35
____
135
81
____
945
_____
DHTE

We write a multiplication as follows: The 1 of 81 belongs in the tens place and therefore below the tens place of the number placed above it.

Bochenski: “When multiplying, do not dwell on that. We simply apply the syntactic rule: Every multiplication (and thus every number rule) must be moved one place further to the left.”

Note: This causes the mechanical aspect of any practiced arithmetic defined in a syntactic rule. In other words, a machine calculated for that purpose performs just as well as an attentive human.

2. Ancimative operation.

Bochenski's example.

Gg. The mathematical equation $ax^2 + bx + c = 0$.-

Gv. 'Solve' this equation.

We start by moving c to the right, but adding the opposite sign. That gives: “$ax^2 + bx = -c$”.

Bochenski:

We act according to a syntactic rule which states: “Every member of one side of a comparison may be moved to the other side, but must then be given an opposite sign”.

Combinatorics.

Someone once wrote that mathematical operations are applied combinatorics. Indeed, both the arithmetic and the hypothetical operation consist in filling in the positions of an appropriate (i.e., not just any, but a logically justified) configuration in the right manner, i.e., logically justified.

Who does not see that the configuration thus defined is an idea, i.e., an abstract-universal form or structure that, as a collective lemma, awaits the fitting fillings therein that represent the analysis which, starting from the given (gd), leads via the collective lemma (grid) to the requested outcome? Provided one places the digits and the letters and the signs correctly.

WEC19

19. Mathematical formalism

Library st.: *IM Bochenski, Philosophical methods in modern science* , Utr./Antw. 1961, 51/62 (*Formalism*).

Calculation proceeds in a formalized manner. However, with the extension and adaptation of syntactic rules, every formalized language is a calculation using signs ('symbols') that are combined just as logically strictly within the logically strict framework of appropriate configurations.

Semiotic basis.

An anecdote. —“Jantje,” the teacher asks the son of a sheep breeder, “if there are eleven sheep in the meadow and if six jump over the fence, how many remain in the meadow?” —“None.” “Why? Eleven minus six isn't zero, is it?” —“I really don't know that, but what I do know is that if six of the eleven jump over, the other five follow.”

1. *Syntax.*

“Faict ficta facit”. The West Flemish priest Van Haecke formulated this little Latin phrase. Using the same letters as those of Faict, his superior, he formulated “a syntactically well-formed sentence” which translates to: “Faict commits imaginary things”.

2. *Semantics.*

That syntactically well-formed sentence (every letter is in its proper place) refers to a reality, namely the person and, above all, the working method of the superior. If that person and his working method actually exist as he formulates them, the sentence is 'semantically meaningful', in other words, true, a representation of reality.

3. *Pragmatics.*

The syntactically well-formed and semantically meaningful sentence aims at a result, namely to amuse oneself at the expense of the superior who, according to Van Haecke, pursues utopias.

Formalism.

Formalized language limits itself to the syntactic aspect. It consists of terms that, free from semantic scope and pragmatic teleology, are processed solely according to syntactic rules. Following the example of all arithmetic.

The difference between mere syntax regarding arithmetic—the teacher says: “eleven minus six is five”—and the semantics of the matter, namely that the eleven, the six, the five, and the minus sign are filled in—the boy says: “not a single one”—is humorously clarified in the anecdote: universally abstract is “12 – 6 = 5”, but concretely—individually regarding sheep jumping over the fence—is “11 – 6 = 0”, due to the herd mentality of animals.

Once again: with arithmetic or general mathematical signs treated in a logical manner, blackened paper (as Bochenski says) holds true within formalized language, but outside of it, circumstances help determine the meaning in sometimes surprising ways.

WEC20

20. Differentiation (mathematical and non-mathematical)

'Differentiating' is to be understood
totality (collection or system)
b. subject to an internal comparison such that (large or small) differences are revealed.

A 'differential' in the strict sense is a set of values situated on both sides of a systechi (opposite pair) according to a norm that is “greater than/less than”.

The rule of three.

In fact, it is usually the percentage rule of three (which expresses percentages). One differentiates between the extremes all and exactly one all intermediate values (some). This differential allows one to differentiate the requested value with respect to a given value by reasoning from 100% (universal set) via 1% (one instance) to x%, which is the requested value.

Accuracy.

In the percentage rule of three, one is accurate to 1/100. -The same rule of three can be made more accurate by identifying all (universal sets) with 1,000, 10,000, 100,000, etc., and thus being accurate to 1/1,000, 1/10,000, etc.

Accuracy.

This is that accuracy that is accurate in numbers to within a certain degree.—This is, of course, the power of mathematical accuracy.

Non-mathematical differentiation.

Here, the series of differences (in identity) is classified (differentiated) according to qualitative jumps based on quantitative changes.

a. ***Measurable jumps.***

Ice (0°C) / liquid water (temperature greater than 0°C) / water vapor (temperature greater than 100°C). Here, material nature (H2O) itself shows qualitative leaps during gradual temperature changes (forming differences): ice is not a liquid and vapor is not a liquid.

b. ***Non-measurable jumps*** .

Clothing can be “very modest/ modest/ less modest/ tending towards immodest/ immodest/ offensively immodest”. The differentiation lies in the presupposed concept of 'modest'. It is evident that cultural differences play a major role here, although ethnological research shows that in all cultures, however different, the differential mentioned here applies, except among members of a culture who place themselves outside normative modesty.

c. ***Floating measurability.***

A small amount (pocket money), a small sum/ an amount (sum of money)/ a large amount (capital) form a differential where the sequence “small/ intermediate value/ large” can be quantified, but represents fluctuating qualitative jumps.

WEC21

21. Mathematical and non-mathematical probative force.

Library St. : *J. Chlebny, les maths font leur preuves* , in *Journal de Genève, Gazette de Lausanne* 10/11.09.1994.

At the 22nd International Congress of Mathematics (Zurich), PL Lions (b. 1956) received the Fields Honorary Award for his meritorious work in the field of applied mathematics.

The distinction between mathematical and non-mathematical proofs.

Here is how Lions puts it: “If mathematicians are sometimes not very popular with some scientists, it is due to the profound importance that mathematicians attach to proof.”

1. *Mathematical.*

“Mathematics is the only science that provides definitive and irrevocable proofs, based on a kind of reduction that leads to an indisputable result.” Thus Chlebny.

2. *Not mathematical.*

The other specialized sciences test a theory against some experience or other. This inevitably involves inaccuracies.

Applicative model.

According to physics, the fall of bodies is governed by a very simple law. However, observation in this regard is not in itself proof. After all, one must take into account, for instance, air friction and the time required for the equipment to react. The relevant law is therefore, although theoretically posited, not verifiable in an exact manner. That concludes Clebny's report.

Note: Whether all physicists agree with this is the question. It is, however, a fact that non-physical testing (of a law or a theory, for example) is situational, occurring within a context of circumstances with the possible influences of others. Whereas mathematical proofs take place outside such situations—put on paper in the pure spirit.

Note: - *Ch. Lahr, Logique* , Paris, 1933-27, 566/569 (*la démonstratrice*) states that the principal types of reasoning in mathematics are the following.

1. *Deductive.*

Axioms and theorems derived from those axioms serve as sufficient reason to logically and rigorously deduce further conclusions from them.

2. *Reductive.*

One posits (as a lemma) a theorem to be proven at the beginning, in order to then provide the proof step by step (algorithmically) (as an analysis).

Note: This is correct in empirical mathematics, but within an axiomatic-deductive system, this second, so-called reductive type amounts to a deductive proof supported by the presupposed and 'foundational' axioms and theorems deduced from them.

One need only think of the so-called mathematical induction, for example.

WEC22

22. Axiomatic definition of a mathematical concept.

Giuseppe Peano (1858/1932), one of the founders of modern formalized mathematics, defines the concept of “positive integer” (these are the three subterms of the integer that expresses the single concept) as follows:

1. Gg. - The logical (logistic) terms 'class' (concept), 'member of a class' (example), and 'implication' (if, then), - the numerical mathematical terms 'number', '0' (zero), “1, 2, …” (example of a number), “a, b,…” (alphabetical numbers) are phenomena that are given or known. That is the phenomenological basis.

2. Gv. - Requested: a definition that expresses the content of the concept of “positive integer” in an axiomatic manner (in which the term 'postulate' disappears as distinct from 'axiom');

Solution: - The following axioms define the content.

(1) ***The successor of a number.***
If a is a number, then a+ (= a + 1), i.e. the successor of a, is also a number.

(2). ***The successors of numbers*** .
If a and b are numbers and if a is the same as b+, then a is equal to b. In other words: two distinct numbers also have two distinct successors.

(3). ***Mathematical induction*** .
If S is a class (concept) of which 0 (zero) is a member and every member of S (instance) has a successor within the class (concept content) S, then every number is a member of S.

Note: - If a property (e.g. having a successor) is a characteristic of 0 as a member of the class (concept) S and if that property is also a characteristic of the successor, then it is a characteristic of all members of S, i.e. of all positive integers. Or in other words: the characteristic in question is a common property of all instances of the concept in question. - One generalizes, starting from 0 and 0+, to all other members of the class (concept) S.

(4) ***The positive integer.***

If a is a number, then a+ (the successor of a) is not 0.

Note: - Thus, for example, –1 is axiomatically non-existent because 0 is the first number in the sequence of numbers.

Abbreviated

1. 0 is a number.
2. The successor of a number is a number.
3. Different numbers have different successors.
4. The axiom of induction.
5. 0 is not the successor of any number.

These axioms are a definition such that the content, the entirety of the content, and the sole entirety of the concept of "positive integer" are distinguishable from the rest of all that exists. The extent to which the content refers is evident from the totality of all possible arithmetic operations permitted by the axioms, and which constitute its infinite richness.

WEC23

23. Axiomatics as a concept.

1. The axioms of Giuseppe Peano, outlined above in colloquial form (formalized language differs in terms of strict formulation), are a collective concept (system) of five axioms that express as many characteristics defining the positive integer in terms of its content.

Collective understanding.

This implies that one axiom, for example, cannot be defined from that whole without defining all the others: one cannot conceive of one or more characteristics exactly unless including all the others. This dichotomy or complementation (something together with the rest) radically governs axiomatics.

Clarifications. - This entails what follows.

1. Every axiom must differ from the rest (all others) to avoid redundancy (redundancy, repetitions of the same thing).

2. Every axiom must, notwithstanding that, be consistent with all others and be contradictory (they must not contradict one another).

In summary.

Every axiom is indeed distinct from all others, but is not separated from them.

In this way, one defines conceptual content axiomatically. Moreover: every definition—worthy of the name—exhibits exactly the same characteristics, unless one aims for an a posteriori definition, paying attention to the most striking characteristics. This is because everything that is a form, a thing, a reality, is only compatible as a whole if every contradiction is absent.

2. ***The scope of the concept.***

It is simple: drop the fifth axiom from Peano's axiomatics, and the content is impoverished but the scope is increased. For the negative numbers become conceivable in the system.

Note: *- R. Blanché, Axiomatique* , Paris, 1955, 51, states: the typical Euclidean-geometric axiom reads: “Through a point outside a straight line runs exactly one parallel line”.

Bernhard Riemann (1826/1866) changes that axiom: “No parallel line passes through a point outside a straight line”.

Nikolai Ivanovich Lobachevsky (Lobatchevski) (1792/1856) modifies Euclid's axiom in his own way: “Through a point outside a straight line run an infinite number of parallels” (which is called hyperbolic geometry).

Both, through the change in volume of “parallel” passing through a point, naturally cause a change in the magnitude to which the volume refers. They founded non-Euclidean geometry.

WEC24

24. The axiomatic-deductive system ontologically interpreted.

Library St.:

-- *St. Barker, Philosophy of Mathematics* , Englewood Cliffs 5N.J.), 1964, 23f. (*Terms, Axioms*);

-- *EWBeth, De philosophy der mathematics* , Antw./Nijmeg., 1944, 63 ff. (*The Aristotelian theory of science*).

Summarizing these works and, if necessary, improving them, the structure of the system of judgments, which is based on axioms and elaborates them deductively, comes down to following .

1. An axiomatic-deductive system comprises

a: a finite number of basic concepts (“primitive terms”) that are put forward without proof but are not chosen without sufficient (even if provisional) reason (as we saw in the definition of Peano’s positive integer);

b. a finite number of basic theorems (“primitive theorems” or axioms, likewise unproven but not proposed without at least a provisional sufficient reason. Thus *Barker* , oc, 24 (*Euclidean geometry*) states that David Hilbert (1862/1943) proposed the concepts “point/ line/ plane/ incident/ between/ congruent” and E.V. Huntington only “sphere/ encloses” as basic concepts for the whole of Euclidean geometry.

2. From this, if the system 'closes', all propositions that reveal the scope of the conceptual contents must be demonstrably derived by strict deductive reasoning.

Points 1 and 2 justify the name “axiomatic deductive”.

Truth of such systems:

Aristotle, speaking of such axiomatic-deductive systems, states that they contain objective truth—to be understood ontologically.

That is often doubted by intellectuals who are not sufficiently familiar with ontological language usage. But behold.

1. The ancient Greek (alètheia in Greek) alètheia, unconcealment, is first and foremost a purely phenomenological concept. Whoever therefore engages in axiomatics and deduction from it starts from data (phenomena, i.e. that which reveals itself directly, i.e. truth in the strictly phenomenological sense).

2. Secondly, even the most bizarre and fantastic mental constructs, insofar as they are not contradictory in themselves, are 'formae', realities, beings, non-nothings, and thus, within strictly ontological terminology, 'objective'.

Together, both mentioned properties of axiomatic-deductive systems mean that they reveal, in their own way, “objective reality”—reality in the ontological sense.

This explains why *D. Van Dale, *Philosophical Foundations of Mathematics* *, Assen/Amsterdam, 1978-4, can pose the very sensible question, 'Do sets exist?' (Existence question) and 'What are sets?' (Essence question). But that is precisely pure ontology, in other words, mathematical products of the mind.

25. Josiah Royce on practices.

J. Royce, Principles of Logic , New York, 1912-1; 1961-2, 72 ff. , state that our actions are governed by the same “general laws” that control the 'classes' (understand: concepts) and 'propositions' (judgments).

A. Combinatorics.

As applications of practices, Royce takes 'singing' and 'dancing'.

1. *Act*

1.1. 0 means “no actions” and 1 means “an action”. In daily experience, such a binary structure corresponds to “either not acting” or “acting”. —Which is actually a contradictory opposition.

1.2. Thus, within 'singing', Royce situates the opposing pair “either sing” or “not sing”. And so on.

2. *Logical product and logical sum.*

Within “an action”, Royce situates “singing and dancing” (called a “logical product”), a representation of the purely mathematical product 'xy', and “singing or dancing” (“logical sum”), a representation of the mathematical sum “x+u”. Such combined actions represent “doing something and/or doing something else”.

B. *The encompassing (implication)*

This is the derivation (“if, then”) of logic. - According to Royce, the term 'encompass' expresses the relationship between condition and inference. - Thus; “sing and dance” implies (understood “among other things”) 'singing'.

Note: - A bit of relationship logistics. Royce calls the relationship or ordering term 'encompass':

1. a dyadic (twofold),

2. transitive and

3. non-totally symmetrical relationship or arrangement, where 'symmetrical' can be translated as 'mutual'.

Logical algebra.

Practices—according to Royce—are governed by the same 'laws' (a term typical of mathematics and logistics) as classes (concepts) and statements—“the so-called “Algebra of logic” may be applied to them”. (oc,74).

Man as a rational being.

The order, as outlined above, can be established in our typically human (understand: rational) ways of acting. Man, as a rational being possessing reflection (self-consciousness), can therefore possess that type of (algebraic) logic which in the set that

1. do nothing,

2. to do something,

3. do this and that,

4. do this or that and

5. encompasses implication, is at work, consciously experiences, and thus acts 'rationally'.

WEC26

26. logistics.

D. Vernant, Introduction à la philosophie de la logique , Brussels, 1986,7, says that since around 1850 a cloud of logics of all kinds saw the light.

Two features

1. Starting from propositional logic, various extensions developed, such as multiple logics and intuitionism, first-order predicate logic, and furthermore, alethic, deontic, epistemic, relevant, and paraconsistent logics.

2. Some logics prioritize axioms that conflict with those of other logics, because the axioms in logistics are largely freely chosen.

Logistics,

Logistics (logistikè, ('□□□□□□□□□□')) in ancient Greek meant 'arithmetic'.

Indeed: logistics in its countless forms is organized according to a mathematical model.

Other names.

“Symbolic logic” refers to the vast number of abstract symbols that are used.

“Mathematical logic” is a more fortunate name: mathematics serves as the model.

“Formalized logic” is a very good name insofar as formalism is the predominant characteristic.

Briefly outlined, these boil down to this.

1. *Preliminary phase.*

Algebraic arithmetic since François Viète provided the basic language usage that facilitates formalism.

2. *Begin at a very early stage regarding the axiomatic-deductive structure of logistics.*

attempted to logically further develop the mathesis universalis (a kind of mathematically structured, preferably all-encompassing theory of order) of R. Descartes in his *Ars Combinatoria* .

3. *Initial phase*

The logical algebra that began in 1847 with G. Boole (1815/1864) and A. de Morgan (1806/1876). Furthermore, B. Peirce (1809/1880) and E. Schröder (1841/1902) with a class and judgment algebra.

4. *The actual logistics.*

G. Frege (1848/1925) with his foundational work *Begriffsschrift* (1879) and G. Peano (1858/1932) re-establish logical algebra. D. Hilbert (1862/1943; proof theory) assists.

Monumental work: *A. Whitehead* (191/1947)/ *B. Russell* (1872/1970), *Principia Mathematica* (1910/1913).

Please note: the intention was to reduce mathematics to logistics (the title is very misleading from that perspective).

WEC27

27. Interpretations of logistics.

Library St. : *R. Blanché, Introduction à la logique contemporaine* , Paris, 1957, 18/22 (*Diverses conceptions de la logique*).

We present the opinion of a logistics expert.

1. According to Blanché, what is called 'logic' was an analysis of customary reasoning as known in everyday language, with the intention of exposing the rule of validity.

2. According to Blanché, logistics reduces reasoning to a matter of calculation. To this end, it pays no attention to empirical (i.e., derived from experience) contents. Nor does it pay attention to the logical meaning of the symbols. It focuses solely on the ways of combining and on the ways in which combined expressions can be transformed.

3. According to Blanché, however, there is a middle ground between logic as the study of thought movements (ad 1) and logistic syntax (ad 2), which is a kind of positive science of combinations and their transformations.

One constructs a language system, i.e. a system of signs, provided with—as Rudolf Carnap (1891-1970) calls them—rules of use (syntactic rules), without paying attention to whether anything outside that language system corresponds to them.

That is how R. Blanché sees it. He explains this in further detail.

1. Logic as it originally was is a deontology (doctrine of duties) concerning valid reasoning. Hidden within it are 'laws', as logisticians understand them, but logistic laws and syntactic rules merge.

Note: - Explanation. A logistic law is a generally valid type of operation of symbols that applies to strictly all cases to which that law applies.

Like this: “If all fg is and xf is, then xg is”. This tolerates no exceptions.

A syntactic rule relates to the placement of symbols. Thus, the rule may hold that, if the above law applies, one may write g or x wherever f appears. After all, logistically speaking, they are 'equal'.

Is logic as a doctrine of duties a strict science, as Blanché believes?

(a) It is certainly scientific because the rules of thought (laws, syntactic rules) are not determined arbitrarily, like, for example, the rules of children on a playground.

WEC28

28. Interpretations of logistics, continuation 1.

(b) However, that same logic, originally called logic, is not scientific if one defines 'science' with Blanché as “the abstract (meaning: formulating general laws and syntactic rules) articulation and systematic ordering of the practical (meaning: everyday) rules that determine sound reasoning”.

The 'theory' that is logic exhibits rules that are neither true nor false as rules, for it is normative, prescribing rules of conduct, such as ethics (which prescribes rules for conscientious behavior) or aesthetics (which prescribes rules regarding artistic beauty).

Blanché.

Steller notes, however, that that type of theory is not as outdated as it seems: “natural deduction” (Gentzen) begins from the outset of the exposition with the rules of reasoning, whereas the more conventional logistics begins with the laws of reasoning. Gentzen’s “natural deduction” thus resembles 'original' logic.

2. His 'classical' logistics sees the formulation of 'laws' as the very first task and the essential assignment regarding the combination of symbols. Thus, one starts from 'inferential' formulas such as “All f is g; now x is f; therefore x is g”, to arrive at tautological formulas (which are usually 'implicative', such as “If all fg is and if xf is, then xg is”). That tautological formulation is – as logisticians define it – “always true” (because it is a law).

That kind of 'truth' is called logistics 'tautological' in the formalized sense (also called “logistic truth”).

Blanché emphasizes: the inferential formulation must remain distinct from the tautological one.

Note: - The term “normative science” is a suspect idiom regarding theory of thought.

For—according to Blanché—logistics, as the true, actual study of the laws and syntactic rules concerning symbolic calculus (arithmetic), establishes 'truths' just like any “scientific theory”. Let us understand: positively scientific determinations.

Immediately, in logistics so designated, 'philosophy' is radically banished as 'suspected' of normativity.

Logistics—whose creators were almost all mathematicians—ultimately becomes distinguishable from axiomatic-deductive mathematics. In that mathematical sense, it is a science representing 'positive' facts from the perspective of their laws.

WEC29

29. Interpretations of logistics, continued 2.

3. The “terrible difficulty” of logistics interpreted as symbolic language. Reason: in logistics, one contrasts normative rules (original logic) with laws that formulate what is ascertainable.

What can be determined.

The extent to which the logistic laws apply necessitates the question: “What is that factual reality?” Which – according to Blanché – is a purely philosophical (and no longer positively scientific) question.

a. Are they laws of thought?

No! The term 'laws of thought' can only be interpreted in two senses.

a.1. As laws, they determine the course of acts of thought—the factually ascertainable course. Understood in this way, they are laws of nature (as, for example, psychological science formulates them regarding intellectual activities).

a.2. If laws, but then as laws that decide on the validity of the course of events, they would be normative prescriptions (as the original logic indicates).

a.3. The realists regarding metaphysics—according to Blanché—state in this regard that—reaching beyond the accidental laws governing the empirically perceptible world—there is room for absolutely necessary 'laws' that reach beyond nature (namely, that empirically perceptible world).

But these then apply to a “mundus intelligibilis”, a purely intellectual world. That is, then, a world of 'essences', the conceptual realities that exist outside and above ascertainable time and ascertainable space, the so-called intelligible time and space.

For the positively scientifically minded Blanché, that is no solution regarding the type of reality logistics refers to.

Conclusion:

For Blanché, it is crystal clear: in logistics, the reasoning reduces to “the manipulation of signs,” i.e., a calculus or calculating with symbols.

b. The solution.

Around 1920, Ludwig Wittgenstein (1889/1951), who evolved from logistic atomism to his theory of language games, claimed that logistic laws are merely tautological (usually implicative) laws. Around 1920, the “non-classical” logistieks emerged, unleashing a proliferation of them.

'Classical' logistics aimed at logistic absolutism, advocating an absolutely valid logistic tendency that tolerates no other as equally 'real', representing the ascertainable.

WEC30

30. Interpretations of logistics, continuation 3.

What stands out about non-classical logistics is that they are combinatorics that abandon one or another law presupposed in classical logistics. However, that deviates from the axiomatics with the laws and syntactic rules of that classical logistics.

Conventionalism.

The fact that non-classical, and therefore deviant, logistics exist clearly demonstrates the conventional nature of the laws that classical logistics posited as absolutely necessary.

Comprehensive use of language.

Rudolf Carnap (1891/1970), along with Otto Neurath and C.H. Morris, advocated a "Unified Science" in the materialist sense, and attempted to formalize all language usages on the basis of the purely symbolic theory (concerning mathematical language usages) of David Hilbert (1862/1943).

Principle of tolerance.

Carnap placed the scientific freedom of the one constructing a logistics at the center: in the logistics he conceived, there is no place for "an intolerant morality" in the sense that everyone has the right to construct a logical syntax that suits them, understand: to realize it through the combinatorics of symbols.

Result:

A logistic system is not a 'theory' that provides a system of symbols with rules of use (thus *Carnap* in his **Einfuhrung in die symbolische Logik* *). To which Blanché responds: indeed, "logistics" does not coincide with any system whatsoever, for it stands above all such constructions. The intention is, namely, to construct systems that are comprehensive-tender by extension, i.e., symbol systems that are more general by extension and thus encompass the already developed language or symbol systems as components.

The ultimate ideal.

To develop a radically general sign language into a calculus, a calculation using abstract-general symbols such that all less general, particular calculi, languages of calculation, prove to be situable within it.

Note: - This is what Blanché retains of what was once a logistic absolutism (until it fell into crisis in 1920). In this way, the ideal of a super-science encompassing all sciences as components—a unified science—constructed as formally as possible, continues to persist. How to reconcile this with radical malleability—everyone freely constructs their own logistics (conventionalism and the principle of tolerance)—remains enigmatic: does the latter not lead to a complete proliferation of individual constructions?

WEC31

31. Chance theory, relational theory.

Let us begin with the definition by Ant. Cournot (1801/1877): "If mutually independent courses or processes coincide and perhaps one of them modifies them, then it is a matter of chance".

Note: - Th. Martin, Cournot (1801/1877), in: *Ev. Rarbui/ M. Carveireg, Les philosophes et les mathématiques* , Paris, 1996, 193/209, fl. 206/208 (*le calcul des probabilités*), dwells on Cournot's purely mathematical and combinatorial theory of probability.

One of *Cournot's* works is titled: " *Exposition de la théorie des chances et des probabilities"* (1843; reprinted 1984). In it, oc 61, he discusses the conceptual scope of chance.

The concepts of 'combination' and 'chance', 'cause' and 'chance' reach—at least in terms of abstraction—beyond geometry and mechanics and are applicable to the facts.

(1) within the movements of slow nature,
(2) within living nature and
(3) within the intellectual and moral world.

Objective character.

Cournot—contrary to a certain tradition—attributes an objective character to everything that is random, specifically within the framework of probability theory.

He defines the 'probability' of an event as the number of favorable chances within the totality of all, favorable and unfavorable, chances that an event actually occurs, in the facts themselves.

In other words: the results of probability theory have an objective scope, namely in the field (domain) of random events.

Storytelling (narratology, narrative)

'Incident', 'event', and 'series of events' are concepts that the theory of chance fundamentally requires in order to express itself. Well, these are explicitly thematized in narrative studies.

1. *Process*

Greek 'kinesis', Latin: motus, movement, change, event, process – in any case, the essence of stories is everything that does not stand still.

2. *Base dyad.*

A duality within that event stands out, if one wishes to speak of something narratable: “the earlier (or previous), the later”. Without that duality, there is no story. For example: “Newton sat looking out the window”. That is the earlier. “He suddenly saw an apple fall”. That is the later (or subsequent).

Some label that dyad with the term “omen/continuation”. ‘Continuation’ is fine, but ‘omen’ already establishes a connection between the earlier and the later, which is not always ascertainable.

In other words, “Newton was sitting by the window looking. He suddenly saw an apple fall” is the minimal-essential element of a possible story.

WEC32

32. An experiment.

A. Gosselin, lapsychology de l'investisseur (*Entre le hasard et la peur de perdre*), in: *Le temps* (Geneva) 12 11 2001, 23.

A psychologist from a university in London, together with the brokerage firm Barclays, investigates the degree of causality inherent in chance and specialist knowledge regarding the work of individuals in stock market transactions. A financial expert was asked to put his know-how to good use. The astrologer had to mobilize his theory of celestial bodies. And the four-year-old, dark-skinned Tia grabbed her stock market luck out of a hat.

After a week of stock market transactions (incidentally characterized by a depression), the result was as follows: Tia lost 4.5% of her capital, the expert 7%, and the astrologer 10%.

Decision:

The theory of chance regarding stock market speculation is gaining ground. Incidentally, mathematicians and chance-oriented psychologists claim that the proportion of chance in what happens in our daily lives is often underestimated.

In other words:

(1) that there is a three-kind causality at work in the above-mentioned experiment, is clear: everyone mobilizes a force that causes an event - here: a preferably successful stock market speculation;

(2) the fact that an expert loses out to a four-year-old who randomly pulls titles out of a hat proves the lack of causation of expertise; the fact that the astrologer loses out to little Tia with her lucky hand, and to the professional, proves that "the stars" (meaning: celestial bodies via horoscopes) possess a weaker causation.

All of this is correct, but it immediately raises the question: "Was there coincidence?" (Existence) and "What kind of coincidence was there?" (Essence). We now wish to delve deeper into this philosophically. The concept of 'causality' is central in any case.

Cause and effect.

One can define a causative process in a narrative manner: " Something preceding causes a sequel to exist and be as it is." In other words: the preceding is not neutral with respect to what follows; it mobilizes a force somewhere, necessary and sufficient, which causes the consequence to exist (existence) and be as it is (essence).

Let us examine this empirically and experimentally.

a. Empirical.

Let us take a very simple event, the fact that water turns into ice if it is cooled to 0° Celsius.

Even the simplest common sense can establish that causative event in the course of every winter containing sufficient cold air.

WEC33

33. An experiment, continued

b. Experimental.

If we ourselves intervene in an empirically established event such that it is actually caused under our direction, then our knowledge of it becomes

empirical or experimental. This happens mechanically, for example in a freezer that creates the necessary and sufficient conditions for the freezing of, for example, water. What comes first is brought about by the experimenter, so that what comes later is brought about by the earlier.

Back to the basic experiment mentioned above.

a. One could argue that four-year-old Tia “left everything to chance” by randomly pulling titles out of a hat.

b. One could also argue that the expert and even the astrologer, each in their own way, “left nothing to chance”. And yet: Tia scores a higher percentage than both others.

Is that not brilliant proof that stock market speculation brings merely a matter of chance or accidental miscalculation? But, if one speaks of the causation of stock market results in terms of chance (leaving everything to chance/leaving nothing to chance), what exactly is being said? Therefore, we will now delve deeper into the concept of 'chance' to arrive at a definition of it.

Definition of chance.

Let us start with a singular—concrete model.

The fate of the acorn.

a . *The normal biological course.*

At a certain point in the course of autumn, the acorn falls, for example, into the tender grass. Normally, that is, if one lets 'nature' take its course and thus nothing hinders the germination and growth of the acorn, the acorn sprouts in the spring and becomes a growing plant.

b.1. *The abnormal course.*

Suppose someone steps on the acorn, but in such a way that in the spring its growth force remains unbroken and it thus shoots up, although somewhat crooked. One shall call the partial crushing a coincidence, that is something that, viewed solely from the normal development of an acorn, is abnormal, unpredicted, and even unpredictable.

b.2 . *The abnormal course.*

Suppose: on a sunny October afternoon, an hungry squirrel spots an acorn. The squirrel, following its biological nature, devours the acorn. That end of life, viewed solely from the perspective of nature—a course foreseen by nature and therefore predictable—will be called a coincidence: that something that intervenes in the normal course non-necessarily but by chance and simply ends it itself.

Note that we formulate: “If, and only if, judged from the normal or natural course, then it is to be called chance.” But the question arises: “If one looks outside the normal course, is it chance still chance?”

WEC34

34. An experiment., continuation 2.

Let us take another concrete, singular case, the Titanic.

On April 14, 1912, the Titanic, the showpiece of shipbuilding at the time, struck an iceberg, resulting in its sinking.

The normal course

a. The normal course of the Southampton–New York journey, if considered in isolation from the rest of reality, did not involve a collision with, for example, an iceberg. Consequence: that collision was, within those perspectives, pure chance.

b. The question arises: “If one situates the Southampton-New York trajectory within the entire geographical framework, and thus goes beyond the limited perspective that constitutes the normal course of events, does that coincidence still remain a coincidence?”

Holistic view.

*Corliss Lamont, *Freedom of choice affirmed* *, New York, 1967, quotes Gardner William:

“It seems to me very evident that the convergence was caused by the naturally given causes that were simultaneously at work in the two courses. That convergence was totally predetermined.” (*G. Williams* in: *Corliss Lamont, ed., A Humanist Symposium on Metaphysics* , Yellow Springs, o, 1960, 14).

Note: - 'At the same time,' says Williams. Indeed, anyone who simultaneously—and this is an example of comprehensive information on the matter—observes the boat's Southampton-New York trajectory, together with the trajectory of the iceberg breaking loose in the North and drifting, sees that the two trajectories must necessarily meet. All the more so because this sign of the approaching iceberg, namely the cooling of the temperature, was neglected by the crew.

Cognitive and objective standpoint.

“It was a coincidence solely because no one foresaw or even intended the meeting. The convictions of the 1,500 passengers that they would reach New

York from Southampton were false from the outset." (C. Lamont, oc, 67). We call this perspective the cognitive one. The objective course of events was naturally necessary and excludes chance.

We call that perspective the objective one. Consequence: objectively, something cannot be a coincidence but necessary, while cognitively it is unpredictable, indeed unpredictable, due to a lack of attention to the integral situation encompassing the objective and the cognitive.

Perspectivity

If one considers the course of the Titanic and of the fatal iceberg each separately, neither contains a convergence, and that convergence is a coincidence. However, if one views both courses together, that is, the one including the other, then there is no question of coincidence. Thus, one must speak of the one course in terms of the other, in the form of a collision that is then naturally necessary.

WEC35

35. An experiment., Conclusion.

Whether something appears as coincidence apparently depends on some very limited, one-sided, non-integral knowledge of the objective event.

The axiom of reason.

Traditional ontology, and following in its footsteps natural logic, place first as an axiom: "Nothing is without reason or ground," as Plato expressed it. That sentence must be interpreted in two ways:

1. All that is being, something, non-nothing, form, has a reason or ground in the fact (existence) that it is there and in the manner in which (essence) it is a fact. We call these the rules of existence and being.

2. All that is without reason or ground, whether within itself or outside itself, or both simultaneously, is nothing. The absolute absence of the means of existence and being understood in this way encompasses absolute nothingness. Such that chance, understood as the absolute absence of sufficient reason, is non-existent in objective reality.

Chance is only conceivable (but objectively speaking non-existent) if one does not know the sufficient reason (but that is a cognitive matter). What happens when one personifies "chance" as a figure of speech. *Carlos Lamont, *Freedom of choice affirmed* *, New York, 1967, 59ff., halt *John Randall Jr., *Aristotle** , New York, 1960, 182ff.

a. The distinction between what occurs by chance and what does not occur by chance is not the distinction between what has no cause and what does. In other words, causal processes, deterministic courses of events for example, can appear to be coincidental.

b. That distinction stands or falls on the fact that a given course of events, which is caused and thus has a sufficient reason or explanation, encounters another course of events that is likewise caused in its own way and thus has a sufficient 'rational' reason or comprehensibility, and is modified by that encounter (sometimes destroyed: think of the acorn being gobbled up by the squirrel) in a manner that cannot be deduced from its course in itself, viewed in isolation from the rest, and which is therefore unpredictable within that limited perspective. Only if one fulfills those conditions does one arrive at cognition that concludes that there is chance.

In other words: one causative process modifies the other causative process by virtue of an encounter not foreseen in either process considered separately. This creates a complicated, multiple causality—which excludes chance.

In summary.

Objective with sufficient reason; cognitive without sufficient reason (due to lack of objective information).

WEC36

36. An experiment, continuation 4.

Note: - To return to the story of the acorn: - Objectively necessary; cognitively unpredictable and therefore chance.

a. That someone steps on the acorn in such a way that he grows up convulsively is nowhere deducible from the biological nature of the acorn. Nor is it deducible that it is eaten by a squirrel.

b . But if one considers both the biological development of the glans and the human life course of someone who pays no attention to the glans, then that convergence prevents it from being deducible, because it would not be necessary (given the totality of the circumstances, of course).

Within the individual perspective of the acorn, being trampled is chance, contingent, not necessary, for it occurs without sufficient reason within the acorn itself.

The same applies regarding the biological development of the acorn *and* the biological development of the squirrel: the convergence of both (at a given moment, an hungry squirrel notices our acorn) provides a sufficient reason to make being eaten rationally explainable.

Mutually independent processes

Let us examine exactly what that term means—did Cournot not say: “If mutually independent courses or processes coincide and at least one of them modifies the other, then we are dealing with chance”? But beware: at the moment they coincide, they are not mutually independent! That is contradictory to coinciding and the modification of the one by the other contained therein.

Nevertheless, Cournot's definition contains truth: “If one considers mutually independent courses solely within their mutual independence, then nowhere is any meeting foreseen or predictable and, if it does occur—which fundamentally alters the initial conditions of the courses: they become mutually dependent—then it is by chance from the perspective of the initial conditions (which contain mutual independence).”

Narrative

Instead of two separate stories, when we meet, we have one story with two sub-stories! We then have an integral story.

Definition of integral knowledge.

That is a logical little chapter. —To stick with our twofold progression: if one knows one progression including the other (and vice versa), then one can speak of the one in terms of the other (and vice versa).

For example: at twenty kilometers from the Titanic's collision with the iceberg, integral knowledge can say: “The Titanic is heading straight for a collision with that approaching iceberg”.

Or “The iceberg is heading straight for a collision with the approaching Titanic.”

One should speak of the one in terms of the other. And with sufficient reason, given the physical causality at work in both.

WEC37

37. An experiment, continuation 5.

In model-theoretical language:

The original, the Titanic and its normal course insofar as it is altered, indeed, destroyed by an iceberg, exhibits that iceberg with its course as a partial model; or: “the iceberg (original as subject) approaches the Titanic (model as predicate) terrifyingly.” That a model is involved is evident from the coherence—in the form of their convergence—of the two courses at a given moment. Since it concerns coherence, it is a metonymic model.

False personification.

Personification is a figure of speech, i.e., a way of saying. -Corliss Lamont, oc,66.

It is essential to realize that, although objectively conceived within the events themselves, “does nothing”. Claiming that “chance made, caused, the Titanic to sink due to a collision with the iceberg” is a figure of speech. It is a network of words that we cast upon a convergence of more than one course of events. But it is not.

Even worse is personification, speaking of chance as a deity. Such personifications of things or processes that are not persons are akin to what the term 'fate' undergoes: “Fate disposes”.

Initial conditions that are being changed.

EC Lamont, oc, 66. -Once both the Titanic and the iceberg begin their course, all the laws governing such courses come into play in the first place, altered by human intervention (e.g. the fact that the cooling of the icebergs was not noticed or was neglected). This follows from the definition of Prof. Randall Jr., who points out that causal regularities are at play.

Decision:

(1) There is therefore an objective necessity of the collision,

(2) which includes fundamental predictability. This is evident from the fact that anyone familiar with the Atlantic Ocean and its icebergs must at least foresee the possibility of a collision.

(3) But, given the absence of integral knowledge, there is factual unpredictability and therefore chance. Integral knowledge comprises the necessary and sufficient reasons for the occurrence.

Conclusion

The entire discussion about whether or not something is random leads to defining 'chance' as a course of events for which our cognition sees no sufficient reason—a sufficient reason, therefore, that we do not know, even though it is objectively present.

In short: "If there is no integral knowledge, then the gate is wide open for an explanation based on chance – an explanation that is a null explanation".

In the absence of 'reason', there is irrationality.

WEC38

38. The early beginnings of cybernetics (control science).

Library St.: *EWBeth, Natural Philosophy* , Gorinchen, 1948, 35ff.

"Kubernètik è t e chnè, Lat.: ars gubernalis", steering science, i.e. the control of processes, appears as a term in Plato, Gorgias 511d.

1. *Definition of terms.*

Let's get to the point. Heraclitus of Ephesus (-535/-465) says in a fragment: "All human laws feed on the one divine law." That statement expresses what the ancient Greeks called "cosmic harmony" which structures and governs every course:

(1) there is the normal course of events inherent in the nature of things, which is predictable from that nature or essence;

(2) occurs by chance, - seen from the normal course of events, a deviation (abnormal course);

(3) upon which, on the basis of the contained cosmic harmony, restoration necessarily follows. In short: "order/ disorder/ restoration of order"

Note: - *WB Kristensen, *Ancient and Modern Cosmology* *, Amsterdam, 1941, confirms something analogous for ancient Egyptian culture. The Bible features something similar: the course of sacred (or salvation) history features "paradise (order)/ fall from grace (disorder)/ redemption (restored order)."

Logical: - "If order is violated, then (whether necessary or not) a sanction (retribution) will occur in any case."

2. *Scope of concept.*

Following H. *Kelsen, *Die Entstehung des Kausalgezetzes aus dem vergeltungs-prinzip** , in: * *Erkenntnis* 8* (1939), Beth says: order (or call it lawfulness) is equally present in inanimate, living, and human nature.

Note: - One may quite safely add the nature of the ancient deities to this: deities, too, are subject to that cosmic harmony.

Examples.

G. Daniëls, religious-historical study on Herodotus , Antwerp/Nijmegen, 1945, mentions the 'kuklos', cycle in 'nature' (in the sense of the time):

(1) Many things (animals, states, for example) start small and grow in order;

(2) sometimes they exceed the limits provided by the cosmic order ('hubris', Lat.: arrogantia);

(3) which is followed by some kind of 'divine' restoration (which can sometimes be total destruction).

Plato, Timaeus 32: "All these things cause diseases (understand: unpleasant consequences) when the blood does not feed on food and drink but acquires its state against the laws of nature (disorder) through unsuitable things."

Aristotle, Politics *a* V:5, speaking about constitutions:

(1) 'telos', order, or purposefulness; **(2)** 'par.ek.basis', deviation from the goal, **(3)** 'ep.an.orthosis' or 'ruthmosis', restoration of purposefulness.

Note: - Beth - such doctrine of order is still found in WR Emerson (1803/1882) et al.

WEC39

39. Kafkaesque steering.

Library St.: *HJ Schoeps, On Man* , Utr./Antw., 1966, 141 (Kafka: the belief in a tragic position). Note: Schoeps knew Franz Kafka (1883/1924) well.

Odradeck.

This Slavic term means "fallen outside the law (understand: order)."

Kafka uses the biblical term 'dogs' and 'dog-like' for everything that is 'odradeck', deviated.

Phenomenologically, such a canine situation manifests itself in the fact that—at least in our modern mechanized culture—man increasingly feels like a 'thing'—for example, as a flock of geese within the immeasurable, opaque, incomprehensible cultural machine that is ours. He is not an 'I' but an 'it'.

Kafkaesque interpretation.

If order *and* if deviation from that order, then canine life experience. Well then, canine life experience. So, order *and* deviation from that order.

One of the symptoms—phenomena—that betrays the canine is an opaque, chaotic, boundless sense of guilt. This is addressed very clearly in several of Kafka's works, albeit artistically disguised. One can specify this roughly as follows.

(1) One or more errors (deviations from the order) must have been committed in earlier stages of culture. Otherwise, the doginess of our day is without sufficient reason or ground.

(2) But—and this is typically Kafkaesque—that reason, that error or errors, remain, as Schoeps, Kafka's life problem, specifies, an 'X', an unknown sufficient reason or ground. That: both the evidence that there must be a sufficient reason and the evidence that Kafka, whatever he undertakes to discover it, does not find it, creates what is called—in the figurative sense of the term—the 'absurd', that is to say: the unbearably incomprehensible aspect of our more intimate life experience.

Note: - The Talmud. - The Mishnah and the Gemara, holy books of the Jews, predict: “One day, in the end times, the faces of people will be like the faces of dogs (note: deviants)”.

Did Kafka intend to give artistic form to that Talmudic text in his works to air his—and that of many of his contemporaries—main impression regarding sense and nonsense, sufficient reason and radically unknown sufficient reason? Given that he was Jewish, it seems so.

WEC40

40. Biblical steering.

Library St.: *H. Perls, The Vengeance of God* (*The meaning of the root NQM and the function of the NQM texts in the context of Old Testament divine revelation*), Zoetermeer, 1992.

In 59 texts, the term NQM means 'revenge', essentially redress for deviation. In 85% of these texts, God is the subject of the NQM act.

Note: - We still find this meaning in the concept of a "sin crying out for vengeance".

Genesis 4:10 : "Yahweh replied: "What have you done, Cain? Hear the blood of your brother (Abel, who killed Cain) crying out to Me from the earth." The killing is so severe that the restoration of order is accomplished by God during the earthly life of the perpetrator. For the schema is: "order/disorder/restoration of order."

Let us reflect on the psychological experience of the one who, by God's will, is in need of restoration of order.

1. *The axiom.*

Genesis 6:3 - Mankind degenerates in a transgressive (crying outrage) manner. What does God say to this? "That my life force ('spirit') in man does not endlessly run out to nothing, since he is consciencelessly deviant ('flesh')".

Epistle to the Hebrews 8:4 – "They themselves did not fulfill his covenant in life. Also: I (God) have abandoned them to their fate." Specifically: if God withdraws his life force due to transgressive deviation, then he leaves the transgressor to his autonomy, which thereby determines his fate. This is to prompt reflection and repentance.

2. *Experiencing the autonomy left to itself.*

Psalm 143 (142):3 ff. describes the inner state as follows: "Whoever is not pleased with me is plotting against my soul—makes my life useless. He makes me live in darkness, just like those who entered eternal death (*note:* understand: the absence of God's life force). My breath of life within me is dying away. My heart in the depths of my being is full of fear (…) I cannot go on like this. Do not shut me out of your contact, God, otherwise I will belong to those who descend into the underworld (understand: an existence without God's life force)."

Job 10:21 ff. – "The land of darkness and of the shadow of death (…). The gloomy land where disorder reigns (…)."

The uncertainty regarding the reason.

Psalm 53 (52): 6. -"Suddenly the evildoers will be struck with fear, - without (understood as: insight into) the cause of the fear."

Or Psalm 88 (87): 15 . -"Why, Yahweh, do You cast off my soul?"

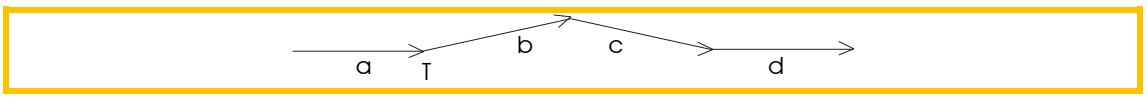
Like Franz Kafka, who, although modern, still lived by the old covenant with Israel, the 'X' so struck with fear undergoes an unknown, or at least very unclear, cause. That is the price of cross-border autonomy: even the reason or basis is a mystery.

WEC41

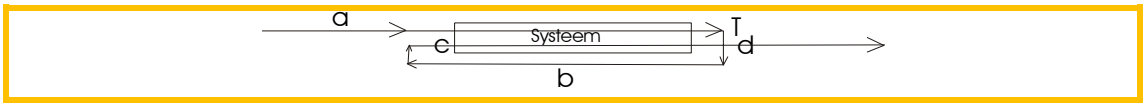
41. Physics as settling accounts with chance.

Library St.: *D. Ellis/Fr. Ludwig, Systems Philosophy* , Englewood Cliffs, NJ, 1992.

The ancient science of control (cybernetics) has as its object a course insofar as it is 'controllable', that is, capable of controlling accidents. Let us take the following geometric model:



a stands for the normal, di goal-oriented course; T stands for chance that impairs goal-orientation and causes the deviation, b; c stands for corrective action, the direct result of the adjustment; de refers to the restored goal-orientation. Let us take another model:



This clearly visualizes the loop nature of the feedback or recovery.

Chance: In T, a chance is symbolized. If one knows only a, the normal goal-direction, T is an unforeseen event (it does not essentially belong to a and is not deductible from it).

The cybernetic.

The typical steering mechanism consists of both anticipating and correcting negative coincidences. In other words: there is a goal-directed course that deviates due to a negative coincidence, but the steering reflex is to restore goal-directedness. As one can see: random theory is here reduced to a component of a theory concerning the correction of (negative) coincidences.

The extent.

The conceptual scope of steering engineering is very extensive:

there are, for example, the purely physical processes that exhibit the characteristic,

The plant world knows this very well: an acorn that falls in the grass and is trampled by someone's foot will shoot up somewhat crooked in the spring, but it will recover somewhat from the deviation;

There is steering in the animal world: a tiger pounces on prey that performs an evasive maneuver that surprises it, but while leaping, it adjusts its purposeful jump; a human rides a bicycle to work, suddenly sees a stone in front of him, dodges it, and continues riding purposefully.

Accumulate.

It is safe to say that nature as a whole, man included, 'accumulates' negative setbacks, having to absorb them in at least a gradually unpredictable manner. Being able to handle these surprises presupposes a steering-oriented corrective that is, as it were, built in so that one survives time and again. Or, to put it another way: the initial given and demanded are negatively altered in a more or less unforeseen manner and become a new challenge that compels one to cope if one wishes to be 'truly' authentic.

WEC42

42. Steering symptoms.

Library St.: *Ludw. Von Bertalanffy, Robots, Men and Minds* , New York, 1967.

Steller draws attention to dynamic systems with self-regulation in the purely physical realm, and further on a biological, psychological, and sociological level.

Those various self-regulations are not totally identical but analogous.

1. *Regulator.*

A regulator is the part of a device that forces its operation into regularity.

Like the pendulum in a timepiece, the 'balance' in a watch, the governor and the flywheel in the steam engine.

J. Watt (1736/1819) constructed this latter model: a signal indicating the speed of the steam engine is transmitted to a component that amplifies power, but in such a way that if the machine runs faster, the steam supply decreases.

So that the speed remains unchanged. The regulator, to control the speed, feeds back information (signal).

2.1. *Homeostasis.*

Biological homeostasis responds in a regulatory manner to internal influences. “The internal environment” (Cl. Bernard (1812/1878)) is thus kept unchanged with regard to acidity, water balance, body temperature, and metabolism.

Cf. *WB Cannon, Wisdom of the body* , London, 1932; *G. Pask, Introduction to cybernetics* , Utr./Antw., 1965, omoc 10/11.

2.2. *Reflex.*

The biological reflex responds in a regulatory manner to external influences.

François Nagendie (1783/1855) defined 'reflex' in 1817 as the activity caused by a disturbance that propagates—via the posterior or dorsal nervous system—to be reflected from there—via the anterior or ventral nerve roots—to its origin, the source, of the disturbance.

There she weakens the initial disturbance, causes it to cease, or even turns it into its opposite.

Note: - The reflex, the involuntary reaction to a nerve stimulus, became the theme of the experimental reflexology of J.P. Pavlov (1849/1936).

3. *Common sense.*

The ABC theory of Ellis and Sagarin shows the following basic scheme.

(A) A disappointing experience (B) is processed in such a moderating and regulating way (C), to the extent that it strikes sound, i.e., relativizing, reason in the human personality, that the shock of disappointment is responded to in a sound, i.e., correct evaluative manner, - which is reflected in the behavior. The neurotic mind in (B) lacks that capacity for relativizing.

One sees the progression: “order/ disorder/ restored order”, on a multitude of levels.

WEC43

43. Recent steering.

The ancient theory of order (order/disorder/restored order) experienced its re-establishment in the 20th century. Norbert Wiener (1894/1964), starting from a national defense perspective, broadened the issues concerning

communication and 'command' to include neurophysiology, biochemical regulation, and computers.

Wiener, as a mathematician, met A. Rosenbluth, a neurophysiologist who was active under W. Weaver (automation). This led to *Wiener* 's *Cybernetics* , Paris, 1948. With this, control science fully enters the domains of the humanities and even the social sciences.

Feedback.

Weaver defines 'cybernetics' as the theory of feedback.

Indeed: **(1)** goal-oriented course (order), **(2)** deviation (disorder), **(3)** feedback (restored order).

Self-regulation

Jean Piaget (1896/1980) in his *Le Structuralisme* , Paris, 1968, sees it this way.

Control engineering posits a dynamic system, i.e., a system with a variation. This comprises: **a.** a totality, **b** . equipped with self-regulation ('autoréglage'). **c.** such that this self-regulation controls, i.e., steers, the transformations of the system ('transformations'). –

Quasi-closed systems.

All this implies that the system in question is open, i.e., subject to its environment and the latter's influences, but on the other hand remains quasi-closed, i.e., maintains itself minimally essentially and thus possesses a regulatory mechanism.

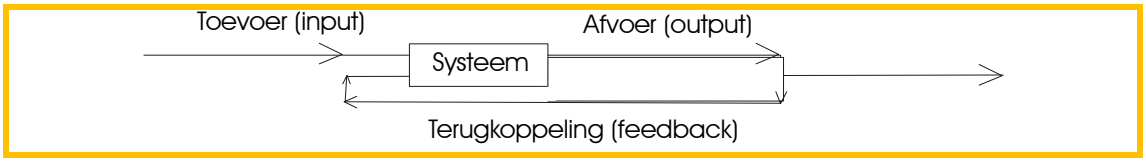
Mathematical models.

If re-established steering is involved, it is primarily due to the mathematical structural formulas.

*John von Neumann, *The Nervous System as a Computer* *, Rotterdam, 1986, xix, says: “The mathematical point of view” (as it is called) means that, alongside general mathematical methods, logical and statistical methods are employed.

A model.

D. Ellis/ Fr. Ludwig, Systems Philosophy , Englwood Cliffs, NJ, 1962, sees it this way:



Consider, for example, a very simple model of a dynamic system, namely a coffee grinder, where the beans function as 'input' and the ground coffee beans as 'output'.

Matter/ energy/ information.

Ellis/ Ludwig: a system can transform, 'process', matter (a coffee grinder), energy (a heater), or—and this works revolutionaryly—information (ordinator).

WEC44

44. The computer system.

Library St.:

-- *P. Heinckiens, Programming is more than typing* , in: *Eos* 6 (1989): 9 (Sept;), 59/73;

-- *E. De Corte/ L. Verschaffel, Learning to program* (*vehicle for skills* ?), in: *Onze Alma Mater* (Leuven) 1990: 1 (Feb.), 4/35.

Definition.

An ordinator or computer is a type of dynamic system in the form of a device ('machine') that processes information ('data', 'information') in a purposeful manner by means of an algorithmic series of actions.

The computer system.

Two larger sections.

(1) The actual computer (with the keyboard at the front).

(2) The background is peripheral equipment (recently including connection to the Net).

The coordinator represents the keyboard as the input machine, while the monitor (with, for example, the screen) and the printer are the output machines.

The floppy disk.

This is a small disk on which countless data are stored (the data carrier): immediately we have the memory, i.e. the floppy disk with the stored data. That floppy disk is both an input and output unit at the same time.

Decision.

Input, memory, and output are three functions (roles) of the floppy disk unit.

Equipment and software.

Hardware ('matériel') and software ('logiciel').

Two components control what was once called the 'calculator'.

a. *Equipment.*

This is the totality of the material components: electromechanical and electronic parts, cables and return paths for electronic power supply and interconnections, - a central memory and auxiliary memories, - input and output devices for the information.

b. *Software.*

This is the entirety of the programs and the associated documentation material (manuals, flowcharts for the operation of the computer).

Both together.

PH. Davis/ R. Hersh, L'Univers Mathématique , Paris, 365/369 (*Modèles mathématiques* , *ordinateurs et platonisme*), points out that actual computer 'calculation' (working with the computer) encompasses both aspects: only when both equipment and software are in perfect order can the coordinator provide 'the absolute truth'.

Stellers emphasize: “Which is far from always the case”.

Conclusion

The term 'computer system' refers to a not-so-simple connection – to a “totem physicum” as the Scholastics would say.

WEC45

45. A structural equation: automatic washing machine / computer.

Let us start from a more transparent model, the automatic washing machine, in order to describe the original that is more complex, the computer, in more detail.

1. *Washing machine.*

The automatic washing machine is a dynamic system that processes matter, namely the laundry with the detergents.

Algorithm.

The automatic washing machine is equipped with a number of algorithms depending on the nature of the laundry and the detergents. To refresh your memory: an algorithm is a kind of division of a process into successive phases in which the sequence, the entire sequence, or only the entire sequence of actions that constitute the essence of the washes—the enumeration (a type of summative induction)—can be found again in the correct, purposeful order.

In other words, it is an algorithmic definition. The algorithm comprises an initial situation, intermediate situations, a series of intermediate commands (instructions), a final situation, i.e., the structure of a goal-oriented process.

a. The clothes to be washed are placed in the drum. The electricity is switched on. The washing powder is placed in the compartments. The water supply is opened.

Note: - It can be seen that this is the provision of the substructure or infrastructure of the operations.

b. Depending on the nature of the laundry, a suitable washing program is selected. This program is located in the built-in microprocessor (i.e., a chip with a logical structure and memory), a miniature computer, if you will. A button is pressed to select one of the many programs. The machine executes this program. The waste detergent and rinse water are drained.

c. Final result: the clean laundry is removed from the drum.

2. *Computer.*

Parable

The ordinator also operates according to the dynamic structure just mentioned: input, this time of information, processing according to a program, output.

Difference.

Apart from the fact that this time information rather than matter is processed, the washing machine is highly pre-programmed, whereas the calculator is much less pre-programmed; the user himself can—to a certain extent—enter a program. This amounts to him programming himself, starting from a problem (given + requested), to achieve the solution.

WEC46

46. Computer thinking.

Five main aspects.

According to *Dr. L. Klinge / Helmholz, Gymnascum* , Boom, computer science comprises five aspects.

1. Insight into the use of the equipment.
2.1. Insight into the core of the thought process, i.e., the algorithm.
2.2. Understanding how to structure the data to be entered (data, information).
2.3. Insight into applying to concrete cases.
3. Insight into protecting the data (against intruders).

1. *The opinion of Prof. Würzenbaum* (MIT)

At a number of American universities a few years ago, every student was required to have a microcomputer.

Weizenbaum disagrees with this: he emphatically wants to prevent subject matter from being viewed solely from the axiom: “It must be programmable”.

In other words: Weisenbaum does not want the understanding of the data to be reduced to “What can I program from this?”.

A great deal can be taught very effectively without a computer as learning material.

*J. Ellul, *Le bluf technologique* *, Paris, 1988, states that there is a danger that, once completely molded within the realm of computer thought, one becomes closed off to every other form of thinking. Ellul calls this computer terrorism.

2. *E. De Corte/ L. Verschaffel, Learning to program* (*Vehicle for skills* ?) in: *Onze Alma Mater* (Leuven) 1990:1 (Feb. 3, 4, 5), states that learning to program as an instrument for the renewal of thinking skills has several presuppositions. Such as: fundamental insights into the processing of the theme.

Anyone wishing to resolve a legal matter—a divorce, for example—with all the known and 'impossible' complications associated with it, using a computer, ought to be well acquainted with the relevant law and legal customs. Otherwise, he enters incorrect data into his program.

Note: - In natural logic, that is called complete or even integral knowledge or understanding.

Like this: self-knowledge:
"Am I biased (opinionated, orthodox, biased, or objective, i.e., scientifically minded – to use Ch. Peirce's terminology)? Proponents call this the metacognitive aspect (knowledge of knowledge)."

Proceeding in a strictly logical manner.
For example, applying the generalization method. In other words: computer thinking is applied logic.

Or again: do justice to the phenomenon, the entire phenomenon, merely the entire phenomenon with those asked, and thus prepare the solution.

WEC47
47. Algorithms as programming.

Programming is converting the task into a logically correct sequence of elementary (= irreducible) steps (action phases) understandable to the type of computer. In other words: forming an algorithm.

Note: - Before using the computer, one sits down at a table with pen and paper: that, too, is already programming.

Algorithmics
"Algorithmic thinking is the hard core of computer science". (H. *Haers/ H. Jans, Computer Science and Computers in Education* , in: *Streven* (Antwerp) 1984: July, 928/ 940).

One defines an order that expresses that which is at stake—the essence—one by one.

Typology.
In information circles, people speak of 'structures' of algorithms. For example, the following three.

a. ***Iterative algorithm.***
The monotonous repetition of the same thing. -Model: "a,a,a,a,…" -The instruction (command, command) is simply repeated a number of times. –

Appl. Model. - One wants to retrieve a list of twenty names from the name store (memory) of a computer: one presses "name entry" twenty times.

b. *Sequential algorithm.*

The non-monotonous sequence. -Model: “a, b, c, d etc.”

Appl. Model. - Putting coffee making into the computer. - Initial situation: “I go to the coffee maker” (a) - Intermediate situations. - “I take the coffee pot. (b). Walk to the tap (c). Fill the pot with water (d). Etc. - Up to the final situation.

c . *Selective algorithm.*

A multitude of possible choices from which to choose.

Model. —“If what is sought, then 'yes'. If the opposite, then 'no'.

Appl. Model:

At the ministry, there is someone who has to calculate a pension using the computer (= statement). The whole, only the totality of all information that together make up the pension sum, is what is allowed to come out at the end of the algorithm.

Like this: “Does the entitlement fall under one of the following categories (worker, employee, self-employed)? “Yes or no?” “If part-time career then…”

Conclusion

Algorithms, if strictly logically elaborated, define a lemma, i.e., a provisional definition that leads to the definitive definition via the phases of the algorithm, where the phases of the algorithm (what is called Platonic) represent the analysis.

WEC48

48. Synthesis, retrosynthesis, total synthesis on computer.

Library St.: *B. Faringa/ R. Kellogg, Factoring* (Nobel Prize in Chemistry 1990), in *Nature and Technology* 58 (1990): 12 (Dec.), 832/837.

1. *Synthesis.*

E. Corey, with about twenty collaborators, worked on the synthesis of gibberellic acid, a complex plant hormone, from final elements (often compounds with carbon atoms). This is a preliminary stage to the manipulation of biological characteristics.

2. *Retrosynthesis.*

Corey broadened the synthesis method.

(a) analysis: he broke down complex structures until he came across the smaller 'building blocks' (components).

(b) Production: he resynthesizes such components.

Note: The role of the computer.

The LHASA (Logical Heuristics Applied to Synthetic Analysis) is a computer widely used in universities and industrial laboratories (including in drug research) all over the planet.

Since 1959, Corey has been applying that method at Harvard University: precisely that computer logic regarding synthesis was one of the main reasons for his Nobel Prize in 1990.

3. *Total synthesis.*

The production of natural substances (a natural substance is an organic compound of natural origin), starting from simple molecular components, is called 'total synthesis'. The various atoms that make up a hormone or an antibiotic (*note:* combinatorics), their mutual interactions, the functional (role-relating) groups within them, the spatial structures—all of this is involved in a total synthesis.

Algorithmic

Corey thus synthesized ginkgolide-B, a complex compound found in Ginkgo biloba, the well-known tree of life (a remedy for asthma and inflammation in Chinese phytotherapy).

This was done by breaking down step by step into 'synthones' (final constituents) - retrosynthesis - and by combining in thirty-seven steps.

Note: - In the field of biochemistry, one sees here how the algorithmic method is applicable not without the concept of 'combinatorics', i.e., the manipulation of configurations (if production, then “bottom up”; if combination into components, “top down” - to characterize the course of events in computer language).

WEC49

49. Something about neural networks.

Since 1960,

Especially after 1985, computer scientists (USA, Japan, Switzerland, etc.) have been experimenting with a type of ordinate controller that contains neural networks. The so-called 'classical' computer contains a program; a neural network does not, unless it is “in the making”.

1. *The human brain.*

A neuron is a brain cell with its neurite and its dendrites. Our brain comprises about one hundred billion nerve cells, which work together thanks to astrocytes.

2. *The neural network* .

This type of computer simulates (= mimics) our brain. In the absence of the 'classical' program, only a set of components remains—artificial neurons—which interact in an interconnected ('connected') manner based on electrical currents, with a sensitivity threshold susceptible to fluctuations.

Application.

Gg.- 1. A neural network, 2. a text.

Gv (= instruction). - “Look up the word 'cookie' in the text.”

The neural network reacts somewhat like a human: the more a word resembles 'cookie' (the object being sought), the more the neural network becomes 'excited' (electrically, of course).

In summary.

The algorithms in the classical ordination system are transparent. The 'algorithm' in a neural network is, even for specialists, 'peculiar' with its own selectivity.

Note: - For robots, neural networks are a key phenomenon. Artificial 'seeing' or “word processing” is aided by neural networks.

Man and machine.

Library St. : CEBOS, Human Cerve (“Maman, enco un miscui), in *Journal de Genève* 10.12.90.

In the blink of an eye, a two-year-old child recognizes a cookie ('miseui' for 'biscuit') that barely shows its edge from the packaging. In 1990, a classic computer could not yet manage that.

Note: - The classical computer is not only mindless, it is also lifeless. As a lifeless machine, it lacks the, as it were, boundless capacity for adaptation

and evolution that history and the evolution (with its mutations) of all life forms (starting from a bacterium, for example) show us.

Let alone that that same computer would realize all the operations of the human mind. Is there an analogy (partial identity) with the human mind? There is certainly no total identity.

WEC50

50 . World wide web.

Library St. : *David Harberli, Le web a dix ans* (*Retour sur une conquête planetaire*), in: *Le temps* (Geneva) 18.12.2004, 4.

September 13, 1991.

In a laboratory in Geneva, Tim Berners-Lee (1955), an English computer engineer, receives Paul Kuntr from Stanford University (Calif.), where he worked at the Linear Accumulation Center (SLAC). Berners

Lee shows Kuntz how he surfs the web via a Next-type ordinator—which he wrote in the context of hypertext connections.

Kuntz's interest.

Kuntz had constructed his online database and wanted to make it available on the internet. To this end, he sought an 'interface'—a link between systems.

The beginning of a revolution in information transmission.

Berneers-Lee developed the Web while working at CERN (Centre Européien de Recherches Nucléaires) in Geneva. He drafted a protocol (meaning: the text governing the process) so that coordinators could communicate with each other. The intention was to connect all systems that provided their own useful performance in isolation but were incapable of communicating with one another.

At CERN, the telephone yearbook was previously used, which was compiled on the basis of data available on all coordinators with the Berners-Lee connections.

World Wide Web.

The meeting with Kuntz initiated the global spread under the name “World Wide Web,” the name Berners-Lee gave to his discovery. P. Kuntz: “The first

web surfer was more than a surfer. He was capable of performing searches on a third device."

The database developed by Kuntz contained 200,000 references that he wanted to make available on the internet. Well, the demonstration at CERN led them to decide to adopt Berners-Lee's solution.

"I have decided to use the web as a more welcoming link so that people all over the world can handle searches like the ones I had seen at CERN!" With that intention, Kuntz returns to California.

WEC51

December 51, 1991.

Berners-Lee reminds Kuntz of his intention—namely, when Berners-Lee was ready to depart for a conference on hypertext.

On December 12, Kuntz was finished with his assignment: the first American web page had been written. It was remarkably austere. http://www.siac.stanford.edu/history/early web/first pages.shtml .

That page served two objectives:

(1) the BINLIST link allowed users to look up phone numbers and email addresses in the SLAC yearbook;

(2) HEP was the access to a set of scientific works.

January 1992.

A month later—in La Londe (France)—Berners-Lee delivered his first demonstration outside CERN.

At the end of it, he connected his database to the base of the SLAG: the two hundred physicists were rooted to the spot. They all wanted to return to their approximately one hundred countries to show the invention to their friends. Within a few months thereafter, the scientific community connected to the web.

Paul Kuntz

The web encompasses two essential aspects.

(1) Virtual indicators make operations easier;

(2) what one can see and do on it does not depend on the machine to which the service is attached."

Bernese Mountain Dog

A very important parameter is at work in the development of my invention: the software is completely free because CERN relinquished financial rights. The result: free access to that scientific world as well.

Colloquium at the SLAC.

The first decade is celebrated in December 2001. The proponents discuss the future of the WWW. It is darkened by the collapse of the New Economy of dotcoms.

A lady.

The web was reduced to a commodity. The fashion surrounding electronic communication and its miscalculations have blinded us: the most important point is that the web placed 500,000,000 people online who are still here and who will not disappear.

WEC52

52. Physics.

Library St.: *F. Cerulus, Theoretical physics* (*Fact, formula and law*), in: *Onze Alma Mater* (Leuven) 1995:1, 7/53.

1. ***Definition***

Current physics – according to Cerulus – is “the science concerning all phenomena – or, if you will: behavior – in nature.

Note: - Curious: the author practically equates 'nature' and 'matter' (understood as inanimate substance), as is evident from oc, 8,9,28 ff. - As a science, it is “thinking about matter”. So much for the conceptual content.

2.1. ***Three main areas.***

The scope of the concept includes microphysics (particles, fields, for example), ordinary physics (matter tangible (to the common sense); and in the form of “solids”), and astrophysics (astronomical physics).

2.2. ***The worldview provoked by current physics.***

The scope of the concept is “an ordered material whole”, – seamlessly connected with chemistry and astronomy, for example, – with all natural sciences (sic) and with all applied sciences... “Even to philosophy” (oc, 7).

Note: When reading this, one cannot escape the impression that current physics harbors ontological pretensions concerning the entirety of reality.

Note:- *M. Fannes/ A. Verbeure, New visions in physics* (*cooperative phenomena*), in: *Onze Alma Mater* (Leuven) 1989:3, 239/250, writes:

"If we realize that telecommunications, microelectronics, computers, nuclear energy, etc. are consequences of physical theories, then we realize how great the influence of physics is on society." (Ac, 239).

Definition.

Physics studies the nature surrounding man in the form of repeatable phenomena and the associated observations in nature. Although chemistry or geology (earth science) also study such repeatable phenomena in nature, a typical characteristic of physics is that it is rather interested in the more fundamental mechanisms (meaning: repeatable phenomena) that make nature what it is." (ac, 240).

This outlines a general definition of the concept of 'physics' in terms of its content and scope. Let us remember above all: nature

1. understood as material nature and

2. the most fundamental repeatable phenomena thereof are the object of that science.

Not the whole of nature as, for example, the first Greek philosophers—natural philosophers—saw it, or as John W. Goethe (1749/1830) conceived of his natural science.

WEC53

53. Physical method.

AW Whitehead, Mathematics (*Basis of exact thinking* , Utr./Antw., 1965, 7/11 (mathematics (an abstract science)) characterizes 'science'.

An application model.

Thus, a question might be asked at the table: "What was it that I saw, that you felt, that he/she smelled and tasted?"

Answer: "An apple on the table." That is nature as the object of common sense.

Science.

In its final analysis—according to Whitehead—science attempts to describe "an apple on the table" based on the positions and movements of its molecules. That is an abstraction, a very partial description: it pays no

attention to (= abstracts from) me (seeing), you (feeling), he/she (smelling, tasting).

In other words: physics—for that is what Whitehead is evidently referring to—reduces the total given or phenomenon to a partial phenomenon.

Note: - Ontologically, that is an impoverishment, of course.

Mathematization.

"The belief that the ultimate explanation of all things is to be found in the mechanics of *I. Newton* (1642/1727; *Principia mathematica philosopiae naturalis* (1687)) is the reflection of the fact that every science, in its growth toward completeness, becomes mathematical." Thus Whitehead. Which leads to a naturalization (i.e., a modification imposed, indeed, a definition, following the example of physics) of every science.

Mathematical language.

This focuses on abstract relationships of data—independent of living people—that exhibit regularity (valid for all cases) and can be immediately expressed in mathematical structural formulas and measurement figures.

F. Cerulus, Theoretical physics (*fact, formula and law*), in: *Onze Alma Mater* (Leuven) 1995:1, 7/53, puts it this way:

A working group is tasked with investigating the milk production of cows insofar as it is partly caused by environmental factors. The theorist of such a group began his report with the sentence: "Consider a spherical cow…"

In other words, the cows are reduced to the geometric model of the 'sphere'. Every material given is stripped of all aspects perceived by physics as 'complications', so that some mathematical remnant of evidence remains which constitutes the actual object of physics.

WEC54

54. Experimental testability of physical statements.

F. Cerulus, Theoretical Physics (*Fact, Formula and Law*), in: *Our Alma Mater (Leuven)* 1995: 1,7/53, states that ultimately the physicist must arrive at a theory, which is a logically consistent system of—preferably mathematical—statements about material processes.

However —pay attention—a theory is an insight—often arising as a sudden inspiration—into a mathematical structure that serves simultaneously as a

protocol and as a regulation for experiments. The statements of the theory must be adjusted, made more calculable, or, if necessary, refuted, by observable behaviors of matter.

In this way, a theory is tested that is general and encompasses a number of behaviors of nature. It must, of course, be logically free of contradictions and mathematically justifiable.

Hand in hand with this go the calculations which, after being tested by means of experiments, make the theory applicable as a representation of natural phenomena.

Experimentally observed is not yet theoretically formulated.

An experiment, for example with an electron, never 'sees' the theoretical electron mass expressed in the structural formula. In fact, one 'sees' a much more complex interplay of electron and photon fields. The electric charge observed experimentally is not the charge as formulated by the relevant mathematical equation (which primarily emphasizes the field character). That charge is determined mainly by the interplay that constitutes the objective event called an 'experiment'.

Humor.

A physicist. - “Sir, your tubular air container has its roundness lost".
Driver. - “What?”
Physicist. - “The cylindrical device on which your vehicle rests is not longer around”.
Driver. - “What?”
Physicist. - “The more elastic matter around the circular frame that you advances by its continuous revolutions in space, is not longer around.

Suddenly, a boy comes past shouting: “Hey sir, you have a flat tire!”

Behold the chasm that scientific language creates between the everyday world of physicists and common sense. It is calendar humor, but that humor aptly characterizes what physics can 'make' of an ordinary flat tire!

WEC55

55. Models in physics.

We do not stand still when simulating on a computer; however, we do with other models. Matter and its most fundamental processes or behaviors are the original that demands information. How do physicists conceive of their models?

Library St.: *J. van Eindhoven, Believing in indirect perception* , in: *Nature and Technology 65* (1997): 9 (Sept), 93. Steller is Professor of Technological Aspects Research at Utrecht University.

A. *Scale and perceptibility.*

(1) Lice, for example, are among the smallest things that "the naked eye" can distinguish details of.

(2) That same naked eye is no longer working alone, for example in observations made with binoculars or opera glasses.

Steller calls "direct observation" that observation that does so without aids.

(3) Things that are many times too small to be observed directly, i.e. without an intermediary, or that are too large to be observed without instruments, are very common in microphysical, mesophysical and macrophysical physics.

For van Eindhoven, this creates models ('images') of the original that are always a clarification or interpretation that risks at least partially distorting the original. If only because the instruments themselves are based on some physical or other theory.

B. *Applicative model.*

X-ray crystallography.

Crystals are tested—observed—for their structure by means of X-rays, which are high-energy electromagnetic radiation (such as our TV tubes, for example). The way in which this radiation is bent provides information (i.e., provides a model) regarding the lattice spacing of the crystal.

Sugar, salt, silicon are crystals, e.g. "The 'seeing' of the structure of crystals is no longer a matter of direct observation or magnification." Thus states the author.

convert a crystal structure into a visible image (*note: a common rational model), we need computer calculations.*

Moreover: a theory regarding the interaction between crystal and X-rays stands between the given (the original) and the viewing of that given—via an 'image'.

Consequence: it is not directly seen. “Only with the aid of that theory can we convert the measurable data into a picture of the structure.

Thus one clearly sees the intermediate terms between our direct, common-rational perception and the original, i.e. the phenomenon, those intermediate terms, that instrumentation, yes, and indeed theoretically justified intermediate terms.

WEC56

56. An example of what Eindhoven calls “an incorrect indirect observation”. -

Ozone in the stratosphere

The American NASA had the first observations thanks to measuring ozone in the stratosphere. In 1983, the Nimbus 7 satellite measured greatly reduced ozone levels (the so-called 'holes') during sunny periods. By axiomatically interpreting this, NASA did not trust that data. It was neglected.

In Great Britain and Japan, however, a different theory (axiomatics) was held regarding the progression of ozone accumulation in the stratosphere. Using different methods, resulting from those different assumptions, the measurements were repeated.

Consequence . - The ozone hole was discovered as a physical phenomenon after all.

Conclusion

Another theory regarding a method just deduced shows a phenomenon differently.

This proves that the physics models, like our knowledge often is, are perspectivist; they expose, yes, but not simply the phenomenon as it is in itself, but as it presents itself in the form of theoretically co-determined models.

Detour observations.

NASA identifies a phenomenon but does not 'see' that it is “of physical importance”. In Great Britain and Japan, exactly the same phenomenon is

identified—at least objectively speaking—but this time via a different form of observation. We call the latter a roundabout observation, i.e., observing another form of the same thing.

A comparison.

We see a series of trees of the same size as diminishing trees the further they are from us. By perceiving in a different way—we make our way to that beautiful avenue—we determine on the spot that those trees, which appear phenomenally smaller, are in fact the same size.

Incidentally: the first view gives us a lemma, which we improve and make more true to reality through analysis and the addition of other forms of viewing.

In other words: what every phenomenology—even outside the domain of physics—establishes, namely the perspectivity of our perceptions (and even of our sensations), also applies to physical phenomenology.

That is the reason why the physics of the same phenomenon (original) has more than one model, so that one model serves as a corrective to the other.

WEC57

57. Once again: models in physics (visualization models).

Bible St.: *F. Cerulus, Theoretical physics (fact , formula, and law*), in: *Onze Alma Mater* (Leuven) 1995:1, 7/53.

We start with an example.

In 1897, the electron was discovered.

(1). In 1913, Niels Bohr (1885/1962) situated it within the atom as a whole. He fused the planetary model of Ernest Rutherford (1871/1937) and the quantum concept of Max Planck (1858/1947) regarding energy exchanges. Bohr's model, with its positively charged nucleus as a sun surrounded by negatively charged electrons as planets, is more of a visualization than a mathematical structural formula.

(2). In 1927, Werner Heisenberg (1901/1976), one of the founders of quantum theory, and Erwin Schrödinger (1887/1961) discovered a consistent mathematical model for the laws that govern the behavior of quanta (discontinuous doses of energy).

This theory can no longer—like Bohr's model—be translated into a single 'image', a visualization model, or made understandable to the common sense; rather, it can be translated into coupled, complementary 'images', namely particles and waves. What is difficult for the common sense to imagine: it has no 'visualization' for it.

The building blocks of matter.

Bohr's atomic model, if calculated (or rather sealed) by means of quantum mechanics (Heisenberg/Schrödinger), yielded in a few years an abstract mathematical model for atomic physics and for another branch of physics, chemistry.

1. For atoms, a few volts suffice to dislodge electrons from their atomic nucleus. This type of energy ('voltage') normally occurs in chemical reactions. In other words: for chemistry, Bohr's model (nucleus + electrons) is 'meaningful', i.e., usable as a model.

2.1. Nuclear physics, however, uses thousands, indeed millions of volts, because only at that energy does the nucleus show that it itself consists of neutrons and protons.

2.2. Experiments at even higher energies reveal that even more fundamental 'particles' exist. - Bohr's model is only 'meaningful' under certain conditions.

In 1995, physics established that electrons, neutrinos, and (three families of) quarks together constitute all matter. They form the “building blocks” of nature. However, in common sense, the term 'building blocks' refers, for example, to the irreducible components of a house. In physics, however, the term presupposes that its building blocks arise and perish (particle/antiparticle), interfere, and clump together. Which house building blocks do not do.

In other words: visualization models can turn out to be very limited as models.

WEC58

58. Models in astrophysics.

Library St. : *Anton Vos, Jamais autant d'étoiles ne sont apparus qu'au début de l'univers* , in: *Le Temps* (Geneva) 10 01 02.30.

1. *The established theory.*

The stars within galaxies, as soon as conditions permitted, gradually formed to reach a maximum number between the Big Bang (the cosmic primordial explosion now about 10 or 15 billion years ago) and the current era.

2. *The new origin model.*

A working group led by Kenneth Lauretta and his colleagues (University of New York), on the sidelines of the annual meeting of *the American Astronomical Society* in Washington, posits that the physical universe rose from primordial darkness in the form of a flood of light never seen since. Specifically: the formation of stars has never been as intense as barely 500 million years (a mere blink of an eye in astrophysical chronology) after the Big Bang. Since then, the number of new sun formations has merely declined.

The reason.

Photographs from the Hubble Space Telescope (1995; 1998) showed the most distant galaxies ever observed. Given the significant distance between our Earth and those systems, they now appear to us as they were several billion years ago, in the early years of the universe.

The working group studied the very faint light of those earliest systems and determined that the photos show only the brightest celestial bodies of that period. All the others that emit too little light remain invisible for the time being.

The galaxies photographed by Hubble represent only the tip of the iceberg: 90% of the light that once illuminated the universe is too faint to be visible from Earth with current equipment.

The group believes that the formation rate of the celestial bodies at that time was ten times higher than that which can be determined in the space near us. Naturally, there is a very divided reaction to this new formation model—which, if tested—as the working group expects and found to be true, will turn a large number of theories upside down—if only due to the very limited visibility of the objects removed from us at such a great distance.

WEC59

59. The physics concept of 'chaos'.

Library St.: *C. Maes, Chaos at the Edge of the Sciences* , in: *Onze Alma Mater* (Leuven) 50 (1996): 3 (Aug.) 379/408 (*Chaos, God of Confusion*).

Scientific chaology (chaos theory).

1. *The term 'chaos'.*

Maes notes that – outside of physics – 'chaos' simply means 'disorder' (disorganization).

Even in *I. Prigogine/ J. Stengers, *Order out of chaos* *, London, 1984, that definition is at work: not deterministic chaos (of established physics) but a form of disorganization stands at the beginning of 'self-organization'.

Applicative model of deterministic chaos.

Suppose: there is an (imaginary) billiard table that

(1) shows no friction conditions and

(2) has a rounded outline without (the four) angles. Because an extremely small deviation in the angle (note: based on the angle) at which the ball is struck triggers a collection of very different trajectories, the entire movement shows - what is called - “chaotic course”.

Chaotic systems in physics

like the movement of the billiard ball above – are very 'sensitive' to a set of initial conditions, in such a way that for every initial condition, another condition can be found that is situated very close to it but nevertheless steers the moving system along a fundamentally different trajectory.

“Even though this difference is initially very small, nevertheless, if we wait long enough, a noticeable deviation will occur.” (Ac, 380).

Note: - In short: “Even if a very small cause, then still major consequences” characterizes this causal process.

Regulatory model of deterministic chaos.

The movement of a physical system

(1) that consists of more than one component (*note:* movement factor) and

(2) is 'sensitive' to interactions and in particular to initial and/or boundary conditions, is called 'chaotic'.

Note: Colloquially: “(One never knows) how things can turn out”.

Note: For example: three planets that—due to gravity—move in interaction with one another;—likewise: the evolution of the weather is 'chaotic'.

Small omens (in the sense of causes) can cause consequences greater than initially expected.

In the same way, the smoke from a burning cigarette can curl upwards unpredictably, though determinedly.

WEC60

60. The physics concept of 'chaos', continuation 1.

Note: Maes remarks.

Henri Poincaré, Les méthodes nouvelles de la mécanique céleste , Paris, 1899, appears to be the first work on chaology. He established that the mathematical equations of mechanics that represent a process are sometimes not exactly solvable, but only approximate.

Related concepts.

(1) The pair "objective determinism/cognitive (un)predictability".

(2) The physical phenomenon of 'chaos' is not incompatible with determinism. According to Maes: quite the contrary!

(a) ***Determinism,***

Determinism, understood as physical determinism, one of the most striking axioms of modern physics (did A. Einstein, for example, not reject physical probability (phenomena proceed probably) as contrary to determinism?), signifies a narrative structure: "If, for example, the initial conditions, then the further course is necessarily (determined)."

(b) ***Predictability/unpredictability.***

A determinate process is perfectly predictable if one knows the totality of its conditions (factors, cause). Unpredictable, however, is a course that, although objectively determinate in itself, is nevertheless partially inaccessible to our cognition.

Conclusion

Objective determinism and thus principled predictability. Cognitive unpredictability due to a lack of information regarding the conditions.

Applicative model.

The toss of a die triggers a physical process that is deterministic. Yet there is a known (stochastic) aspect to it: "Few can predict how many eyes will be rolled." (Ac, 383)

(2) ***Probability theory.***

Thanks to logical-statistical reasoning, probability theory offers a kind of way out regarding processes where our cognition of the sum of factors is incomplete: the unknown part of the factors is revealed in the calculated probabilities.

Note: - Physical models in chaology.

All that has been said above compels us to the question: "How to represent chaos as an original that calls for a model? And specifically a partially unknown original?"

(1) As already mentioned, with reference to H. Poincaré, mathematical dynamic equations.

(2) Fractals (sometimes: fractals), i.e. irregular geometric figures (cf. Benoît Mandelbrot (b. 1924) who founded his theory of fractal objects in 1975, - objects which on the ordinate represent Mandelbrot sets which may represent deterministic chaos).

WEC61

61. The physics concept of 'chaos', continuation 2

(3) complexity theory.

First, an outline of the concept in circulation.

Complicated.

A Boeing 707 contains more than thirty thousand parts. That is – certainly for the non-technician – very complicated. But ultimately, it remains transparent.

'Complex'

'Complex' in the new sense is best Dutchified as 'over-complicated', i.e., ordinary complexity but cognitively opaque. For example, the correct position (configuration) of a bowl of spaghetti viewed in its parts. The configuration of a buoy remains transparent; that of the parts of a portion of spaghetti is cognitively opaque.

Maes thus states that he (in 1996) does not know of a good or general definition of 'complex' in the sense of cognitively overcomplicated. However, he does state that a (future and physically valid) complexity theory could possibly represent "complex aspects" of chaos.

(4) ***Turbulence theory***

One opens a water tap and a 'turbulent' jet of water sprays out. According to Maes, such a phenomenon appears chaotic. However, (in 1996) an exact definition of the term 'turbulence' was not yet available (Ac, 401).

(5) *Irreversibility theory.*

I. Prigogine (1917/2003), in his * *Les lois du chaos* *, Paris, 1994, uses the concept of 'chaos' to explain irreversibility (irreversibility regarding the passage of time). Others speak of a kind of 'generalized' irreversibility regarding chaotic processes.

Maes:

A number of chaotic processes are perfectly reversible. - Irreversibility is, incidentally, a characteristic of macroscopic phenomena.

A game of billiards can be chaotic but will never be irreversible.

Conclusion

'Chaos' belongs to the domain of mechanics, 'irreversibility' primarily to that of …. (?)

Scientists who “should know better”. (Ac,397).

(1) *Alpha and gamma sciences “misunderstand”.*

The background of that misunderstanding. - Thinkers such as H. Bergson (1859/1941) or A.N. Whitehead (1861/1947) rebelled against the established natural sciences. They accused them of mechanics (the universe as a cold machine) and reductionism (the universe as reducible to a small number of physical and/or biological concepts and laws). - Both vices are also called 'physicalism'.

Chaology in the service of the critique of the natural sciences. J. Baudrillard (sociologist), G. Deleuze and F. Guattari (psychologists), J. Kristeva (linguist), M. Serres, J.-Fr. Lyotard (philosophers), P. Davies, A. Ganoczy, A. Gesché (theologians), Fr. Capra (mystic), - in our country G. Bodifieé and J. van der Veken, - they are all accused by Maes of a wrong understanding of 'chaos' and related matters.

WEC62

62. The physics concept of 'chaos', continuation 3

(2) Everyone sees chaology and related fields as a radical break within physics, especially mechanics.

Note - In fact, according to Maes, they fall into projection: they have their own definition of chaos, of disorder, in their minds, and project that definition into physics as if, for example, determinism had been cast out with it.

In particular, the term 'chaos'—which contains an element of disorder understood as unpredictability (cognitive) in both physics and their minds (human and other sciences)—is regarded as identical rather than partially identical or analogous: concordistically, the difference in meaning is not considered.

(3) All - according to Maes - base at least partially their own alpha and gamma sciences on that misunderstanding of chaology.

Thus, some see in the natural science revolutionized by chaology a kind of metaphysics, i.e., a theory of reality that encompasses the cosmos, God, and man. — Thus the cosmologist and physicist-theologian P. Davies: “It may seem bizarre, but in my opinion 'science' offers a safer path to God than religion. (…) The far-reaching conclusions of the “new physics”.

Note - Maes' criticism is evidently justified. She demonstrates for the umpteenth time how a term - e.g. chaos - must first be precisely defined in terms of content and scope before it is used.

Moreover: the same word sound, as a term, can always be situated within the axiomatics of language use (here, for example: physical language use, distinguished from that of the humanities and social sciences) to which it belongs.

If, therefore, established natural science is subject to criticism, this must be based on grounds other than a misunderstood “deterministic chaos”.

WEC 63

63. The world as organization (matter, life, being human).

Library St.: *Ludwig von Bertalanfy* (1904/1972) considered living beings as forms of organization. He situated these within a general systems theory (1968). In his **Robots, Men and Minds** (* *Psychology in the Modern World* *), New York, 1967, 56 f., he outlines this as follows.

1. *Criticism.*

The worldview of yesterday – the so-called mechanistic universe – was a worldview of blind laws of nature and of physical things in random motion. –

1. 'Chaos' was typical of, for example, atoms.

2.1. By chance, organic compounds and potentially self-replicating molecules emerged on the primordial Earth as the precursor to life.

2.2. No less disorderly (so the evolutionary theory of the time posited) was the emergence of higher life forms through random mutations and selections – amidst accidental environmental changes.

3. By means of an inexplicable coincidence, mind and consciousness appeared as an epiphenomenon (*note:* non-essential accompanying phenomenon) of the nervous system.

In the same vein, behaviorism and psychoanalysis posited that the human person was an accidental product of nature and nurture. In this view, hereditary factors were assigned a minor role, while accidental events in early childhood and subsequent conditioning were given a major role.

After all, human history was one damned thing after another "without its or her reason" (as the historian H. Fisher says—in an expression rivaling Shakespeare's Cosmic Idiot).

2. 1967

In 1967, we are seemingly looking for a different fundamental insight: the world as an organization.

Central fact: "The organized complexity". (Oc, 58)

Central premise: the fact that humans invent and manipulate symbols (signs).

Three arrows.

Von Bertalanffy clearly distinguishes three levels regarding organized complexity: **(a)** the mechanical, **(b)** the vital/life-specific, **and (c)** the organismic organized complexity. He refers here to Democritus of Abdera (-460/-370), the atomist, Aristotle of Stageira (-384/-322), the vitalist, and Hippocrates of Kos (-460/-377), the organismist.

In other words: von Bertalanffy attempts to do justice to the qualitative leaps (inorganic, organic, human).

WEC64

64. Towards a definition of life.

Library St.: *Fr. Rienks, Biology* (*What is that* ?), in: *Nature and Technology* 66 (1998): 2 (Feb.), 48/50. Rienks summarizes *E. Mayr, This is Biology* (The

science of the living world). E.W. Mayr (b. 1904) is Professor of Zoology at Harvard University.

What is biology?

The book thematizes the commonalities of, for example, embryology, neuroanatomy, and evolutionary biology in such a way that they become distinguishable from the natural sciences. The answer spans nearly three hundred pages, which indicates that defining the essence of biology is not a simple matter.

What is life?

First of all, the historically known answers, presented all too briefly.

(1). Primitives (claim?) that a mountain and a tree also possessed a 'spirit'.

(2). Ancient Greeks already defined living things as endowed with 'breath of life' ('psuchè').

(3). Bible believers speak of 'soul'.

So much for the pre-modern.

The modern debate.

Galileo believed that “the book of nature” is written in triangles, circles, and other geometric figures. Descartes claimed that all organisms (except humans insofar as (self-)consciousness) were 'machines', mechanistically explainable phenomena. That is physicism or mechanics regarding the definition of life.

Vitalism

Some thinkers took a stand against this: they retained terms such as 'spirit', 'breath of life', or 'soul'. That is the thesis of modern forms of vitalism, which posits a principle of life that cannot be fully explained by physics, or in the form of chemistry (biochemistry).

Note - G.E. Stahl (1660/1734) labeled his vitalism as 'animism'. Friedr. Hoffmann (1660/1742) called it his 'organicism', which is still strongly mechanistic.

Organicism

Around 1920—according to Mayr—organicism emerged, which effectively combined physicism and vitalism. Figures such as Ch. Darwin and G. Mendel (evolution and genetics) influenced it.

Organization.

More than energy and movement (physicism) and different from life force (vitalism), 'organization' is typical of all that lives.

Note - This resembles what von Bertalanffy states, with the understanding that the latter also posits inorganic nature as organized. Life should therefore not be defined simply as 'organization' but as a kind of organization. But what, then, is the specific nature of living organization? Rienks does not dwell on this.

WEC65

65. Induction regarding living beings.

Bible st .: *Ch. Lahr, Logique* , Paris, 1933-27, 604/624 (Méthodes des sciences biologiques).

Lahr states that the biological sciences study "living matter." Consequently, he situates everything that lives (plant, animal, human) within the framework of matter.

1. *Natural science layer.*

Anatomy, physiology, ethology, and pathology (the study of disease) indeed exhibit a physical (or biochemical) nature.

Applicative model. - A veterinarian, called to a cattle farmer with beautiful, high-yielding cows, is confronted with a cow that is “not doing well.” The veterinarian breaks his animal-friendly relationship with the animal to understand it as someone trained in the natural sciences.

Result. - Examination of symptoms, questioning of the livestock farmer, - anamnesis (examination of the past). Once this stage is reached, he can prescribe medication.

2. *Biological layer.*

Biology is the science not of “life” or “living matter,” but of living individuals. While science studies 'facts' (and 'laws'), a veterinarian (just like a physician) stands for individual beings.

2.1. *Individualological layer.*

This cow—“a particularly affectionate and sweet animal,” says the farmer—is not that other one over there. A living being—certainly on an animal level—is much more individual than inanimate matter. It is therefore much more unpredictable and complex.

2.2. *Typological layer.*

Moreover, the “cuddly - sweet” cow is a member of a biological type or species. She is a ruminant.

(a) cloven hooves, multiple stomach, molars with flattened crowns.

(b) Excluding claws, single stomach, canines and molars with tubercles on the crown (which define a carnivore).

Analog induction.

Analogy is both similarity (a ruminant and a carnivore are both living beings) and difference (a ruminant excludes a number of characteristics of a carnivore). Analogy is both coherence (cows live in their own groups, occasionally, as in tropical Africa – alongside carnivores in the same habitat) and gap (ruminants avoid carnivores).

In other words: induction, both as generalization (similarity/difference) and generalization (cohesion/gap), leads to a distinction between species or typology.

Everyone—even if in the form of a pet or similar—who truly interacts with animals (circus people first and foremost) will attest to the above based on experience with animals that are more than 'living matter' in the materialistic sense.

WEC66

66. Absolute chance in fairy tales and in some theories of evolution.

A story is minimally essentially a past event followed by a later event. Thus, one might hear biologists claim that there was once an Earth without life (a past situation) followed by an Earth with life (a later situation).

Theory of chance.

It is now common in some biological circles to state that the occurrence of life or the subsequent mutations of life forms are coincidences.

Let us address this narratively, for what such biological circles assert is a story, namely the story of life on earth, beginning with its origin and the vicissitudes of life thereafter.

The fairy tale as a story.

Fairy tales specialize in coincidences. These surprising moments are even one of their charms.

Like this: “The stone turned into a fairy”. Translated: the fairy emerges from the stone. It is a story that tells of a fate, namely the encounter with a stone, and that recounts the origin of a fairy, from a stone of all places.

The absence of sufficient reason as absurd coincidence.

Everyone knows that the stone, if its course is viewed in isolation from the rest of reality, presents no sufficient condition for the emergence—from it—of a fairy. Either a fairy appears somewhere outside that stone, or she does not appear. Saying that a stone 'transforms' into a fairy creates that dilemma.

Figure of speech

That a stone turns into a fairy can well be stated with a network of words, but can never be logically justified. Just as everything absurd is absolute nothingness. But it is an aesthetic delight to read such nonsense or to hear it told as if it were “a miracle.”

Comparison

If it is asserted that the Earth, in its course, sees life arise “by chance” at a certain moment, this is only possible if one limits oneself to the Earth insofar as it was without life, and thus, isolated from the rest of reality, contains no sufficient reason for the existence of life. In other words, that sufficient reason is to be sought outside the Earth viewed in this way.

But that presupposes integral knowledge: there must therefore be a sufficient reason in the entire cosmos outside the Earth—even if we do not know it. Yet to claim that the Earth, within its inherent possibilities, sees life arise by chance is telling fairy tales; in them, things arise without any sufficient reason. It is aesthetic pleasure but absolutely nothing. A pseudoscientific web of words. A figure of speech that underscores anything but truth.

WEC67

67. Proponents of evolutionary contingentism.

Library St. : *Jean-Jaques Kupiec/ Pierre Sonigo, Ni Dieu, ni gène* (*Pour une autre théorie de l'hérédités*), Paris, 2000.

Genetics, one of the top achievements of the current biological model, in: from the dissection of genomes to medical applications. Both authors, one a philosopher, the other a biologist, label “the genetic theory” as pre-Darwinian and therefore backward.

Darwin's model.

Darwin—according to Kupiec/Sonico—definitively did away with finalism. He argued, namely, that the evolution of biological species is not the realization of a predetermined—and thus 'finalistic', managing teleology—'program', but the result of the natural sifting of individual biological beings insofar as they are confronted with contingent (random) environmental changes. Which is the biological-evolutionary model.

1. ***Genetic programming.***

(a) Established genetics seems finalistic to its proponents: the totality of genes is, in fact, a conceptual pattern that from the outset refers to the realization of the biological individual as a totality.

(b) Stellers. - Recent results in biology show that the connection between the gene and the corresponding physical characteristic that the biological individual realizes is tenuous. One then makes do with stating that genes are "the genetic domain", which is no more than a kind of predisposition whose realization is far from certain.

2. ***Embryological programming.***

In the wake of this, embryology is due for revision.

(a) The established model. - On the basis of 'instructions' that are genetically encoded (i.e. latently present somewhere in the genes), the cells of the embryo, which are all identical to begin with, are gradually differentiated and become specific (i.e. each endowed with its own purposefulness) cells.

(b) Stellers. - The cells are 'thrown' into contingent environmental changes resulting in "natural selection" of those cells that are thus ready for differentiation, - without a genetic initial program.

Note - This type of narrative regarding the history of cells and embryos (systematically anti-finalistically) introduces chance where our limited cognition sees no sufficient reason for both mutations and differentiations.

Whoever narrates biological science in this way does so according to a narrative scheme also found in fairy tales: there, too, one encounters 'miraculous' coincidences, i.e., events without any sufficient reason. Which is a form of "irrational explanation," i.e., a null explanation.

WEC68

68. Evolutionary theory (viewed logically).

The essence of chance.

If we wish to propose a truly general definition of chance, it is the following: “Anything that has no sufficient reason or ground is chance,” and thus immediately irrational, if the Latin for reason (ground) is 'ratio'. Whoever assumes chance assumes that there is something that exists without 'ratio', without reason.

The gradations regarding reason.

To keep the exposition clear, we refer to *Vladimir Soloviev* (1853/1900) in his * *La justification du bien** (**Essai de philosophie morale* *), Paris, 1939, 190 ss., where he expresses himself as an Orthodox Christian thinker regarding evolution as *Charles Darwin* (189/1882) sets it out in **The Origin of Species by Means of Natural Selection* * (1859).

Evolution.

To begin with, Soloviev establishes, along with the biologists of his time, that the evolution of life species is a fact that is a scientifically undeniable given.

As an axiom, Soloviev puts forward—to understand the stages—that “from a + b I can indeed draw a or b, or a + b, but from a I can only draw a” (oc,191).

In other words: if the lower, in terms of biological structure and course, is merely the lower, without showing even the slightest trace of the higher within itself, then only the logically higher cannot be drawn from it.

Note - Solovyo in the 19th century assumed that, if the facts are given, evolution which essentially stands or falls not merely with mutations but with leaps resulting in a more complex, comprehensive structure and course, these facts possess their own sufficient reason or foundation to be understandable, i.e., provided with 'ratio' or reason.

He symbolizes this in: “If a + b, then e.g. a or e.g. b or a + b understandable”. The preposition “If a + b” signifies sufficient reason or understandability. If the sufficient reason (expressed in the preposition) is only a or only b, then only a or only b can be derived from it (thought of exclusively), making it plausible and understandable. - oc, 187.-

Evolutionary levels.

The stone exists (*note:* as an inorganic being). The plant exists and lives. The animal lives and is aware of its life. Man understands the meaning of life on the basis of concepts. The sons of God (*note:* who share God's supernatural life) actually and actively realize the meaning of life, i.e., the perfect conscientious order in all things until the end (*note:* until what the Bible calls "the end times").

There you have his characterization of the levels of evolution in a nutshell.

WEC69

69. Evolutionary theory (viewed logically) (continuation 1).

In other words: to be perfectly clear: Soloviev views a fact as conditioned by a reason or sufficient salvation (within itself, outside itself, or both). Or: a given can only exist—and be conceivable—with such a sufficient reason or 'explanation'.

The evolution of sufficient reason.

Or “judgments logically expressed”, the evolution of the antecedent clause that logically grounds the consequent. Let us examine the progressions on the evolutionary levels.

1. *One stone falls on another.*

The effect on the second stone is purely physical. (Note: physics is understood in the current integral sense: it encompasses micro- and macro-processes to chemistry).

The sufficient reason for that effect is a physical one: for one reason or another (one need only think of Newton's gravity), a first stone falls and falls onto the second. With, for example, a fragment breaking off the second and pulverizing the latter.

2. *One plant acts on the other.*

When a massive tree eventually renders a slender plant uninhabitable through its shade, this is not merely a progression on the one hand; it is simultaneously a biological process. The fact that the small plant becomes uninhabitable cannot be explained by purely physical factors (meaning: reasons or grounds).

“If only physical reasons, then only physical effects are possible.” One sees that the 'explanation' of the survivability that disrupts the development (and

the structure) of the small plant is biologically understandable. One stone overshadows the other, but does not render the latter uninhabitable.

3. *One animal bites another.*

When an African lion bites a hyena attempting to steal its prey, this is a reciprocal process that exhibits a purely physical aspect but is essentially more than a large one rendering a small plant uninhabitable: the sufficient reason is typically animal.

The lion is hungry, his prey is threatened; he realizes that threat (animal consciousness); he realizes the source of that threat, a hyena; he reacts with his teeth adapted by evolution. The hyena reacts to the entire situation—not like a stone on a stone falling on it,—not like a plant becoming uninhabitable due to a more powerful plant, but like an animal reacting to an animal.

The animal structure and the course of events make fighting for prey plausible and understandable only if they constitute the sufficient reason for that fighting.

WEC70

70. Evolutionary theory (viewed logically) (continuation 2).

4. *One man kills another.*

This is a reciprocal progression that cannot be reduced to the physical, nor the plant, nor the animal without ignoring essential aspects. When, on September 11, 2001, terrorists kill several thousand fellow human beings by means of hijacked planes flying into the WTC towers, this tragedy bears all the characteristics of a human level or standard regarding the struggle for life.

Animals, however cunning and powerful, do not reach this level of elimination. Only humans can handle this. The sufficient reason is therefore not an inorganic, nor a plant or animal reason, but a human one, even if an inorganic, plant, or animal aspect or partial reason is involved: humans surpass animals in structure and progression, yet much of the animalistic, for example, lives on at the human level of existence.

5. *The Jewish authorities have Roman soldiers crucify Jesus.*

For such a thing to be plausible and understandable, yet another sufficient reason is necessary. The structure that the Jewish state establishes within the Roman Empire, the message of Jesus seeking to fundamentally evolve the Old Testament, the basis of the Jewish religion, the radical rejection not so much by “the people” who saw Jesus as a prophet, but rather by the vanguard

of that time (Pharisees and scribes) who wanted to stick to the old ways—all of this constitutes the sufficient reason for Jesus' death on the cross.

For the Jew and the Christian, this is therefore more than a mere human tragedy.

Conclusion

In other words, there are types of sufficient reason. - The axiom “Everything has its reason” (Plato) must exhibit a variety within the term 'reason' that considers evolution plausible as a fact.

Necessary course of events; not accidental.

This immediately implies that the term 'necessary' is just as susceptible to variety as the term 'reason'. Thus, it is physically necessary for a loose stone to fall on another; it is botanically necessary and inevitable for a lion to bite a hyena threatening its prey; it is 'humanly' necessary for terrorists to destroy the WTC towers in New York; it is necessary on a Jewish level for Jesus to suffer death on the cross.

In all those cases, the ordinary person says: “If one knows the situation, then it must be done.”

Conclusion: necessity also evolves with levels of existence.

WEC71

71. Gravity and the evolution of life forms.

Let's start with something more scientific. *Anton Vos, Les scientifiques ouvrent leurs bras aux ondes gravitationnelles prédites par Einstein* , in *Le temps* (Geneva) 08 01 02, 3v.

Isaac Newton (1642/1727) derived his general theory of gravity and the law contained within it from the three laws of John Kepler (1571/1630) concerning the movements of the planets around the sun. In 1916, this Newtonian theory received a renewed physical model based on the generalizing theory of relativity of A. Einstein (1879/1955). Reduced to what common sense can grasp, this amounts to the following.

(1) The universe, materially speaking, consists of three spatial dimensions (length, width, height) and a temporal dimension, so that one can speak of 'spacetime'.

(2) Fundamentally, within that theory, mass (which manifests itself, for example, as weight) and energy are identical or at least equivalent ($E= mc^2$).

Curved space.

A mass (or energy), if sufficiently accumulated, curves the space at that location such that what—in the experience of the common sense—is a straight line, is in fact a curve. Thus, for example: a ray of light, if it approaches such a concentrate sufficiently closely, follows a path traveled that is curved in fact.

Gravity.

We experience as a direct phenomenon that we are 'drawn' to the ground beneath our feet, and we call this 'gravity'. What we perceive as “weighing heavily” (and see around us) becomes, within Einstein's theory, the fact that our (small) mass is attracted by (the curved space of) the (large) mass of the Earth, which itself moves within the curved space of the Sun, just like the other solar planets.

Gravitational waves.

Still according to Einstein's theory of relativity: if sufficiently large masses (energies) are subjected to sudden acceleration, this would cause gravitational waves—a bit like a pebble splashing into a puddle causes a series of ripples.

The collision of two black holes or a supernova (naturally large concentrations of mass and energy, respectively) would constitute such an acceleration. This wave model, however, is still untested and therefore hypothetical, but physicists (LIGO in the states of Louisiana and Washington, and GEOGOO near Hanover) are preparing the craft to test that part of the theory.

WEC72

72. Note: Gravity and levels of existence.

1. ***The deterministic reason (explanation).***

I. Newton saw an apple fall just like all other purely material bodies. Whether one interprets it as Newton (gravitational determinism) or with Einstein (curved space), the fall of bodies that—insofar as they are purely inorganic—cannot resist it is determined. That fall is immediately predictable if the totality of the conditions (initial conditions, for example) are known.

2. ***The not simply deterministic reason.***

Here reveals one of the characteristics of life that is very clearly ascertainable to common sense—and favored even by the most advanced

biology or human science—namely, the mastery of gravity. This apparently occurs by virtue of a mysterious mechanism in all living things that perceives curved space (to use Einstein's words) and—what is more—overcomes it, in order to subject that force to its own normal course, or respectively, to its own objectives.

2.1. Due to that mechanism, a plant grows, at least in part, against the curved space created by the earth, i.e., upwards. This is in exactly the opposite direction of, for example, a stone, which simply falls.

2.2. By virtue of that mechanism, but now activated in the structures representing animal consciousness, animal life moves against gravity across the entire earth. – Thus, scientists observe that termite nests in Central Africa, with their towering turrets, harbor an air and heat regulating mechanism such that, through the clever activity of the termites, warm air rises from the nest and cooler air descends—air movements that are themselves subject to gravity but are neutralized by termites in their nest planning.

Not to mention the mountain goat that skips up the mountains—all in defiance of "the fall of inorganic bodies".

2.3. By virtue of an analogous mechanism, but now engaged in human objectives, mountaineers ascend the Himalayas or manned or unmanned aircraft take off, or humans enter cosmic space.

Conclusion:

Life is subject to gravity—one of the most fundamental physical forces. And yet: on at least three levels, life possesses a gravity-overcoming mechanism. What lifeless 'things' in the middle.

In other words, life and its evolutionary stages show a characteristic that very clearly demonstrates the powerlessness of gravity.

WEC73

73. Man Biologically Interpreted.

Library St.: *H. Ponchelet, Yves Coppens* (*Le propre de l'homme*), in *Le Point* (Paris) 02.11.01, 114/115.

It is an interview based on *Yves Coppens / Pascal Picq, De l'apparition de la vie à l'homme modern / Le propre de l'homme* .

The two volumes bear the common title: *Aux origines de l'humanité* , Paris, Fayard. The conversation discusses what makes a human being human, biologically speaking.

Incidentally: Coppens, together with D. Johannson and M. Taïeb, was the discoverer of Lucy (Australopithecus afarensis (1974) “the father of Lucy”.

The general model .

A cosmology is the background: just as astrophysicists established that matter, although inert (slow in the physical sense), nevertheless develops over time a process of increasing complexity and orderliness, so too does biology: as time progresses, life organizes itself to the same extent in the form of ever-increasing complexity.

This orientation is a great universal law (a;c; 114). In other words, evolving life is goal-oriented.

The human being within that universal model.

What distinguishes man from the rest of all living things is—at least according to the current (2001) state of the science—that he is the most complex and most organized life form on our earth. This is the thesis that Coppens further attempts to substantiate.

Facts.

Coppens is a field paleoanthropologist (see his role regarding Lucy). The fossils speak a language such that evolution is no longer “a simple hypothesis among others” but a fact. Even the Pope acknowledged it in 1996.

Logical remark.

We recall the terms “full concept” and “integral concept,” which we briefly bring to mind. Suppose: a petrified bone.

(a). Individual generalization: one seeks to fit it into one's own biological whole.

(b). Generalization: other findings (and their generalizations) show similar wholes.

(c). Collective generalization: the living beings evoked by the witness remains had mutual relationships (regarding nutrition, sexual life, the struggle for survival, for example)

(d). Integral definition: this coherence is situated within the totality of living beings. - Coppens' representation briefly presents the full (a to c) and

the integral (d) concept based on the findings: within the physical framework (see general model above) he situates man. In particular, he situates man within the framework of apes as biological relatives in order to characterize him, which excludes certain characteristics and includes certain characteristics. The analogical induction that underpins typology is the inductive method appropriate to the object of study.

WEC74

74. Man compared to the great apes.

Biologically, from the perspective of DNA, humans and great apes are closely—sometimes very closely—related. They descend from a common ancestor, but they diverged in such a way that, for example, the chimpanzee is not the ancestor of humans, yet is still a closely related biological being.

The three angels of primatology.

Louis Leakey (1903/1972) discovered fossils in Kenya and Tanzania, namely the Parathropus boisii (Zinjanthropus (1959), an australopithecus, and the Homo habilis (1961), a hominid.

He encouraged three women to study the great apes on site, namely Jane Goodall (the chimpanzees in Tanzania), Dian Fossey (the gorillas in Rwanda), and Biruté Brindamous Galdikas (the orangutans in Borneo). They discovered that numerous forms of behavior thought to be exclusively human (i.e., the earlier type) also proved to be observable in great apes (i.e., the more recent type).

Just like humans, chimpanzees fall out with one another. The power struggle for dominance within the same group never stops. Groups living in close proximity attack one another; indeed, they organize night patrols to guard territorial boundaries. It even escalates to wars.

Chimpanzees make use of tools they find.
Claude Lévi-Strauss (1908/2009) refuted.

Bonobos, a species of chimpanzee that mate facing one another just like humans, exhibit a form of exogamy: the females of a group leave it and seek a male partner in neighboring groups.

What C.L. Lévi-Strauss (structuralist ethnologist) refutes, who argued that the incest taboo was the epitome of the characteristically human.

Protocultures or real cultures?

The chimpanzees, a group of which Frédéric Joulian studied in the Tai Forest (Ivory Coast), crack nuts, whereas neighboring groups do not. He writes that he discovered cracked nuts, providing evidence that this 'culture' may date back four hundred years.

Such a thing is only possible if there is a transmission—'tradition'—of this technique from generation to generation. Furthermore, this entails a learning process, namely the relevant upbringing of young chimpanzees.

Two interpretations.

Such a type of culture is labeled 'protoculture' (or, if you prefer: initial culture). Yves Coppens believes that we are dealing with “real culture”.

Note: Everything depends on how one defines the term 'culture' and, of course, how one defines the human aspect of human culture. After all, even if man uses instruments found in the wild, the manner in which he does so and the context in which he carries it out do indeed differ from that of great apes: his outward behavior is underpinned by a typically human mental life.

WEC75

75. Man different and higher than the great apes. -

Although Coppens is repeatedly surprised by “the human” in the great apes, he nevertheless emphasizes the gap between the two types of living beings. We reproduce this – somewhat abbreviated.

Human consciousness.

Jean Piveteau, Coppens' teacher, said: “An animal knows a lot, but man knows that he knows it.”

Ethnologists state that apes do indeed possess consciousness. However, the prehistorian Hélène Roche notes that in the wild, an ape did not manufacture tools itself. And, although there is a small chimpanzee in the Antwerp Zoo cleaving pebbles to sharpen them, it still needed the epitome of a human. Great apes use tools, but moreover, humanity is constantly inventing new ones.

Human society.

Chimpanzees, for example, are apparently socially organized. Human forms of organization, however, are far more numerous and sometimes extremely sophisticated. For instance, some apes do wage war against one another, yet human wars are rational and extreme. Bonobos seem to uphold

a kind of incest taboo, but human laws regarding this are fundamentally different.

The human sense of art.

Long before the appearance of the people of the Lascaux cave, Neanderthals collected beautiful stones and fossils, and made necklaces from discovered shells or pierced teeth. Since their era, the Cultural Revolution of humanity has taken flight.

3. *Man as metaphysician.*

"What are we doing here on earth? Where do we come from? Where are we headed?" Such fundamental questions are not found even among the great apes, but are present in "thinking matter," which has prompted humans in their societies for three million years to find an answer to such—labeled by Coppens as—"frightening questions."

Conclusion:

A qualitative leap, despite all gradual approaches to "the human", separates even the great apes from mankind.

Note: - Coppens: "If, for example, one allows chimpanzees to live long enough, they might perhaps reach the threshold of human consciousness (and in its wake, typically human societies, art forms, and—who knows—the metaphysical stage)." Biological evolution, with the emergence of new species (in that sense), presupposes that small groups live in isolation for a sufficiently long period. One can therefore speak of the great apes as original, but only to a limited extent in terms of human models.

WEC76

76. Human Sciences.

"Man" as an object of specialized sciences is very briefly outlined *in G. Legrand, Vocabulaire Bordas de la philosophie* , Paris, 1986, 306s. (*Sciences humaines*).

1. *Ethical Political Science.*

For most ancient Greek thinkers, the primary object of thought was **(a)** man and **(b)** his society. Human sciences were therefore called "moral and social sciences", because the virtuous (conscientious) man in his society was the primary concern.

2. *Human Sciences.*

1. ***David Hume*** (1711/1776, a leading figure of the English Enlightenment) poses the problem of "man" as the object of modern, empirical, or experimental specialized sciences. He can be considered the pioneer of the natural sciences that have been emerging since around 1950.

2. ***D. Diderot*** (1713/1784; encyclopedist), *Lamettrie* (1709/1751; *l'homme machine* (1747): - G. Buffon (1707/1788; biologist); - *de Sade* (1740/1814; *La philosophie dans le boudoir* (1795 *), JJ Rousseau* (1712/1778); *Emile* (1762), together with others whom we skip, in Hume's s poor, define man **(1)** reductively and **(2)** often contradictorily among themselves.

3. ***I. Kant*** (1724/1804; leading figure of the German Enlightenment) sees in "man" the pedestal of all sciences; G. Hegel (1770/1831) absorbs "man" into his all-encompassing Spirit or Idea.

4. ***Positivism*** (A. Compte (1798/1875) et al.) does not believe in a comprehensive anthropology and reduces "man" to 'social facts'.

The opinion of G. Legrand.

(a) The object.

The current human sciences reduce human science far too much to "an accumulation of uninterpreted, brute facts and statistics". – Only historical science and psychoanalysis have "man" as their object.

(b) The methods.

There is no common method across all humanities: "The ethnologist does not question primitive man on a couch (*note:* as psychoanalysis does). The sociologist—with exceptions—neglects the past of the groups he studies."

Note: Bordas' dictionary does not mention two humanities.

(1) The hermeneutic science of man (*W. Dilthey, Einleitung in die Geisteswissenschaften,* 1883).

(2) The cognitive sciences which study 'mind' (mental life), brain, body and society and which, based on purely materialistic principles, include philosophy, psychology, artificial intelligence, neuroscience, anthropology and linguistics (*J.FR. Dortier, ed., Les sciences de la cognition* , Auxerre, 2001)

WEC77

77. Conception of meaning/foundation of meaning (meaning-making) in the judgment is significant.

According to Wilh. Dilthey—following in the footsteps of *Fr. Dan. Schleiermacher* (1786/1834), *Dialectics* (1839), who introduced the term 'hermeneutics' (until then 'the science of textual interpretation') and conceived of it existentially, i.e., spread over the entire life—the whole of life is one continuous act of interpreting. According to C.H.S.S. Peirce, man is essentially an interpreting person, an interpretant.

*Jaap Kruithof, *De zingever** (*A Introduction to the Study of Man as a Significant, Appreciative, and Acting Being* *), Antwerp, 1968, states that the whole of life is one life of interpretation in the threefold main forms that are 'signifying' (judging), appreciating, and acting (acting).

Like this: whoever treats someone in a manner that occurs consciously or unconsciously 'interprets'—consciously or unconsciously—that fellow human being through their actions, although that by no means excludes signifying and appreciating, of course. Even if they treat that person without saying a word.

1. *Meaning-making as conception of meaning.*

For some time, a company head has noticed that the profit margin is shrinking. This turnaround has symbolic value; it is a signal: amidst today's rapidly changing economy, the firm is due for restructuring.

The manager grasps the point if he firmly admits that the policy is failing, at least partially. It takes courage to grasp the meaning of that turnaround.

Logical. “If (A) a turning point and (B) courageous understanding of meaning, then (C) responsible behavior”.

2. *Meaning-making as meaning-foundation.*

A manager observes that the representatives' reports have shown downward trends for months. This reversal is a sign, a signal. Perhaps the conclusion is: the sales department needs activation, perhaps even a thorough overhaul.

The manager creates meaning regarding the sign when he does not muster the courage to 'face reality', for example due to a lack of ordinary humility. His subjective input into the assessment of the given signal clouds his view of that signal. He does not grasp correctly—does not wish to grasp correctly—the turning point. He creates meaning, therefore he introduces a disturbing error of judgment between himself and the given information.

Logical: “If (A) reversal and (B) incorrect sentence construction, then (C) irresponsible behavior.” Specifically: The meaning does not derive from the given information. A logic of judgment cannot look beyond those two—sense of meaning and sentence construction—without becoming 'unreal'.

WEC78

78. Human science once again ethical-political science.

Library St.: *W. Lepenies, “Is it wirklich so?”* (*Der Mögligkeitssinn in den Sozialwissen-schaften*) in: *Neue Zuricher Zeitung* 24.02.1996, 69/70.

Note: - Since 1950+, the moral-social sciences became the current human sciences. It seems that a shift to the contrary is taking place.

1. *Economics as “hard science”.*

In a deeply established sense, economics is a hard science:

(a) it is natural science and does not take into account man and his cultural context;

(b) the only language that fits this is mathematical language (tables, statistics, graphs, - mathematically formulated theory, accessible only to 'initiates'). There, briefly outlined, is the prevailing model.

2. *Crisis of established economic science since especially 1989.*

In Western countries, rising unemployment (with the 'excluded'), and in former communist economies, the transition from the guided (socialist) to the liberal free-market economy, compel mathematizing economists to 'calculate' with non-economic (meaning: scientifically accessible) factors. Economics as a theory has so far (1996) failed to incorporate these factors.

3.1. *Style shift.*

(a) Opinions of “competent rebels” (Asok Desai) who express criticism within economic science itself;

(b) the need for some economic analysis within non-economic sciences (geography, biology, psychology, sociology, history, even aesthetics) leads to an evolution within natural economic science.

3.2 . *Economics as a socio-moral science.*

“We can once again speak of human sciences as moral sciences.” (*AO Hirschmann, Morality and the Social Sciences* (*A Durable Tension*))”. Thus Lepenies.

Cognitively established facts ("Ist es wirklich so?") are situated within ethical-political commitment. ("Es könte wahrscheinlich auch als sein".)

In other words, the morally and socially engaged thinker (or economist) takes into account that humans can intervene in what—at least within the model of established opinions—is merely a natural scientific phenomenon.

For example: *Amartya Sen, *Poverty and Famines** (Harvard) portrays famines in more than just physical-mathematical language. Immediately, both the author as an engaged personality and his temperament (which is more than a cold ascertainer of facts) once again come into their own more clearly in texts on the humanities. Human science, understood from a natural scientific perspective, becomes ethical-political science once again.

WEC79

79. The rationality of history: logical model from historiography.

Library st.: *JP Vernant, Mythe et pensée chez les Grecs* , II, Paris, 1971, 55. - The question is: "Is everything that happens logical and therefore rationally understandable?"

1. *Common sense.*

"It had to happen." This is how the ordinary person expresses the connection between what precedes—as reason or foundation, in Latin: ratio—and what follows, which represents the ascertainable phenomenon.

Appl. Model

Suddenly, a strike breaks out in a factory.

(1) To outsiders: a complete surprise.

(2) for those involved: "The tension was palpable". The strike had foreshadowing, which presuppositions:

(a) the pattern acted extremely harshly for months;

(b) the unions did not budge an inch.

The insiders therefore say, "It was bound to happen," namely when one knows all the data and deduces from that data.

2. *The historical understanding.*

Vernant, oc, 55, cites the ancient Greek historian Thucydides of Athens (-465/-401) in his Peloponnesian War.

Regarding this matter, JM Meyerson says: “The sequence of events in Thoukudides is logical (…). Time in his work is not merely chronological: that time is, so to speak, a logical time”.

Jacqueline de Romilly confirms: “Thoukudides' story – e.g. of a battle – is a 'theory'”.

Note: J. de Romilly naturally means “applied logic”. In that sense, Thucydides presents a victory achieved as a confirmed reasoning: “If one knows the circumstances (the factors), then the victory is deducible, for it is a kind of historical necessity”.

Logical models.

Thutzudides establishes historically given phenomena as originals that demand a model. Now, he attempts as much as possible the logical model: “if the omens or conditions, then the facts follow from them not only chronologically but logically.” In that sense, his historiography is the unveiling of the rationality of the facts.

Hegel's philosophy.

Who does not think of Hegel in this context? For him, everything that ever was, is now, and ever will be is logically structured—if you will: applied logic. In his * *Philosophy of Right** , he therefore states:

“All that is real (note: logically justified in the facts) is rational ('vernünftig'). And all that is rational is real.” In his view: in all that is factually ascertainable (is a phenomenon), a 'Vernunft', an omnipresent rationality, is at work. Even though Hegel (and also Thutzudides) knows that what is in itself objectively rational is not thereby already rationally explainable to our limited knowledge.

WEC80

80. Orthodox model of the court.

Library St.: *SA Meurtre* (*L'Homme n'excuse pas tout* , in: *Journal de Genève / Gazette de Lausanne* 23.08.1996.

On January 10, 1993, an Albanian living in Switzerland murders his wife's lover but fails to kill his wife.

Whereupon, three months later, the young woman's father kills his little grandson and his own daughter injures the little granddaughter while they were out walking. Behold the phenomenon. And now the model.

The grandfather states: “He had merely applied the code of honor of his community. Actually, he had not murdered. However, he had—as he justified in court—acted with passion: he had fulfilled the duty of revenge (*note:* his model) in a state of intense emotion.”

Library St.: *T. van Dijk, Turkish Mores* , in *HP- De Tijd* 20.02 1996.

Steller: “Especially when it concerns acts that, although punishable in Turkey as well, were committed to restore the honor of a woman, family, sister, or the perpetrator himself (note: steering-oriented structure) and for which admiration is garnered—within one’s own circle.” Through gossip, for example in the coffee house, “honor has been sullied” (*note:* the first part of the model). The perpetrator therefore considers himself a hero (*note:* the heroic model of revenge).

Axiom.

That family member for whom imprisonment proves most favorable is granted the duty of conscience to take revenge, i.e., to rectify the injustice committed. For example: “If the father has died and the eldest son is married and has children, then the youngest son takes revenge on ‘the madman who harasses mother’.”

Axiomatic deductive behavior as a 'rational' model.

We explain.

1. Axiom.

Someone whose honor has been tarnished can only regain prestige within the Turkish community if that honor has been restored.

2. deduction.

2.1. That entails that the rapist of, for example, your sister must be killed.

2.2. which entails that a son will murder his mother if she engages with other men.

Predictability.

Given that axiomatic-deductive model, redress is predictable to the extent that the traditional axioms are taken seriously. For redress is applied reasoning and, in that sense, 'logical'.

That posits the fundamental problem of multiculturalism. Outside of Albanian or Turkish traditions, at least partially different axioms apply, which can make the Albanian and Turkish traditions appear 'irrational'.

WEC81

81. Induction regarding humans.

Library St. : *Ch. Lahr, Logique* , Paris, 1933-27, 625/659 (*sciences morales et socials*).

1. *Moral*

By 'moral (ethical)' it is understood that man, as a being endowed with spirit (= intellect, reason, mind, will), immediately entails freedom and thus, to the extent that he is truly free, decides autonomously (independently) and thereby co-causes his own course and his environment.

Logical: 'human' encompasses a richer content and therefore a poorer scope than 'biological being'. This is reflected in the models that the sciences employ regarding humans.

2. *Human typology.*

Plants and animals can be classified into types on the basis of analogical induction, which focuses on characteristics that include or exclude each other. Humans can be classified in an analogous way as well.

We would like to briefly refer to *W. Dilthey* (1833/1911) and his *Einleitung in die Geisteswissenschaften* (1883).

2.1. *Psychology.*

Dilthey considered the natural scientific psychology of his time, for example, to be too one-sidedly 'explanatory', taking physics as its model. Starting from the radical difference, the radical chasm between inanimate matter, the object of mathematical physics, and life, the object of biology, and between non-human life and human life, he devised a humanistic – 'verstehende' (understanding, comprehensive) – method.

2.2. *Hermeneutic method.*

'Hermèneutikè' (Greek for antics) meaning 'the science of interpretation'.

Library St.: *H. Diwald, Wilhelm Dilthey* (*Erkenntnistheorieund Philosophie der Geschichte*), Göttingen, 1963 (frl. oc, 153/170) (*Der Ausdruck als Mittelgied zwischen Erlebnis und vertsändnis*).

(a) ***Experience*** . - This is human mental life: man experiences the data with his (Geist' or 'Seele'. Dutch: 'experience'.

(b) *Ausdruck* . – Man reveals his mental life: he expresses it. That is 'expression'. This is the sign of his inner life, which can thus, through those manifestations, become perceptible, indeed, empathizable, and thus open to interpretation.

(c) *Verständnis* . - Through the expressions one's fellow man - in the past (historical hermeneutics) and in the present (psychological hermeneutics), and 'Verständnis', understanding, to muster.

Typology.

Thus, for example, Dilthey designs psychological or historical types of human life. His cultural typology bears witness to this. We cultivate a compassionate yet scientific understanding of our neighbor by responsibly interpreting his inner life through the signs that are its manifestations, and, for example, classifying them into types.

WEC82

82. Gabriel Tarda's interpsychological societal model.

Library St.: *Mark Hunyadi, Selon Gabriel Tarde l'imitation fonde la société humaine* , in: *Le temps* (Geneva) 21.07.01,10.

Hunyadi establishes the relevance of G. Tarde (1843/1904) on the occasion of the publication of his main work: *Les lois de l' imitation* (1890-1). *Les Empêcheurs de penser and around* , 2001.

Tarde was once so authoritative as a sociologist that he obtained the chair of modern philosophy at the Collège de France in 1900 (with H. Bergson as his opponent).

The main question: "What makes a society a society?"

1. *Economic utility values.*

According to some contemporaries, the emergence of society coincided with the emergence of economic communication and interaction. – "If – thus Tarde – the relationship of one member of a society to another was essentially an exchange of services, then one would have to state that animal societies are societies, moreover, that they are societies par excellence.

2. *Legal model.*

"In holding this view, one forgets that all labor, every service, and every transaction is based on a genuine understanding, guaranteed by gradually regulating and complex legislation." In other words: regarding the foundation of societies, the legal system takes precedence over economic utility relations.

Similarity, in particular imitation.

Legal solidarity is essentially exclusively social, because it prioritizes similarity based on imitation. When this similarity already exists without the existence of recognized rights, there is nevertheless already a nascent society.

Social group

A group is 'social' if it is "a collection of beings insofar as they are engaged in imitating one another or insofar as they—without imitating one another at that moment—resemble one another and their common characteristics are ancient imitations of the same tonal image."

The raw material of a society.

That is a group of children who, insofar as they grow up together, share the same upbringing and the same environment.

Conclusion

For Tarde, the individual is the driving force in his interpsychological model (as he calls it) throughout the network of imitations: in other words, Tarde is not an individualistic sociologist but an interactive sociologist.

WEC83

83. Conflictology.

René Girard's mimetic theory.

Patricia Briel, Un philosophe chrétien invited à "desobeïr aux violences" , in: *Le Temps* (Geneva) 02.11.01,43.

The author discusses *René Girard, *Celui par qui le scandale arrive* *, *Desclée de Brouwer*, 2001, a work that addresses the terrorism that struck New York and Washington on September 11, 2001, and led to the Afghanistan War (07.10.01).

Imitation in animals and humans.

In his **La violence et le sacré** , Grasset, 1972, 250 ss., *Girard* quotes Sigmund Freud: "The little boy shows a great interest in his father. He would like to become and be what he is, to replace him from every point of view."

Furthermore: “The little boy becomes aware that the father is blocking their access to the mother. His identification with the father thereby takes on a hostile tone and ultimately becomes the desire to replace the vein in the mother as well.”

We find ourselves at the root of the Oedipus complex: precisely by imitating the father—which Girard denotes with the ancient Greek word 'mimesis'—the conflict between the boy and the father arises, a conflict that, through that mimesis of the boy, makes the mother the stake in the rivalry.

Girard broadens and deepens the Freudian concept: he starts from what researchers observe in animals, children, and adults to explain all that constitutes conflict.

Definition: if there are too many suitors and too few objects to satisfy, then conflict. Cf. his * *Des choses cachées depuis la fondation du monde** , Grasset, 1978.

Terrorism.

The motivation is “desiring imitation”, the desire to also be and to possess what one’s fellow man is and possesses.

Violence.

Violence is omnipresent in our culture: in the family, at school, on the street. It takes many forms: the most impressive form in 2001 is terror, which attempts a war of extermination against civilian populations.

Ourselves.

Among all the threats that weigh upon us, the only real one is ourselves. For Girard, violence is neither biological nor political or so determined, but mimetic. Thus he explains the hatred of the West: precisely because non-Western cultures imitate the West in the same areas (raw materials, influences, etc.), they arrive at a hatred of the West.

Christianity.

Philosophically, Girard is clear: all relativisms and particularisms fall short regarding the moderation of the omnipresent mimesis. According to him, moderation is reserved for the universalism that Christianity—though not necessarily the actual Christian—advocates.

WEC84

84. The Critique of Traditional Repressive Power (M. Foucault).

Library St.: *Is. Rüf, Michel Foucault* (*Les "Dits et écrits" constituent une boîte à tools philosophiques* , in *Le Temps* (Geneva) 04.08.2001,8. Based on *Michel Fouault: Dits et écrits* , Ed. de D. Defert et de Fr. Ewald, 2001.

Foucault (1926/1984), along with Lévi-Strauss, Piaget, Lacan, Althusser, and Derrida, belonged to the structuralism of the 1960s: they emphasize the primacy of the system, viewed synchronously, over evolution, and that of society over the individual. Meanwhile, that way of thinking has receded into the background.

However, that Foucault does not simply view 'structures' as models in that way will become clear from what follows.

Current affairs.

A Communist of 1950/1952, he waged war outside party affiliations in the sixties and seventies regarding thorny issues such as the justice system, asylum policy, sexuality, and psychiatry. In doing so, as he puts it, he felt like a journalist attuned to current events.

Critique of Humanism.

According to Foucault, the conception of man has gone astray since the 18th century. What was then called (and still is) "man" is above all the individual subject conscious of the world, which over time simultaneously becomes the object of the human sciences, such that God vanishes from Western attention.

Instead of searching for "man," understood in this way, one must expose the network of 'structures' (understand: relationships imposed by "the ruling power") in which "man" is trapped. We, humans, understand that system and its structures well, and we also interpret it in terms of concepts, judgments, and reasoning.

But—and here the structuralist reveals himself—we, as conscious individuals, are not its creators. Consciousness is not the ruling power. Immediately, we are like the other biological species: we do 'function' within the system of society, but as it were without purposefulness of our own—even though we attempt to give meaning to our individual consciousness.

The marginal

People in an asylum are treated as madmen, people in a prison as deviants by subsystems of “the system” that originated in the past (*Foucault, L'archéologie du savoir* , 1969) and which Foucault studies within the framework of a history of origins intended to prove that those subsystems (asylum, prison, all that constitutes the exercise of repressive power) can also be modified: they are not 'eternal'.

WEC85

85. The awareness of the unconscious: the self-illuminating consciousness.

Library St.: Dl. Perrin, Comment Freud en inventant l' inconscient nous a rendus très compliqués , in: *Le Temps* (Geneva) 18.07.1999.

In 1869, S. Freud (1856/1939) introduced the term 'psychanalysis' based on

(a) the fact that the people then labeled as hysterical prove that 'psychic' encompasses more than 'conscious';

(b) his own psychoanalytic experiences which brought what remained unconscious to consciousness.

The triumph of consciousness.

Patients labeled 'hysterical' were suspected of 'simulating' (in folk psychology: putting on an act) to make themselves look interesting (Paul Diel would later say: out of vanity).

Following in the footsteps of J.-M. Charcot (1825/1839); la salpêtrière), Freud thought that they **(a) were** fundamentally **(b)** best informed, provided they were properly guided, about the unconscious factors that 'disturbed' their behavior.

In other words: Freud derived healing awareness from the more or less disturbed inner life of the patients themselves. – Perrin refers here to *Fr. Roustang* (*Introduction à la psychanalyse*).

(1) Apparently the consciousness of those involved was 'weak' because it was obscured by unconscious factors (which Freud summarizes with the term 'libido', the deeper feelings of pleasure).

(2) ***The power of consciousness*** .

(a) ***The inexperienced consciousness***

The inexperienced or even deeply obscured consciousness represses 'things' that 'it' cannot simply accept as belonging to that same consciousness.

For example, because they are too shameful. (Paul Diel rightly calls that shamed consciousness 'vanity' – vanity, so he says, which can severely disturb self-knowledge (introspection, reflection)).

But in the meantime, it is clear that that seemingly weak consciousness somewhere realizes very well (is aware of) that a shameful phenomenon is present in the soul: how else would it make every effort to repress it, indeed, to suppress it very consciously?

(b) ***Now, that duality.***

The patients are aware that they once repressed and, for pleasure-seeking reasons (i.e., due to a lack of respect for the objective truth about themselves), still attempt to repress, notwithstanding that a number of symptoms (called 'psychoanalytic') remind them day and night (they suffer from it) that they do not want to confess (especially to others).

Psychoanalysis rests on that duality. The conscious, goal-oriented intervention of the psychoanalyst forces the patient to clarify that duality (knowing/not wanting to admit).

Conclusion. – Unlike many cognitivists, Freud ultimately held consciousness and the process of becoming aware guided by him in very high regard.

WEC86

86. More models in the humanities.

Library: *W. Salmon, Logic* , Englewood Ciffs (NJ), 1969, 67/70 (*Argument against the man*)

1. ***Genetic definition.***

"We think genetically (ancient Greek: 'gennetik os ') when we describe the becoming of, for example, a plant (...) or the history of a text from the first draft in the mind to the finishing touches." (*O. Willmann, Abriss der Philosophie* , Vienna, 1959-5, 51).

2. ***"Genetic fallacy".***

Genetic fallacies. - This is one form of "argumentum ad hominem," which involves targeting someone at their weak spot where they are refutable. Genetically, this is done by using the weak spot—the psychological genesis of, for example, a claim—as an argument against it.

Note - Fr; Nietzsche calls that 'genealogy'.

Applicative model.

Salmon, oc, 69- Platon psychoanalytically explained.

(1) Plato's neurosis is taken as a model for the original that is the true meaning of Plato's texts. Some psychoanalysts argue that, given his psychic structure, he was neurotic. He suffered from the notorious Oedipus complex in such a way that the relationship with “the mother” was not really clarified. His entire intellectual life betrays this psychic state.

(2) Platon thus 'rationalizes'. In his texts he constantly—unaware of it—identifies himself with his undigested complex. He philosophizes in such a way that his inner conflict is depicted (projected) in his seemingly logical reasoning. His clouded psyche disguises itself in the beautiful robe of 'rational' texts.

Rationalization means “converting what is not rational in itself (original) into rational terms (model)”. For example: a person who carries out a post-hypnotic command will, if asked why he acts in this way, give a far from post-hypnotic explanation, because he does not realize the circumstances.

Criticism.

Salmon. - Even if Platon was more neurotic, his methods of reasoning (Socratic induction, deduction ('sunthesis') and reduction ('analusis'), lemmatic analytical method, etc.) still remain logically very valid.

Karl Popper once remarked that psychoanalysts attempt to illuminate such vast scopes of understanding with so few conceptual contents. Furthermore, Popper reproaches him for a shocking lack of testability regarding what they assert about the soul and its depths.

WEC87

87. The word is not everything: Lacan's rhetoric.

The son-in-law of the famous French psychoanalyst Jacques Lacan (1901/1981) compiled a portion of his legacy in *Jacques Lacan, Autres Ecrits* , Paris, 2001.

1. Lacan made an exceptional impression on all of French thought at the time. And yet: “The non-existence of any legacy of his psychoanalysis proves his brilliant but sterile artistry of words”.

Thus *John E. Jackson, Le génie verbal de Lacan n' a pas d' héritier* , in: *Le Temps* (Geneva) 19.05.01,11. We summarize.

2.1. ***The reasons for Lacan's glory.***

The psychopathology of our daily lives concerns us all. Lacan, furthermore, was exceptionally gifted in the field of abstractions and theorizing. He also conceived of Freudian psychoanalysis in terms of the human sciences of the time: linguistics (de Saussure, Jakobson), anthropology (Lévi-Strauss), philosophy (Heidegger), resulting in a generalized structuralism that made a great impression as a very comprehensive explanation. Finally: his countless puns and his tropes intrigued many.

2.2. ***The reasons for sterility.***

To begin with, Lacan's texts express disdain for readers, including psychoanalysts, as well as for anyone who did not think like him. Furthermore, there is his type of argumentation. As a modern rationalist, Freud attempted to refute anyone who disagreed with him using rational proofs.

Lacan, however, refutes—a conversation with sarcasm—with 'arguments' that disregard the rules of rational discussion, in order to conceal his vulnerable spots. “The unconscious is structured like a language”

Note: the term “the unconscious” means the totality of those representations that we repress and that we only reveal through “the unsaid” when we bring ourselves up in conversation.

Lacan's famous sentence seems to align with Freud (one need only think of what Freud says about humorous remarks). But Lacan pretends that an 'analysis' (= interpretation of the unconscious) by a psychoanalyst is, above all, a matter of a conversation between two persons, in which one, while speaking, reveals his repressed unconscious to some extent (at least to the psychoanalyst). In fact, Lacan reduces “the unconscious” to the spoken words.

This is in direct conflict with what Freud calls the 'id', the wild and uncontrolled in our inner life, which, according to Freud, consists merely of drives seeking to discharge themselves.

Jackson: “In what would such a thing be structured, let alone be structured if a language is structured?”

With this, we are far from a so-called “return to Freud” advocated by Lacan and his followers.

88. The decade of the brain science model".

Library St. : *Jean François Dortier, La décennie des neurosciences* , in: *Sciences humaines* (Auxerre) déc". 2001/ Janv. 2002, 13.

Until approximately 1975, the term “cognitive sciences ” was non-existent. From 1975 onwards, it became common in the USA around themes such as artificial intelligence, cognitive psychology, Chomskyan linguistics, and philosophy.

According to Dortier, the term now encompasses neuroscience, artificial intelligence, anthropology, linguistics, and psychology, which culminate in a philosophy of the mind: cognitivism.

The decade of brain science.

1950+. - The research work of neurologists David Hubel and Torsten Wiesel uncovered precisely distinguishable brain and nerve defects that are active when people see something. This earned them the 1981 Nobel Prize in Medicine, which they shared with another great neurologist, Roger Sperry, who highlighted the specific role of the cerebral hemispheres. - Many other discoveries followed thereafter.

Thus: Wilder Penfield (brain imaging technique), Robert McLean (the “three brains”), Jean-Pierre Changeux (epigenesis), etc.

Note: - From 1980 onwards, new fluoroscopy techniques (scanner, magnetic resonance, positron emission tomography, for example) emerged.

The main purpose.

This was understanding the mental – especially the cognitive (concerning cognition, content of knowledge and thought) – activities.

One of the collective names for this is 'mind' (which immediately takes on a new, primarily neuroscientific meaning).

For example: by examining subjects who read, calculate, and speak, specific cognitive brain areas (neuroscientific modules) are discovered.

Similarly: one compares the brain regions that are active when reading meaningful words ('table', 'flower') with those that underpin the reading of meaningless words ('feltu', 'oemble').

Brain injuries—such as prosopagnosia (the inability to identify faces)—are investigated in this way.

Discussions.

The relationship between "brain/consciousness (mind in the traditional sense)" is particularly central. Most neuroscientists today (23002) state that knowing and thinking are inevitably 'anchored' in the brain, but that these functions depend equally on learning processes and on cultural (or social) environmental factors.

In any case: while artificial intelligence was the main interest from 1956 onwards, this has shifted to neuroscience since the decade 1990/2000.

WEC89

89. The decade of the brain science model". (continued)

Note: Dortier notes that two terms are common in Anglo-Slaksian usage.
(a) 'Awareness', the waking consciousness as opposed to the sleep state
(b) 'consciousness', i.e. the 'production (sic) of mental states and activities.

Note: - Finally, Dortier notes that the study of abnormal consciousness by psychologists and neurobiologists is one of the methods (let us think of someone who exhibits more than one personality).

Note: We add to this—for the time being—the neurotheological method of Eugene d'Aquili, Professor of Psychiatry, and *Andrew Newberg* , Professor of Radiology, of the Department of Nuclear Medicine at the University of Pennsylvania, who published * *Why God Won't Go Away** (* *Brain Science and Biology of Belief* *), New York, 2001, and * *The Mystical Mind** (* *Probing the Biology of Religious Experience* *), Minneapolis, 1999. We mention these briefly to clarify how cognitive sciences approach consciousness, specifically religious consciousness.

The predicate is already there, now we just need to find the subject. – Science is speaking of an original, as the subject of a sentence, in terms of a model, as a predicate. Now there are two types of models.

1. *The similarity model (metaphorical model).*

When Du Bois—Reymond says that we do not know what consciousness is and, moreover, never will know—a claim shared by quite a few cognitivists—it is because in his mental life the predicate intended to provide information

about the subject, consciousness in this case, is already given, namely, it is a physiological predicate.

The fact that Du Bois-Reymond harbors no hope of scientifically defining 'consciousness' based on that physiology is caused by that axiom.

2. *The coherence model.*

If one finds oneself axiomatically impossible to find a model of similarity for subtle things like consciousness (or indeed anything sacred), then there is an alternative model, a metonymic model: one defines what consciousness is (= model of similarity) by identifying it with a model of coherence.

Thus, neurotheologians attempt to know what religious mental states, understanding, etc. are by scientifically examining their reflection in the brain. This method is typical of many cognitivisms when discussing consciousness.

The question is, however: “May one identify the coherence model with the similarity model?”

WEC90

90. Which model to find for human consciousness?

*F. Droste, *de taal van hetbewustzijn** , in: * *Onze Alma Mater** (Leuven) 53 (1999): 2 (May), 166/203, discusses at the beginning of his exposition the German physiologist Emil Du Bois-Reymond (1818/1896), a pupil of *Johannes Müller* (1801/1858), who is very famous in Germany ; * *Handbuch der Pfysiologie des Menschen* * (1833/1840).

Emil Du Bois-Reymond is one of the founders of experimental physiology and electrophysiology.

Well, in 1872 he writes **(a)** that one does not know what consciousness is, **(b)** moreover that one will never know it. Dropste states that Du Bois-Reymond is the first to harbor doubts about the how and the what of consciousness.

An 'unmanageable' situation.

Behaviorist psychologies axiomatically excluded consciousness. Psychoanalytic psychologies attempt to say something about it through that which is associated with it, namely the unconscious, or the pre- and

subconscious. This amounts to speaking of consciousness in metonymic models.

According to *J.Fr. Dortier, Le retour de la conscience* , in: *Les sciences de la cognition* , Auxerre, 35 (Dec. 2001/ Jan. 2002), 12, the cognitive sciences prepared “the return of consciousness” as a privileged object of study by discussing mental functions such as “mental states” (e.g. “I believe that I exist”), “representations” (“I imagine that I am dead”), and “mental strategies” (i.e. methods).

Indeed, since 1990, many publications have appeared on the market by **(a)** philosophers, **(b)** neurobiologists, and **(c)** psychologists (Daniel C. Dennett, John C. Eules, Jean Delcou et al.). So that 1990/2000 is the decade of consciousness.

Ambiguity of the term.

Dortier warns – At one time, 'consciousness' means the fact that humans (and animals) experience mental states (if you will: thinking in the broadest sense). At another, it means the mental insofar as it is subject-bound, indeed, subjective (i.e., non-objective), just as sensations (cold, heat, aversion, sympathy) and indeed perceptions (e.g., hallucinatory), emotional reactions, etc., are experienced.

A third time, 'consciousness' means the fact that we—animals too, for that matter—deliberately give meaning and direction to what we do, to our actions (purposefulness, yes, purposefulness).

Moreover: consciousness is strongly identified with reflective consciousness, i.e. self-consciousness (“I realize that I am writing now; the intentio secunda of scholasticism”).

WEC91

91. Note: Consciousness model (cognitivist).

Library St.: *Pascal Engels, Introduction à la philosophie de l'esprit* , Paris, 1994, 187/209 (La conscience n'est-elle qu'un mythe ?) By the term 'consciousness', this cognitivist understands the following.

(a) Mental (psychic, inner) states insofar as they are experienced (perceived, become aware) are called 'conscious'. For example: “I am in pain”. “I am a convinced Christian”.

(b) Mental states of the first order ("I am a convinced Christian" but processed in the form of mental states of the second order) are conscious. For example: "I believe that I am a convinced Christian." Or: "We believe that we will one day desire to be Christians."

Note: - This would, for example, be called a Ricoeur "reflective consciousness", i.e. a self-illuminating consciousness of something ('something' here is, for example, "being a Christian").

(c) That mental state which is the subjective perspective (point of view) regarding the aforementioned mental states of the first or second order is called 'conscious'. Thus: "I for my part think that you are mistaken".
Or: "If I were in your place, I would proceed as follows."

Note: - Here a 'I' emerges hesitantly as a personal point of view, but certainly not as a person.

(d) That mental state which identifies the subjective view of things just mentioned with, or at least connects it with, an 'I' or subject, is also conscious. But like Daniel Denett, another cognitivist, Engel thinks that the 'I' as subject is an illusion.

Note: - If one reads cognitivists and examines how they conceive of a self that is, for example, neuroscientifically, grammatically, or genetically determined, the fact that they call such a self an illusion is normal.

Note: Reference should be made to *Jean-Pierre Dupuy, *Aux origines des sciences cognitives* *, Paris, 1944, in which it is explained how control science (cybernetics), in an initial and a later interpretation, becomes one of the foundations of materialist cognitivism: man as a cognitive machine stands central, - cognitive machine defined according to logistics (formalized logic).

Every materialism—even the dialectical of Hegel or Marx—has problems with man as an individual, actively conscious being, because the latter—the individual self—is absorbed into matter, preferably defined physically, or into the network (the structure) of dialectics, which primarily views relations that can be filled in by individuals who fade into those relations like 'foam'.

Biogenetically, the self is determined by the fact that our DNA is unique, singular; in that sense, the self is reducible to that biochemical structure which is DNA.

92. The alternative thinking and doing model.

Library st. : *P. Engel, Introduction à la philosophie de l'esprit* , Paris, 1994.

Steller briefly outlines cognitivist eliminativism (the axiom of elimination). Well-known examples include *Patricia Churchland, *Neurophilosophy* : *Toward a Unified Science of the Mind-Brain* *, MIT Press, 1986, and *Paul M. Churchland* (Patricia's husband) with his * *Neurocomputational Perspective** (**The Nature of Mind and the Structure of Science* *), MIT Press, 1989.

For both, “science,” and particularly computational (conceived according to some computer model) neurobiology, is the only source of cognition (knowledge).

P. Engel, oc 56 ff., refers to *Paul Churchland, Eliminative Materialism and Propositional Attitudes* , in *Journal of Philosophy* , 1979.

Incidentally: “a propositional attitude” is a mental phenomenon that can be expressed in a 'proposition' (e.g.: “I believe in no God”).

Exclusive materialism.

Engel emphasizes this: cognitivism (Note: with exceptions) is exclusive, as follows.

1. Cognition, the common object of the cognitive sciences (logistics, linguistics, artificial intelligence theory, cognitive psychology, neuroscience – summarized by Engel under the name 'humanities'), has nothing to do with consciousness phenomena as an established Western opinion places them at the center.

Consciousness is at most an epiphenomenon, a kind of imagined accompanying phenomenon of cognitive and even, generally speaking, psychological events.

2. Cognition stands exclusively opposed to anything that a certain opinion labels as paranormal.

3. Cognition stands exclusively opposed to anything a certain opinion labels as 'sacred' or 'deity'. In particular, the Churchlands distance themselves from fundamentalist creationism. – Not without reason, but a reason different from that of the Churchlands.

Criticisms

According to *S. Cuypers, *Stoffige geesten* (*over het materialisme*), in: *Tijdschr. V. Filosofie* (Leuven) 56 (1994): 4 (Dec.), 701, the thesis of the two Churchlands was fiercely debated even in materialist circles. However, it is typical of the still-existing scientism, that propositional attitude which asserts: "I believe exclusively in what positive sciences, such as the cognitive sciences, assert."

WEC93

93. Self-knowledge as a method in the human sciences.

Reference should begin with *Paul Diel* (1893/1972), an Austrian "curative psychologist" who later established a school in France and for whom Albert Einstein did not conceal his admiration. His seminal work **Psychologie, psychoanalyse et médicine* *, Paris, 1987, is a reissue of his **Psychologie curative en médicine** .

His axiom states:

Introspection, if purified of its disturbances (primarily vanity), is the truly valid psychological method.

Doctors, psychologists, and psychiatrists in France apply his motivational psychology (*Psychologie de la motivation* , Paris, 1964-2) with success. Which proves the testability of Diel's position.

Next, reference is made to *Paul Ricoeur* (1913/2005). To his * *Le conflict des interprétations* *, Paris, 1969, from which it appears that his reflective method—his name for self-knowledge—is updated with what hermeneutics, psychoanalysis, and structuralism have taught us regarding non-conscious mental or linguistic processes and mechanisms.

"The philosophy of the subject—so it is claimed (*note* —he means primarily the hermeneuticians and the structuralists)—is threatened with disappearance. Good. But that type of philosophizing has always been contested." (Oc, 233).

'Subject' here means "the I", which we all are, especially insofar as consciousness is coupled with self-consciousness.

An old tradition.

“Take good care of your soul” (Socrates, Plato) is already philosophy of subjectivity, but within an ancient Greek framework.

“I think” (*St. Augustine of Tagaste* (354/430; the greatest Church Father of the Western Church) continues this way of thinking, but within a biblical framework (one need only think of the self-knowledge he demonstrates in his *Confessions* , which have repentance as their concluding element).

'Cogito' ("I think", René Descartes (1596/1650) is a tradition-critical, strongly subjectivist re-establishment of both previous types of self-knowledge.

“I think” (Immanuel Kant (1724/1804; leading figure of the German Enlightenment), in a strongly modified sense (already pre-Romantic).

“Ich denke (Joh.G. Fichte (1762/1814) is the aim of Absolute (or German) idealism.

Jean Nabert (1881/1960) continues that tradition in an updated form, as does Edmund Husserl (1859/1938). Both pave the way for Paul Ricœur .

One could label his position as an ego-science ('egology'), but elaborated within Husserlian-Heideggerian phenomenology. This means that, both in the curative-psychological and philosophical present, the method centered around the conscious ego still exhibits some validity.

WEC94

94. The criticisms briefly outlined. - They amount to this.

1. *Psychoanalytic criticism.*

As far as S. Freud is concerned, his core issue is the murky forms of consciousness, rather than the unconscious. Indeed: somewhere, normal and abnormal people alike realize that what they think and do occurs far from fully consciously. Psychoanalysis, the result to a large extent of previous schools of thought that were aware of the unconscious, is characterized by an organization, namely The International Psychoanalytical Association (1910), as well as by deviants such as C.G. Jung, Alf. Adler, P. Rank, Ferenczi, Reich, and Lacan.

2. *Structuralist critique.*

In the linguistic sense, structural thinking is that language model which designates language as a structure reducible to formalized rules, viewed synchronically, that is, outside of historical development. Names such as *F. de Saussure* (1857/1913) with his posthumous *Cours de linguistique générale* (1916), Jakobson, Troubetzkoï, Martinet, Hjelmslev, Bloomfield, and Harris are worth mentioning here.

Just as in psychoanalysis, consciousness (here as so-called conscious language use) is considered to be influenced by unconscious rules. Consider the common man who, without ever having consciously learned grammatical rules, nevertheless applies his language rules very correctly. However, the distinction is clear: psychoanalysis 'displaces' the ego from its capacity for control through various impulses.

3. *Hermeneutic criticism.*

W. Dilthey (1833/1911), with his **Geisteswissenschaft*,* views the soul, the spirit, and the self as accessible only when one can interpret ('verstehen') the manifestations of their behavior as signs of mental life. For Ricoeur, this becomes: the self understands itself only from the manifestations that betray it; that is, access is indirect.

Note: Over time, Ricoeur attributed a very broad meaning to hermeneutics and also to semiotics (*CR Morris* (1901/1971; *Foundation of the Theory of Signs* (1938), following in the footsteps of CH.S. Peirce), as well as to structuralist semiology (linguistics as the theory of signs within a speaking community), as is evident from his *Text and Meaning* (*Essays on the Interpretation of Literature*), a translation by M. van Buren (Baarn, 1991).

In a text, even if it is structured based on unconscious factors (impulses, rules), an 'I' is speaking that addresses a 'you' (also an 'I') that attempts to 'understand' ('verstehen') the 'I' expressing itself in literature.

Thus one sees that Ricoeur's philosophy of the self keeps the self at the center but fully acknowledges its limits as consciousness that is powerful;

WEC95

95. The criticisms briefly outlined. (continuation 1)-

Note - Bible st . : *Mark Hunyadi, Mon cerveau ne pense pas* (*Défi aux neurosciences*), in: *Le Temps* (Geneva) 18.04.1998.

Hunyadi addresses *Jean-Peirre Changeux/Paul Ricoeur , ce qui nous fait penser* (*La nature et la règle*). Hunyadi criticizes the excessive degree of explanatory attempts by the cognitivists, who act as if they "finally" have the last word regarding psychological phenomena.

Paul Ricoeur takes a radical stand against Changeux and distinguishes very sharply between the neural and the psychological. Brain functions are not identifiable with "le vécu," the consciously experienced. Ricoeur does not deny the biological, but "if I know the functioning of my brain better (*note:* what neuroscience does) (note: what 'cognition' is), do I then know myself better?"

Thus Ricoeur. Brain science, and generally speaking biology and physics, describe the human body within the limits of their methods, that is, only partially. They do not grasp the body as it is psychologically experienced as a phenomenon reducible to the physical, biological, or neurological.

Thus, the euphoria of being in love is indeed accompanied by a physical, biological, neurological phenomenon that the cognitive sciences capture with their method, but that euphoria is not therefore totally identical with those accompanying phenomena.

The brain: that is neurons, neural connections, neurosystem.
The mental: that is knowing, feeling, acting—which is 'soul life'—mental states inherent to an ego.

Conclusion

"Even though I have a brain, it is I who think, not the brain," even though the latter is the foundation of the activities that the self, as subject, performs. Incidentally: Hunyadi believes that both positions are somewhat reconcilable in a third stance, but he remains very vague on the matter within the mentioned article.

Introspection (reflection).

Library st.: *G. Rey, Introspection* , in *O. Houdé et al., Vocabulaire des sciences cognitives* , Paris, 1998, 22ss.

Steller: "Everyone seems to immediately know the essence regarding what is thought or felt at every moment."

Note: - fortunately Rey says 'seems', for where is that man to be found - positively scientifically speaking - who “immediately knows the essential concerning what is thought or felt at every moment?”

Steller caricatures those who defend the scientific value of self-knowledge—introspection—in order to refute them with great ease.

WEC96

96. The criticisms briefly outlined.(continuation 2)

Rey. - René Descartes's confidence in (self-)consciousness was already highly nuanced by the Cartesian G. Leibniz (1646/1716). However, it is the psychoanalysis of S. Freud that posits that unconscious processes are at work in our spiritual life, which is seemingly governed by consciousness, and that gave this hypothesis scientific prestige.

That is—according to Rey time and again—a commonplace in linguistics and in cognitive psychology, which posits that the most cognitive processes underlying intelligent behavior are, insofar as they are unconscious, inaccessible to introspection.

Experimentally given.

Rey refers to *R. Nisbett/ Tim Wilson, On telling more than we can know* , in: *Psychological Review* 84 (1977), 231/259.

A scenario in that sense.

E. Pairs of stockings that are perfectly matching.

Gv. 1. - “Choose a pair”. The pp. choose the pair on the right.

Gv. 2. “Why do you choose this pair?”

The pp. utter sayings which can be proven not to be the true explanation.

V. 3. - “Why do you choose the right?” The parties emphatically deny that placement plays a role.

Reception

This experiment elicited many reactions because the authors formulated the conclusion (protocol statement): the pp. choose “under the influence” of unconscious factors and processes.

The most methodical response was *L. Ericsson/H. Simon, Protocol Analysis* (*Verbal reports as data*), MIT, Press, 1993. They constructed a detailed

computational (conceived according to a computer model) theory regarding “introspective processes”.

Note: The account Rey gives of the experiment amounts to a skeleton of the whole affair. However, the following.

Introspection is first and foremost phenomenology.

The one who, for example, analyzes why or how (both are far from the same: the former is a conscious motive or reason, the latter some unconscious factor) he thinks or acts in such and such a way, observes what presents itself directly, i.e., a phenomenon. Articulating that is phenomenology, i.e., formulating the given insofar as it is given.

Introspection is, to a further degree, a logical engagement with what phenomenology establishes. Here, questions of motive are situated not so much, but primarily questions of 'how,' which indeed repeatedly transcend self-illuminating consciousness and compel one to turn to the rest of reality in order to find the answer. Phenomenologically, this is called “indirect knowing.” One can speak of introspective 'processes,' but then one disregards the consciously experienced aspect of all introspection, which, while it can be interpreted as part of a whole cognitive process, must be done in such a way that the one practicing introspection is nevertheless more than a—e.g., computational—process. And to state that processes, insofar as they are unconscious, are inaccessible to introspection is to say the same thing in other words.

WEC97

97. Models in the human sciences.

Library st.: *Jean-Michel Truong, Totalement inhumain* , Paris, 2001.

This essay is half fiction, half factual. Truong is the founder of the first artificial intelligence company.

Incidentally: in 1956, the first seminar on artificial intelligence took place in Dartmouth (Canada), led by John McCarthy. The first computer program, called “Logic Theorist”, was produced there that allowed a whole multitude of subsequent clauses to be derived based on a small number of opening sentences.

What interests us here is a passage from Truong's work that *Joelle Kuntz textually quotes in *Une figure “ totalement inhumaine ” appelée à nous*

succêder *, in: **Le temps** (Genève) 28.12.01,36*, and which clearly shows us how a neuroscientific model provides information regarding an economic original.

The Nobel Prize winner (1974) Friedrich August von Hayck (1899/1992; neo-liberal economist) is well known. We quote Truong verbatim as much as possible.

The brain as a model of the market economy as the original.

We are Vienna in 1919: bitter cold and a state of emergency such that the university must close. Von Hayck, a psychology student, travels to Zurich where he attends the classes of the excellent brain specialist Constantin von Monakov.

Amidst anatomical experiments, the twenty-year-old von Hayck discovers an interpretation of the human 'mind': “What we call ‘human mind’,” he says to summarize, “is nothing other than a spontaneous (*note:* arising under no policy) order resulting from the interaction of billions of neurons under the influence of processes that selectively (*note:* therefore not just randomly) either favor or oppose the connections of the neurons, with the norm being the mental ideas that either facilitate or hinder our adaptation to the environment.”

In other words.

To begin with, our brain develops new activity possibilities in order to perceive the experience—the possibilities—preferences that exhibit utility value in terms of adaptation to the typical characteristics of the environment.

Put another way.

The mind “plays at the same moment with a large number of activity models, some of which survive because they are useful for self-preservation amidst a demanding environment.”

Connectionism

The knowledge activities are interpreted by the connectionists (including James L. McClelland and David E. Rumelhart around 1985) as the result of small, interconnected units that interact with one another without a leading authority.

The brain is therefore not an engineer who—to solve problems—would manipulate its data according to fixed sequences of instructions—the algorithms—but a tinkerer who continually stumbles upon randomly

encountered solutions and retains those solutions that he finds interesting. There is no question of calculation, but rather of discovery through tinkering.

WEC98

98. The neoliberal distinction.

Von Hayck emphasizes one distinction in particular.

(1). An order or organization has been established by a central body;

(2). An ordering is determined by the arrangement of the connections between the constituents within a single structure.

The first prioritizes the deliberate intervention of a single design; the second, on the other hand, is a 'spontaneous', self-organizing organization that results from the mutual relationships and improvements of the components.

In other words: the brain as a neural network is the very type of order-creating structure that knows no centralization.

Unpredictability.

Of such a connectionist order, we can at most discover how it functions, but, starting from a given situation, we cannot determine its behavior by means of exact prediction, let alone control it.

Transfer.

For von Hayck, the market economy is an adapting ('adaptation') machine that functions in exactly the same way as brain neurons.

The market machine 'calculates' (in the connectionist sense) on the basis of the free play of products and consumers exchanging composite (*note:* non-simple) signals, namely prices. Prices are to the free market economy what nerve impulses circulating through neurons within the brain are: doses of information that relieve the various agents (note: factors acting) of the need to possess complete information regarding the situation in order to make a decision. That is the core of Hayck's critique of the guided economy.

Criticism.

Joelle Kuntz titles the excerpt as if von Hayck is designing an economy that prioritizes " *le chaos des neurones* "—the chaos of neurons—as its guiding principle. That is only partially correct in the sense that there is unpredictability, but entirely incorrect if one forgets that von Hayck prioritizes a norm: survival amidst an environment.

Furthermore: von Hayck's extract forgets that only one type of model may be called 'exact', namely the definition. All other models say too much or too little and are, in other words, not totally identical to the original about which they provide too much or too little information.

Admittedly, as a metaphorical model of an approximate nature—a kind of general sketch of the (neo)liberal market—the neural network model is certainly suggestive. But whether the acting individuals in the economy can simply be classified as neurons (the same applies to the human mind) is another matter.

However, it is true that if a (neo)liberal economy is imposed from above on a mass of people through legislation, von Hayck's model reflects reality.

WEC99

99. The axiomatic models of Galileo and Bekker.

The current scientific community denies or, at best, minimizes paranormal phenomena which (a) prove to be undeniable (b) but which it interprets using a model foreign to those phenomena.

1. G. Galilei (1564/1642).

Ch. Alain, L'effet lunaire , in: *Psychologies* (Paris) 77 (1990): June 50/53, says, in summary, the following.

With Copernicus, Tycho Brahe, and Kepler, Galileo founded the exact natural science (the science connecting experiment and mathematics). That is apparently one of his true merits.

But George Sarton, the Nestor of the history of science, says: “Galilei wanted at all costs to eliminate astrology (note: original) as superstition (*note:* model).”

This even led him to emphatically reject the possibility that the moon might exert influence on the tides. — He was admittedly one of the greatest minds of all time, but — in this case — his passionate rationalism misled him. — Is it true that so many are misled by their irrational urge (note: the urge towards all that is mysterious or supernatural)? It is also true that Galileo's rationalism made him prejudiced. Such a thing is no better than superstition.” So much for the historian.

2. Balthasar Bekker (1634/1698).

**De betoverde wereld *, 4 vols., Leeuwarden,* in 1690 , on the occasion of the appearance of the comet of 1680.

For reasons other than—partly—than those of Galileo, he stated that "sorcery, magic, the summoning of spirits (note: the originals) is in all forms a despicable—ridiculous—form of superstition."

Axiomatics

His axioms were those of the rationalists A. Geulincx (1624/1669; occasionalist) and Nic. Malanranche (1638/1715; ontologist), both Cartesians: only God as spirit can act upon matter.

In those matters even the human self is "a nominal, unreal, imagined subject" (*A. Weber, Histoire de la philosophie moderne* , Paris, 1914-8, 294). From such massive and massive activity of God, Bekker drew the conclusion that everything 'supernatural' (paranormal) amounts to pure superstition. Only God acts upon matter to such an extent in non-scientific processes.

Note: - One sees how modern rationalism, which on the one hand severely privileges physical models and on the other conceives of God alone and exclusively at work in supernatural processes, axiomatically stifled any genuine – 'real' (in Hegel's sense) – understanding of paranormal phenomena through this dual axiomatics.

Foret - Les arbres sont lunatiques. *Le temps* (Geneva) 21.04.0998.

Les arbres connaissent aussi des phénomènes de marée, selon une étude de l'Ecole polytechnique fédérale de Zurich publié jeudi dernier dans la revue Nature. Les chercheurs de étudié des sapin et constaté qu'ils enflent et désenflent régulièrement. Le phénomène, invisible é l'œil nu, est quantifiable. With the length of the coupes of the variations, they can be easily reproduced in the cells of the vivantes. The lune, the evolution, retains the beauty of the cellules and the laissez-faire, and the image of the influence exerted by the force of attraction on the mers. (ATS)

WEC100

100. Three hundred and seventy-four models of mental disorder.

Library st.: *Thérèse Liechti, qu' est-ce que la maladie Mannen* ?, in: *Le temps* (Geneva) 29.10.2001, 20.

The lady is responding to a text published shortly before in Le Temps. The paper picks up in part.

The thesis.

'(…)' You say that neuro-psychiatric “mental disorders” are responsible for almost a third of the disabilities in the world.

Remark.

1. From a psychiatric standpoint, one can assume that.

2. Nevertheless, psychiatry has long existed—in all strata of society, aided by millions of Swiss francs (*note* : 1 Swiss franc = 0.6 €). And yet: the number of completely successful cures of the “mentally disturbed” is unusually high. This, notwithstanding unprecedented expenditure in that field, for it is constantly rising due to the number of these diseases: in 1952, the DSM—the Bible of American psychiatry—counted one hundred and twelve “mental disorders”.

Today—early 2001—it numbers three hundred and seventy-four. The more one relies on psychiatry—or rather: the more it is forced upon us—the more society is burdened with psychological problems. In Switzerland, the number of cases for insurance against psychological disability increased from 23,507 in 1986 to 62,000 in January 2001. Is that proof of the inefficiency of mental healthcare?

Liechti: “cure; for, if psychiatry fails to solve a problem, then it will simply claim that it is “an incurable ailment”.

Conclusion

Before the seven billion people around our planet are slapped with the label “mentally ill,” our authorities should test the validity of this pseudo-science once and for all—and immediately determine whether there is still a place for such a pseudo-science in our society.

That concludes the submitted text verbatim. - Now a few remarks.

1. *“Cum hoc; ergo propter hoc”.*

The lady argues that the increased number of phenomena, for which a separate model is being developed in the USA, demonstrates that psychological care is failing, in its equally increased presence. That may be the case, but there is likely another causality that explains the increase in disorders, namely the evolution of world cultures, for example.

2. *The specialist in “mental disorders”*

It remains the case that for the specialist in “mental disorders,” confronted with a phenomenon like the original, first accurately knowing the correct model and then responsibly applying it to the phenomenon, it will not turn out to be so simple.

Talk about ambiguity.

WEC101

101. The duality of a very gifted man as a model.

With reference to *S. Nasar, Un cerveau d' exception* , Calmann-Lévy, 2001, *Cl; Arnaud, John Nash* (*le cerveau*), writes in *Le Point* (parsi) 04.05.01, 102, the following.

John Forbes (b. 1928) is the 1994 Nobel Prize winner in Economics.

The student.

At the age of eighteen, he tackled subjects such as Fermat's theorem or quantum theory on his own. In 1948, he studied at Princeton University, where A. Einstein taught.

Method.

In the style of Poincaré or Nietzsche, whom he reveres, he does not read much about a subject but unleashes his intuitive intelligence upon it. He takes it far: the federal government includes him in a study on nuclear warfare.

From 1948 to 1958, he immersed himself in economic, computer science, and geometric (concerning imaginary spaces) problems, but primarily as a mathematician.

1958/1960.

He becomes a teacher at MIT and shows the first signs of delusion. In the winter of 1959, he hears messages “from space” and practices a kind of numerology (number magic). He processes major newspaper articles—via coordinators of the time—into 'instructions' that identify him as the architect of a world government.

Things like the K of Khrutshev or Kennedy, the telephone numbers of competitors, and Pope John XXIII (due to the number 23) occupy him. Every number is converted into words based on an arithmetic that contains the number 26 as a system instead of 10.

Nash wants to liberate the entire earth from the former Cold War (USA-USSR), which he had actually favored before, and in doing so, settles accounts with a crypto-communist conspiracy orchestrated by scientists in red ties.

He renounces his American citizenship, moves to Europe, and demands "planetary refugee" status from the UN. He fancies himself "the Emperor of Antarctica" and "the Prince of Peace" who bombards heads of state and ambassadors with letters. He expects salvation solely from his advisors, extraterrestrial beings.

Note: - Once again, one recognizes the nonsense that thrives so easily in New Age.

Treatment

Against his will, he is treated seven times in a hospital with very painful insulin administrations and electric shocks.

For thirty years, he has been haunting the blackboards of Princeton University with cryptic messages in which one can discern influences of Zoroastrianism or of other religions.

WEC102

102. 1990: The turning point.

For example, his students ask him for clarification regarding his game theory. And lo and behold: once applied to economic situations, this theory will lead to the privatization of state complexes.

In October 1994, upon leaving a seminar, he learned that he was being awarded the Nobel Prize in Economics. He resumed his research work in Princeton. His comment: "I have, of course, set a bad example."

Note: - From such events, one sees that New Age and its successor, Next Age, are not simply a repristination, a return to pre-modern or pre-antique states of mind, but one of the possibilities of our modernity and postmodernity.

One could call it "the dark side" of it or, as some intellectuals put it, experience "the other." That dark side displaces modernity as much as possible; postmodernity less so.

Since the most primitive cultures, it has been there—underground, subconscious, or unconscious—that other side of common sense. Neither modernity as modernity nor postmodernity as postmodernity will rid the world of that other side: it requires its own diagnosis and its own therapy.

WEC103

103. "So many professors at higher institutions are manic-depressive".

Library st. : *Kay Redfield Jamison, De l'exaltation à la dépression* (*Confession d'une psychiatre maniaco-dépressive*), Paris, 1997 (Orig.: *An unquiet Mind* , New York, 1995).

The author is a Professor of Psychiatry at The School of Medicine (Johns Hopkins University). The psychosis began gradually when she was fifteen. "I was 16 or 17 when I realized that my impulses and eccentricities were exhausting those around me, and all the more so because, after weeks of megalomania and sleepless nights, my thoughts were degenerating into genuine and disturbing pessimism." (Oc, 41).

She had three good friends—"handsome boys"—two of whom had manic-depressives in the family, and the third had a mother who committed suicide. "All three on their way to manic-depressive states," she says.

The syndrome.

Throughout the entire—engagingly written—book, she goes through the syndrome. She characterizes her beginning as follows.

(a) ***Manic*** : "Himmelhoch jauchzend". - "I was running around in all directions (...). Bursting with plans and overflowing with enthusiasm (...). Went out night after night. Was active all night (...). I felt absolutely great."

(b) ***Depressed*** :

"Saddened to death". - Then suddenly: "after that the foundation of my life and of my spirit gave way. (...). My thoughts became eccentric. I read and reread the same text only to find that I retained nothing of it. (...). I woke up dead tired every morning. (...). Obsessed with death". (Oc,42/44)

To be put to rest.

Then going back to work hyperactively. Not without typical erotic-sexual needs. Then being put on rest again. And so on. Meanwhile taking lithium to "endure it".

The strangest thing.

It should give us all deep pause for thought. The author claims—and she knows the intellectual center of American higher institutions intimately—that "there are so many professors who are manic-depressive".

What exactly is 'mind' for these people who perhaps pen brilliant texts in moments of clarity (the author puts it that way) but then plunge into the depths of what psychiatry calls “a disturbed mind”?

Incidentally.

If one defines 'mind' purely scientistically (or cognitivistically), how can such a person (and on what purely positive-scientific grounds) distinguish the healthy mind from the sick mind without 'falling' into some kind of folk psychology? How does one articulate, within that axiomatics, the distinction “factual/normative” ('Sein'/ 'Sollen' interpreted in the scientistic sense)?

WEC104

104. Vico's model of the modern rationalist man.

*Giambatista Vico (1668/1744) published his third and definitive version of his *scienza nuova** in 1744, the full title of which was: * *Principles of a New Science Concerning the Common Nature of Nations* *.

His basic model in this regard is very well known.

Every nation undergoes a threefold development:

(a) the mythical ('divine') era with its theocracy (the religious vanguard);

(b) the heroic era with its aristocracy (the nobility as the vanguard);

(c) the human era with its rationalism (liberated reason as a guiding principle).

Library st. : *A. Clavel; Vico a creé un rationalisme attentive à l'irrationnel* , in: *Le Temps* (Geneva) 12.05.01.9. The text is a very short interview

1. *The first humanity.*

In bygone times, not modern reason but the powerful, poetically gifted imagination and feeling created the basic institutions, namely religion, family, and kinship, the first structures of society.

2. *Rationalist humanity.*

Reason in the ancient and later sense took over the leading role of the pre-rational gifts. As such, it is a latecomer in cultural history.

Barbarism.

There has been constant talk of the barbarism of the first phases of culture. But Vico distinguishes “a barbarism of reflective reason,” that is, reason that is merely reason. The Roman Empire, for instance, in its period of decline, was one example of this.

In other words: reason is not necessarily the sufficient condition that protects against the excesses of which it is capable. Vico sees its dark side.

Reason.

Vico leaves reason itself untouched within its appropriate limits. He is not hostile towards the modern sciences and techniques of his time, the age of the European Enlightenment (or rationalism). However, he does criticize his rationalist contemporaries for disregarding the poetic cultural capacity of earlier humanity—for labeling classical (primarily Greek-Latin) culture as outdated—for placing quasi-blind trust in the modern form of reason with its specialized sciences and techniques.

Alain Pons, who translated La science nouvelle (1744), holds Vico in high regard for his ideas and the immense richness of that work, which addresses almost all major cultural aspects (religion, mythology, language and thought, the legal system in culture, etc.).

Pons Vico is particularly supported where he exposes the “other side” of reason.

WEC105

105. A psychologist's forced model.

Library st. : *Torey Hayden, L'enfant qui ne parlait pas* , Paris, 1992 (Or. *Ghost Girl* (1991)).

Hayden is a world-renowned psychologist specializing in troubled children. In 1987, she ends up in a class with four children in Perking (near Falls River, Canada). Besides three boys, there is Jade Ekdahl, eight years old.

Jade.

On the first day in class, the three boys caused a commotion. Jade, however, behaved as if the class were normal: without being instructed to do so, she took out her math and reading notebooks. She completed class assignments and submitted them for correction. After which she practiced spelling.

Sometimes she cast a brief glance in Hayden's direction, but mostly Hayden's presence left her indifferent. (Oc, 45).

Contact after all.

After many attempts, a period of growing contact and mutual familiarity began. Especially after class hours.

Which model?

The writer lists—oc 73/74, 123, 138, 147—a number of possible models that she can stick onto Jade.

1.1. Split personality: “I cannot bring myself to believe such a thing”.

1.2. Hallucinations (delusions): “I do not like this hypothesis at all”.

1.3. Inventions: “Why would jade invent (such a thing)?”

2.1. Domestic abuse: “Does not seem to be ruled out”.

2.2. Sexual abuse: “Some of Jade’s reactions have a sexual undertone”. Specifically:

(a) Jade stated that one could obtain milk by sucking on a penis. Hayden: “Little imagination is needed to think of sperm when it comes to 'milk'. An eight-year-old child cannot come up with such an idea on their own” (Oc, 108).

(b) In an after-school conversation, Jade said: “Ellie took a knife. She plunged it into Tashee’s throat. Blood splattered out. Ellie caught it in a saucer.” (Oc, 104). Where exactly does the latter fit in with the former?

Satanism.

“Should one believe in jade? Had one really killed a child and drunk his blood?” – Others than Hayden cite Satanism, with pedophilia and child sacrifice at the forefront, as the model. The author herself, however: “I believe in evil but not in an entity (note: Satan worshipped by Satanists). Oh! After all, I know too little about that.” (Oc, 149).

Conclusion.

Hayden sticks to what Ch. Peirce calls “the method of orthodoxy,” namely, in this case, what the established psychologies, psychiatries, and neurologies believe.

WEC106

106. lack of information.

O;C;, 219 Hayden states that a certain open-mindedness is necessary to believe in satanic practices; “If Hugh (*note:* an acquaintance who knew occultism) had not discovered that specialized bookstore, (…) I would never even have thought of satanism when Jade spoke to me about the cat and the blood. This was partly due to my ignorance of the matter”.

A form of blindness.

Oc, 219.- “Furthermore, there was a dose of blindness in me: I was accustomed to interpreting all behavior in terms of psychology or psychiatry, whereby every other interpretation was excluded. Furthermore, there was in me—without a doubt—a certain refusal; I did not want to see.” Hayden: flying saucers, the snowman, the Loch Ness Monster, occultisms are modern folklore!

Note: - This is what modern rationalism claims.

Career concerns:

Oc; 220. – “Since I was still young and saw my career threatened, I succumbed to the pressure of professionalism”.

Further course.

Jade leaves school. For the police took the accusations Jade leveled against her environment very seriously, investigated thoroughly, conducted excavations in the Ekdahl's garden, and turned their barn upside down in search of Tashee's remains.

The printed model.

Oc, 216. - during all those weeks of police investigation, of meetings of social workers and health experts, the purely psychological explanation was generally accepted. And yet. Oc, 217. - “Some minor facts remained purely psychologically inexplicable”. Such as, for example, the fact that Jade did not want to be photographed, the fact that she handled the magnetoscope and caniscope skillfully (when such equipment was still little or not at all known), the symbol “cross within a circle”, etc.

These prioritize a different model: “Taking Jade’s stories seriously inevitably led to prioritizing ritual abuses involving torture by a group”.

Moreover: “In the last ten years (1981/1991) a considerable number of children have recounted scenes that bear a striking resemblance to one another.” (Oc, 218) “Yes, one often discovers the corpses of children (oc, 221).

Saving a model.

One sees that established scientists are pushing through their model. If necessary, by neglecting a number of relevant data belonging to the dossier. Karl Popper would say: “What falsifies (i.e., what refutes) is neglected.”

WEC107

107. Understanding method as a non-university model.

Library st.: *Ingrid De Bie, Hearing Voices* , in *Humo* 27.0101996, 22/27.

1. *Essential data.*

Prof. Romme and his colleagues at the University of Limburg have been studying and helping people—including children—who hear voices since around 1989.

(a) Romme. - “My GP is a sailor. He told me that he heard voices when he was alone at sea for forty-eight hours: “Just as real as if you were having a conversation with someone!”

(b) Romme; - “In 34% of cases, people have both visual and auditory hallucinations (note: apparent perceptions), but the two do not fit together.” - Note: the term 'hallucinations' itself is an interpretation.

(c) De Bie. - “Two percent of all people hear voices. Only a minority of those who hear voices are actually ill or mentally disturbed. Researchers at the University of Limburg have demonstrated this.”

How it started.

Romme. “It started with a patient who 1. was greatly troubled by voices and 2. was dissatisfied with the way “psychiatry” was responding to it. At the time, those voices were viewed by “everyone in psychiatry” (including Romme) as a symptom of illness.

Note: - In other words: the university model. - The patient in question rightly said: “That is quite possible. But I do not suffer from ‘that disease’. But it is impossible to live with ‘those voices’. And the medication does not help.”

Understanding method.

The hermeneutical (Wilh. Dilthey says:

(a) the fellow man experiences something in his mental life;

(b) he said that;

(c) through that expression I understand what he is going through and I am ready for real help.

Romme.

'I said (to the patient): “If you really hear voices, I must honestly admit that I know nothing about that.

“It might well be that others who also hear voices understand you better than I do.” Romme then organizes a gathering.

Then my colleague Sandra Escher came up with the idea: “If all those people hear voices and they recognize them in each other, then we can claim that it is imagination, but that doesn't help those people.”

Note: - The rationalist model that amounts to disbelief and is immediately the real model. The employee takes this issue, which begins with the expressions of the patients, more seriously than established 'science' usually does.

WEC108

108. The parental model.

Romme

“There are people who could talk openly about it as children (…). There aren’t many of them. – With a number of patients who started hearing voices early on, we have seen that they were never able to express themselves freely about it.”

Note: If even pure expression is stifled from the mouth, how can a true understanding of the mental experience ever take place?

Reason. - A lot of people only care whether they follow a straight line to adulthood. They are not genuinely interested in what their child is experiencing.

Note: - The same issues are exposed in books about “the new children”, such as, for example, *L. Carroll/ J. Tober (eds.), *The Indigo Children* (*A New Generation Emerges*),* Laren NH 2000; *C. Muytert Van Blitterswijk, *New Age Children* (*The Intuitive Child in Family, Education and Care)* ,* Deventer, 2000; *M. Van Gestel, *My Child Sees More* (*A Mother Tells About Her Paranormally Gifted Child*),* Deventer, 2000; PMH Atwater, * *Children of the New Millennium* *, Sigma Press, 2000.

The experience was expressed; the theory was not pushed through.

Humo. “Isn’t it true that in most cases those voices are one’s own thoughts?”

Romme. – “That is the theory. But that is not how they experience it. We have learned here not to prioritize theory: you help no one with your conviction. I may well think that those voices are someone’s own thoughts –

and I do think that I think that – but that does not help my patients (…). You do not help people with a theory."

Note: - Apparently, this refers to: a theory that does not align with the directly given fact.

Incidentally: one's own mere thoughts are perceived differently from some inner voice.

Sandra Escher.

"Eighty percent of the people in our study are convinced that 'the voice' is not theirs (…). If you believe that you hear the voice of God and I do not believe that, then we can discuss that. But that gets us nowhere."

Conclusion

The scientifically trained person, if he is not careful, adapts the phenomenon to his theory. The patient, insofar as he is not indoctrinated in any way, adapts his 'theory' to the phenomenon.

Rationalism.

Anything that does not align with what the rationalistically trained person experiences himself does not exist and can be reduced to irrationalism.

The understanding method attempts to break out of that axiom and penetrate "to the matter itself."