

**ELEMENTS OF NATURAL LOGIC  
LEARNING TO THINK LOGICALLY .  
(388 p.)**

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## **Chapter 2, Special Logic**

### ***The scheme of traditional logic: the organon.***

We follow the layout of Aristotle's *Organon*, Greek for "tool" or "method". His *Organon* is still considered an introduction to logic. This work includes, among other things,

**(a)** introductory texts on what he calls 'categories' (a set of collective basic concepts), and on what he calls 'interpretation' (his term for 'judgment');

**(b)** the first and second analytics (in which the proof, definition and classification of concepts as well as the basic principles are discussed).

Aristotle deals with many points of a logical nature in his metaphysical writings, in his exposition of the soul, and in his ethical works.

**(c)** Dialectic. This is the third part of the *Organon*, which contains a main section, the topic (on commonplaces), and a discussion of fallacies. 'Dialectic' in Aristotle means 'the science of discussion' (as in Socrates' case). It teaches to develop and test ideas. The data are "ta endoxa", the current opinions. The demand is to discuss the pros and cons. One learns to tackle problems with a view to achieving real 'science'.

**Rhetoric.** O. Willmann, *Abriss der Philosophie*, Wien, 1959-5, 16ff, rightly adds in Aristotle's spirit: "A side branch of dialectic, something that

is not far from it, is rhetoric, which deals with the way in which reasoning affects the feeling and the will". Note: Rhetoric, once abolished in the 19th century, has been experiencing an unprecedented actualization for several decades. Indeed: much of what presents itself as given or proven, when examined closely, amounts to nothing more than 'propaganda' or 'publicity', and is no more than that.

Willmann, loco citato, says: "The analytical approach to the thought process makes it possible to justify the individual steps in it (...). In the exposition of his logical tenets, Aristotle approaches the 'exactness' of mathematics, so that Leibniz, in 1696, could say: "He was the first to write mathematically outside mathematics". It is therefore not surprising that some thinkers today re-evaluate Aristotle's logic or rather his entire Organon, including dialectic and not without "what is not far from it", rhetoric. Logic, dialectic and rhetoric, after all, cover a great deal of what is 'thinking' and 'reasoning'.

## **1 Concept theory**

### **1. 1 The concept**

#### **1. 1. 1 The concept (content / scope)**

Bibl. Sample : Ch. Lahr, *Cours de philosophie* , I ( *Psychology, Logic* ), Paris, 1933-27, 491/496 (The idea and the term). Definition. A concept is reality insofar as it is given in our mind.

Note: In this course we restrict the term 'idea' to the Platonic concept.

Concept / term. "A young girl" consists of three grammatical 'terms' but is only a single logical term (which can consist of a plural of words or signs of all kinds). However, 'a', 'young' and 'girl' are logically three subterms.

**Conceptual content and conceptual scope** . (3.1) The conceptual content (Lat.: comprehensio, complexus) is the set of characteristics (properties) - cognitive contents or formae - that together form one cognitive content or 'concept'. The conceptual scope (Lat.: extensio, ambitus) is that to which the content 'refers', i.e. that which the content shows.

**Distributive and collective scope**. Plato, when he speaks of 'stoicheiosis' (theory of order); Lat.: elementatio), distinguishes between 'all' (distributive) and 'whole' (collective). Medieval scholasticism (800/1450) speaks of 'omne' and 'totum' (singular) or of "omnes, omnia" and "cuncti, cuncta" (plural) or of "distributive concept" and "collective concept". On the one hand, we speak of 'collection' and on the other hand of 'system' (or of

'set' and 'system'). Thus: 'Young girl' means the whole of the being of a young girl (collective); "all young girls" means the collection to which the content refers (distributive); "the whole (the world) of young girls" means the coherence of young girls among themselves (collective). In other words: twice collective (individually and as a group) and once distributive

**The ratio "content / size".** Let's take 'young girl'.

(1) If 'young' is omitted, then "a girl" refers to many more girls (actually to all girls).

(2) If we add 'rich' - "a rich young girl" -, then the expression means many fewer girls (i.e. all rich young girls). Conclusion: content is inversely proportional to size. The more specified the content, the smaller the size. And conversely, the smaller the content, the larger the size.

**Classical and romantic concept** . The singular concept is so rich in content that it refers to precisely one instance, which constitutes the entire scope. In classical logic, traditionally seen, a concept is always a general concept ('universal').

Ch. Lahr, SJ, *Cours de philosophie* , I ( *Psychologie.Logique* ), Paris, 1933-27, 537, expresses this scholastic view: "Non datur scientia de individuo", about the singular (individual) there is no science available. For "omne individuum ineffabile", everything that is singular, is not susceptible to general formulas. The boundless variety (synchronic) and the equally boundless change (diachronic) of the data in the real world around us prevents one from building up a universally valid 'science' about the varied - changeable.

**Consequence** : Sciences such as history and geography, which essentially aim at the individual (and the evolving), limit themselves to a kind of network of generally valid statements. They are - to use a recent term - 'nomothetic' ('nomos' = general law; 'thesis' = to compose), i.e. they formulate 'regularities' that are applicable to a plurality of, for example, landscapes (geography) or events (history). For example, there is only one Belgium, for example, and only one Napoleon. In the singular, it is at most a kind of 'art' (that represents the individual (and evolving)) but not 'science' (that represents the universal).

**Romanticism** (1790+), however, also defines the concept as that which represents the unique and the developing, - in addition to the classical

concept. For example, history and geography can be interpreted as 'idiographic science'. The 'essence' (i.e. that by which something - in this case: something individual - differs from the rest of being or reality) is, for Romanticism, first of all the singular essence, depictable in a singular concept, which in turn is susceptible to a singular definition. 'Idios', in ancient Greek, means 'singular'; 'grafia' means 'representation'; result: idiography is representation of the individual.

**Incidentally**, what is called a 'monograph', that is, a study of something singular, is essentially idiographic.

The definition of the singled Bibl. Sample : H. Pinard de la Boullaye, SJ, *L'étude comparée des religions, II (Ses méthodes)*, Paris, 1929-3, 509/554 (*La démonstration par convergence d'indices probables*). This text is one of the very rare texts on our subject.

The rule of definition is also here: a. the entire given; b. only the entire given (defined against the rest). In the absence of axioms (general definitions) one falls back on separate characteristics, but then in such a way that one piles them up (cumulative method) until one is certain that the essence of the individual datum and only its essence is represented.

In that enumeration of characteristics that arises inductively, the (proper) name is indeed very special, because this is the only 'property' that may not be universal. One sees it: one defines by enumerating until the unique becomes distinguishable. Thus there is only one Antwerp; there was only one Napoleon! One can say many generalities about those two singularia, but does nomothetic science then talk about the real Antwerp and the real Napoleon?

In science we refer to the DNA method which can define exactly one human being on a biological-genetic basis.

**An application.** –

**(a)** forma (form of being. Species name)) : female.

**(b)** 1. Figure (view) : very beautiful; 2. Proper name : Roxana; 3. Origin : daughter of Oxuartes, satrap (a kind of governor) of the 'basileus', the prince of Persia (as the ancient Greeks called Persia's king); 4. Birthplace: Bactria (an area of what was then Persia (+/- Turkestan / Iran / Afghanistan); 5. Place: central Asia; 6. Time: - 327 Roxana marries Alexander III (the great: - 456/-323; founder of a Macedonian - eastern empire, source of the

'Hellenistic' (= late Greek) culture); In - 319 she leaves for Epeiros (lat.: Epirus) with Alexander's mother. In -316 she is imprisoned by Kas(e)andros (lat.: Cassander), prince of Macedonia (Macedonia, in northern Greece), and murdered in -310.

This is the 'filling in' of the scheme that allows a definition to be constructed of a character from human history. Here, a definition must represent the whole of the defined ('general') and only the defined ('exclusively').

**Differential of magnitudes.** Two series were observed:

- distributive or collections concerning “singular/particular/universal” (“just one/some (a few)/all (possible)”);
- collective or systems concerning: “one-part / multi-part / all-part” (“one part / some parts / the whole”).

**Note:** In ontology (the theory of reality) there is a special kind of concepts, namely 'transcendental' concepts. This term 'transcendental' should not be confused with 'transcendental', which, as already said (10.1), is Kantian and means 'critical'; i.e. questioning traditional metaphysics.

The transcendental concepts refer to all possible realities and to the whole of reality. For example: 'being', 'reality' (at least in the strict ontological sense), 'unity', 'truth', 'value (goodness)'. More about that later, of course.

The tree diagram of Porphyry of Tyre (233/305; a neo-Platonic theosophist) looks like this: being is either immaterial or material; material is either inorganic or organic, organic is either vegetable or animal; animal is either irrational or irrational. Classical antiquity indeed defined man as “a irrational animal”. Immediately one sees once again that as the conceptual content becomes richer, starting from the concept of 'being' that tolerates all possible additions, the conceptual scope becomes poorer and represents only a diminishing part of the total reality.

### **1. 1. 2 Antonomasia (change name)**

Bibl. Sample : G. und I. Schweikle, Hrsg., *Metzler Literaturlexicon* , Stuttgart, 1984, 19 (Antonomasie). With this concept we find ourselves in the area of periphrases (descriptions) which replace a term in a text by a term related to meaning and this on the basis of similarity or coherence. These

include the tropes: metaphors and metonymies as well as metaphorical and metonymical synecdoches (2.4).

**Synecdoche and antonomasia.** On the basis of similarity or coherence one 'says' a term but 'means' a term related in meaning.

**Paradigm.** In one and the same text, the name of the planet Venus is used as both “the evening star” and “the morning star”. This is called 'antonomasia' or (the use of an) alternating name. Reason: the fact that Venus is sometimes observed as an evening star and sometimes as a morning star indicates that its course includes both phases. It is the coherence within Venus' course that allows it to be mentioned sometimes as “the evening star” and sometimes as “the morning star”. For example, one 'says' “the evening star” but 'means' Venus. Antonomasia is a kind of synecdoche or co-signification (2.4). On the basis of its resemblance to stars, the luminous planet Venus is also called, metaphorically, morning or evening star, and not, for example, morning or evening planet.

**Typology** . There are two main types.

**(a). Appellative interchangeable names.** Striking examples of a collection give rise to interchangeable names. Because Eve, the biblical female figure, is a striking figure, a woman is called “an eva”. Because Judas, the apostle who betrayed Jesus, is notorious, a traitor is called “a judas”. Because Casanova is notorious as a womanizer, a womanizer is called “a casanova”. Similarity is the reason.

**(b). Characteristic alternate names** . Jesus' characteristic is that he is the redeemer. Result: in one and the same text his name is replaced by "the Redeemer". Because his redeemership belongs to his course. Agamemnon is the son of Atreus. He is an Atride. His personal name, derived from the father, his patronymic alternate name, is "the Atride" in Homer's poetry. One of the roles of the Roman supreme god Jupiter was that he was, as a mythical origin, "the Father of gods and men". This compound term is his alternate name. Coherence is the reason.

**Note:** Since G. Frege (1848/1925) wrote his *Sinn und Bedeutung* (1892), logicians distinguish between 'Sinn', i. knowledge content, and 'Bedeutung', i. the singular datum that displays that knowledge content. Frege discussed the antonomastic or synecdochic use of language. He attempts to establish the truth conditions of a proposition in the form "S = M". Filled in: "The evening star (S) is (=) the morning star (M)". To justify the



truth of that sentence, one must first know that Venus is both an evening star and a morning star. That knowledge - 'information' - is expressed (in a subliminal way) in the sentence "The evening star is the morning star". Incidentally: such statements are called 'identity statements' by logicians, where 'identity' refers to the fact that a plurality of names refers to a single (identical) datum ("refers to it"). The term 'identity' here does not have the meaning it has in the axiom of identity.

**Note:** This usage of language should not be confused with that of natural logic, because the conceptual content 'evening star' or 'morning star' refers only to a limited conceptual scope, namely Venus as evening star or as morning star. These two 'different' contents refer to two 'different' scopes. These are not identical, although they belong to the course of one and the same Venus.

### **1. 1. 3 Universals**

We stick to this Latin term because it has been in use for centuries, but at the same time it poses the problem par excellence, namely: "What is the reason on which we rely to speak in general - universal - terms?" There is no logic without universals.

**The reasoning of Sextus Empiricus** . This ancient Greek physician and philosopher is one of the main representatives of what is called "skepticism". The term must be understood correctly: 'skepticism' does not mean that one "doubts everything", but that one doubts what is not directly given. One strictly adheres to "the phenomenon". That is why skepticism is always a kind of 'phenomenism' (or 'phenomenalism'). When exactly Sextus lived is unknown, but it is calculated, given what is known of his contemporaries and such, that he lived at the end of the 2nd / beginning of the 3rd century.

It is certain that Sextus emphasizes the singular and the particular - to the detriment of the universal - and at the same time emphasizes the difference and the gap between the facts of our experience and the universal concept. This is how he reasons in his Pyrrhonian sketches.

**Sextus on Induction** . Induction is relying on singular and particular phenomena to derive the universal from them. Which is generalization. For Sextus that is 'dogmatism' and he designates that as a 'belief'.

**Dilemma:** Either test all cases or do not test all cases.

(1) Testing all cases summarised in a universal (singular of universals) is impossible since – except for very limited summative inductions – the singular and particular cases are 'infinite' in number.

(2) It is not feasible to test all cases, but leave the rest in doubt. Conclusion. In both cases the induction is without sufficient reason and is not a completely conclusive - Aristotle would say 'apodictic' - proof.

**Note:** Sextus sees that he places the summative nature of induction at the centre (and in this sense he is Aristotelian, for 'induction' (without more) is summation for Aristotle). Insofar as he argues, he cannot be blamed for this. Which leads us to two types of universals:

(1) there are universals that rely on the testing of strictly all cases, i.e., on a summative induction that is only feasible insofar as it concerns a finite number of phenomena (cases) that are within the reach of our testing power;

(2) there are universals that lack summative induction and that are therefore universal at most in a hypothetical way. Whoever speaks 'universally' on this last basis - in natural laws for example or in social laws -, speaks axiomatically in the sense that he speaks in a way that has not been fully tested and therefore puts forward hypotheses. For one never knows with absolute certainty - and that is what Sextus means - whether in the untested cases there are no 'falsifications' (cf. K. Popper, see further 4.1.4), i.e. refutations, that make the 'universal' non-universal.

**Note :** Such exceptions will be discussed later.

### **1. 1. 4 Limitations of physics**

Physics, especially since it has been mathematically - experimentally based, is a basic science. Today it is defined as the science of 'nature' (understood as matter) based on 'operational' method (PW Bridgman, The Logic of modern Physics). For centuries it has tested a part of the whole of nature in this way. That is its summative induction. The rest that has not yet been tested, still lies fallow.

**Naturalism** (physicism, physicalism). In order to be as strictly scientific (understood: operational) as possible, one tries to work out the rest of the sciences in terms of physics. This means that a phenomenon - in order to be considered a scientific fact - must show physical (material) evidence. This is called 'physicism' or 'naturalism'. This is applied to biological and human phenomena. In this sense, physics becomes the basic science.

**Paranormal phenomena.** There are phenomena that still encounter resistance in the established sciences because the established methods do not integrate them unless they are mutilated. They are therefore called 'paranormal' (located outside the 'normal' paradigm of the sciences). Paranormology is the science of such data that are physical, biological, psychological, sociological, economic, artistic etc. (so that parapsychology only studies a part and if continued involves one-sidedness in terms of method).

**Scientific evidence.** Established scientists react to undeniably paranormal facts with mixed feelings:

**a.** many positivists (who only recognize “the positive fact”, preferably a fact that can be proven as materially as possible), deny even the most obvious facts in the name of that axiom;

**b.** many scientists consider even these latter facts “of no importance from a physical, biological, or human scientific point of view”;

**c.** some, such as W. James (1842/1910), investigate them. This multitude of interpretations indicates that the main problem of paranormology is: "How to reach the stage of scientific evidence?". Some evidence is obtained, but "universally accepted evidence" is 'not' obtained. Result: the substandard degree of evidence causes opinions to diverge into 'against', 'undecided', and 'for'.

**Physical paranormal phenomena .** Especially since H. Thurston (1856/1939), *The Physical Phenomena of Mysticism*, London / Monaco, 1952-1, 1985-2, as well as *Surprising Mystics*, London, 1955, physically verifiable paranormal phenomena have been a task, also and especially for physicists who are interested in principle in 'all' physical facts. Levitation (the reverse of gravity), stigmata (bleeding spots on the body reminiscent of Jesus' crucifixion: refer to the seriously researched stigmata of Padre Pio), light phenomena, salamandrism (either incombustibility or resistance to burning of the skin), incorruptibility (the mortal remains do not decay), absolute fasting (complete and prolonged abstinence from food), multiplication of foodstuffs, odours, are materially verifiable facts and therefore fall in principle within the domain of physics. And this with "physical evidence", which does not prevent the established research community from 'ignoring' them. Note: Anyone who wants to know more about this can read e.g. P. Sbalchiero, dir., *Dictionnaire des miracles et de l'*

extraordinaire chrétiens, Fayard, 2002 (some 230 contributors, non-believers included, with 830 articles).

**Summative induction.**

**a.** What is called “Physics” therefore leaves a part of the physical facts aside, which means that its induction concerning physical phenomena is not summative. It can therefore only express responsible statements about the part examined and not about the unexamined.

**b.** Of the so-called paranormal physically verifiable phenomena, only some physicists - labelled 'mavericks' - have investigated only some phenomena in more detail, which forces us to suspend judgment regarding the rest; the uninvestigated part.

Conclusion: Physics is indeed limited.

**1. 1. 5 'Private' or 'some' (Not all / even all)**

**The given** . - Jevons, *Logic*, 58, says: “As signs of a particular proposition there are the indefinite numbers 'some', 'some', 'certain', 'few', 'many', 'most' or others which mean 'partly at least'. Oc, 66, he says: “The reader should be on his guard against an ambiguity by which even eminent logicians have been misled. In 'particular' propositions (note: in connection with opposing judgments) the number 'some' or 'any' should be carefully read as “some and there may be fewer or more or even all”. This means that 'particular' ('some') can now mean “not all” and then again “even all”.

**The requested** . How does this rhyme? Because “not all” conflicts with “even all”.

**Solution** . Bible st.: A. Lalande, *Vocabulaire technique et critique de la philosophie* , PUF, 1978-10, 743s. (private); P. Foulquié / R. Saint-Jean, *Dict. de la langue philosophique*, PUF, 1969-2, 500 (Opposition), 515s. (Private).

- **Colloquial**. 'Some' means "at least two" (and certainly not "all"). 'Private' means "that which is not public", as in "Private interests sometimes conflict with the public welfare". In "A private individual can “buy land” means “private individual” “individual”.

- **Set doctrine**. Within a set (and in its own way within a system) 'particular' means "not all copies (resp. parts)". Thus: "Some triangles are right triangles". This is: "not all" triangles. Colloquial language speaks like this. Also I. Kant ( *Critique of Pure Reason* (1781-1)). Between 'all' (universal)

and "all not (none)" is situated 'not-all' (particular), where precisely 'one' (singular) is one case of 'not-all'.

- **Logical.** The following scheme is assumed for judgments that are 'opposite', i.e. have the same subject and the same predicate but differ in quantity or extent (here distributive: all, some yes, some no, none) and in quality (here: confirmation (model) or denial (countermodel) (see also 2.1.1.).

**Note :** The Scholastics derived A (all) and I (some) from 'affirmare' ('affirm') and O (some not) and E (none) from 'nego' ('I deny'). An overview:

|                               |     |          |                          |
|-------------------------------|-----|----------|--------------------------|
| All students are present      | (A) | All      | universally affirmative. |
| Some students are present     | (I) | some do  | private confirming.      |
| Some students are not present | (O) | some not | privately denying        |
| No students are present       | (E) | no one   | universally negative     |

Thus A (all) and I (some), and O (some not) and E (none) differ in quantity. Thus A (present) and O (not present), and I (present) and E (not present or none present) differ in quality.

In the box below, 'private' means "at least one". Which does not exclude "several" or even "all". "Some" in this box means "not by number specified copies or parts". We get:

|   |   |                        |   |  |
|---|---|------------------------|---|--|
| Alle leerlingen zijn aanwezig.<br>(universeel bevestigend)<br>(alle: model)         | (A)                                       | contrair               | (E)                                       | Geen leerlingen zijn aanwezig.<br>(Universeel ontkennend).<br>(Alle niet (geen: tegenmodel)) |
|   | s<br>u<br>b<br>a<br>l<br>t<br>e<br>r<br>n | Contra-<br>dicatorisch | s<br>u<br>b<br>a<br>l<br>t<br>e<br>r<br>n |  |
| Sommige leerlingen zijn<br>aanwezig.<br>(Particulier bevestigend).<br>(Sommige wel) | (I)                                       | subcontrair            | (O)                                       | Sommige leerlingen zijn<br>niet aanwezig.<br>(Particulier ontkennend) .<br>(Sommige niet).   |
|   |   | Contra-<br>dicatorisch |   |  |

**Note :** As indicated above, A with E is called a “contradictory judgment”; I with O is called a “subcontradictory judgment”. A with I, and E with O are called “subaltern judgments”. Finally, A with O, and I with E, are called “contradictory judgments”.

**Synecdoche.** (2.4.) Synecdoche says 'particular' (as in colloquial language and set theory, in which 'particular' is distinguished from 'singular' on the one hand and from 'universal' on the other, but is related to them in order-theoretical terms) but means 'at least one' (singular), yes, 'several' (particular) or even 'all' (universal), precisely on the basis of the coherence. Whoever 'says' one member of the coherence on the basis of similarity or coherence but 'means' the other member, commits a trope called 'synecdoche'. Thus, in terms of linguistic economy, the same term 'particular' ('some') can mean 'not all' in terms of set theory and 'at least one / several / all' in terms of judgement logic.

### **1.1.6 Symbol abbreviations**

This term consists of a metaphor, i.e. 'shortening', because 'symbol shortening' is one type of shortening, and a metonymy, i.e. 'symbol' which does not resemble 'shortening' but is related to it as follows: “to symbol shortening”.

A concrete example. W. St. Jevons, *Logica, Utr / Antw.*, 1966, 5 and especially 50/52, gives the following concrete model. Colloquial: if one multiplies the sum of two quantities by their difference, then this involves the difference between their second powers. Algebraic symbols shorten this to:  $(a + b)(a - b) = a^2 - b^2$ . Jevons: “With that product we work in the dark or 'symbolically'. We use the letters a and b according to certain fixed rules but without knowing anything about, or caring about, what they mean”. We will now go into this in more detail.

**The pair “intuitive / symbolic”.** Jevons illuminates our problem of symbol shortening with the help of this pair of opposites. 'Intuitive' means something like “easily understood with the thinking of the common sense”. He states that every symbolism starts from a minimal - essential intuition. For example, concepts such as 'square' or 'hexagon' are intuitive, but concepts such as 'thousand-sided polygon' or “the difference between a figure with a thousand sides and one with a thousand and one sides” are intuitively so vague that only the intellectually defined ones are still 'meaningful'. Other purely intellectually understandable concepts are for example 'zero', 'contradictory' (for example a straight arc or an unfelt pain), 'nothingness' (certainly in the ontological sense of 'absolute nothingness' which is absolutely nothing). In Jevons' language these are 'symbolic' terms.

The 'filling in' (semantic designation) of symbols.

Let us take “All numbers less than 2”.

Symbolically: “For all numbers  $x$  such that  $x < 2$ ”. This last expression can be filled in semantically, i.e. concretely, by e.g. “ $-4 < 2$ ”. All abstract, i.e. concretely summarizing, terms can be ‘filled in’ in this way. Which we would now like to clarify.

Jevons says that we work in the dark and do not concern ourselves with what symbols, once semantically interpreted, mean. He may mean well, but we consider a precision necessary. The letter - actually 'letter number' - 'x' is not simply filled in. Only numbers smaller than 2 fit as fillings. This means that the concrete meaning is indeed 'not left in the dark'.

But there is more. Even non-symbol abbreviations obey precisely the same rule. In the sentence “All the flowers of this plant are yellow. Now, these flowers are from this plant. Therefore, these flowers are yellow,” terms such as ‘flowers’ or ‘yellow’ or even ‘from this plant’ stand as abstract terms, insofar as in an exposition of logic the above reasoning is presented as exemplary. They are presented as ‘replaceable’ and therefore immediately ‘fillable’ by other logically equivalent terms. For example: “All the stones of this mountain are granite. Now, these stones come from this mountain. Therefore, these stones are granite.” In logical thinking, it is not absolutely necessary to reduce all terms to symbol abbreviations in order to learn to think logically ‘accurately’ – ‘akriboos’ in ancient Greek. Why? Because our mind, if properly guided, accurately grasps abstract terms in and through concrete terms. The common mind does this all the time. Admittedly, abstract 'symbols' are more mathematically powerful, but, as Jevons insinuates, they presuppose something intuitive.

In that simplified symbolic abbreviation, natural logic will symbolize a judgment as “S (subject) is P (predicate)” or structurally outline an argument as follows: “If SZ 1 and SZ 2, then NS (logically valid)”. But only when it is ‘filled in’ does that ‘formula’ (the diminutive for ‘forma’) begin to ‘live’. If only because even logicians, while still alive, have first learned to think concretely before they can get to abstract ‘formulas’. By the way: didn’t Hegel say that an abstract term is “infinitely rich” in terms of fillings in?

***This section summarized*** : *Traditional logic follows the division of Aristotle's Organon. Special logic starts with the theory of concepts. A concept is reality insofar as it is given in our mind. Concepts have a content and a scope. The poorer the content, the larger the scope. For example, the concept 'girl' refers to all girls. The more extensive the content, the smaller the scope.*

*'Girl with blue eyes' refers to only a part of 'all girls'. The scope can be distributive. In that case, it refers to a collection. The scope can also be collective, in that case it concerns a system. The concept in classical logic is thought to be general. The romantic concept of 'concept' emphasizes the singular or individual.*

*Antonomasia pays attention to descriptions. These can refer to similarity or coherence.*

*Logic is only conceivable because we can speak in general terms, universals.*

*Physics demands physical evidence from the data. This means, among other things, that paranormal phenomena are only integrated into physics in a distorted way. Natural science can only make responsible statements about the part that has been investigated and not about the uninvestigated. Physics is therefore limited.*

*Indefinite numerals show a differential, ranging from all yes, through some yes, some no, to none. Judgments can differ in quantity and quality.*

*In their negation, judgments can be contrary, subcontrary, subaltern, and contradictory.*

*Jevons states that we use Symbol Shorthand concepts without concern for their meaning. He also states that every symbolism starts from a minimal - essential intuition*

*Symbols can be so vague, according to him, that only the intellectually defined ones are still 'meaningful'. One can note here that our mind, through concrete terms, grasps abstract terms. In this way, they do not always have to be reduced to symbolic abbreviations to allow us to think accurately.*

## **1. 2 Definition and classification**

### **1. 2. 1 Definition (content) and classification (scope)**

**Definition and classification as applied summative induction .**  
Definition and classification are modes of enumeration. Now, only a complete enumeration results in a valid definition or classification. The components



(copies / parts) of an enumeration must be mutually irreducible but together form one datum. Distinct but not separated.

**Consequence** : an enumeration can contain redundant components. For example, when the same component is mentioned more than once. For example, when the teacher mentions Piet twice when calling the attendance. Or when one speaks of a female girl. An enumeration can sin by mentioning too little. For example, when “young girl” is mentioned as a “young person” or when an attendee is forgotten when calling the attendance. These are the two basic errors in defining and classifying.

**Definition.** If all and only all (= summing) characteristics of the content of a concept are listed, then there is a good definition. In the traditional interpretation of the definition, it is considered to be an 'essential determination': the 'essence' (that which something is and by which it differs from the rest of everything that really is), the whole essence and only the whole essence, constitutes a good definition.

**Classification.** If all and only all copies of a collection or all and only all parts of a system are listed, then this gives a valid classification of the scope of a concept. One sees it: defining concerns the content of the concept, classifying concerns the scope of the concept.

**To enumerate “a potiori”** . This is an incomplete enumeration that mentions the most striking or at least the most characteristic of the thing to be “defined” or “classified”. Because in many cases a strictly complete enumeration is impossible, but an incomplete enumeration contains sufficient information to avoid confusion with something else. That is enumerating a potiori.

An application. In a 'sketch' (an approximate enumeration) of what educators and psychologists call "the tyrannical child", it is said: "A little tyrant lives with impunity, is overvalued by his parents, is spoiled in material matters, accepts disappointments only if he receives concessions, knows how to seduce and blackmail, regards fellow human beings as his servants, often provokes rejection by others, shows a false maturity, seems insensitive, becomes demotivated very quickly, is unhappy".

Admittedly, this definition is strictly speaking incomplete, but it sketches a 'picture' that will prove its practical usefulness in many cases. Such a definition is the result of induction: just as Socrates started from separate

concrete situations in order to arrive at a general concept that he wanted to define strictly again and again, so both parents and educators have arrived at the 'picture' of the tyrannical child, but not at a strict definition, but at a set of loose characteristics that nevertheless make 'the essence' of the tyrannical child as strictly as possible distinguishable ('discriminable') from everything that is not the tyrannical child.

It immediately becomes apparent that strict enumeration - in terms of definition - can be very difficult because the induction that is supposed to make it possible is itself defective.

### **1. 2. 2 Aristotelian categories (*predicabilia*)**

Something can be a model for an original in more than one way. The ancients have left us the categorizations and categories in this respect. First a word about the categorizations. The categories will be discussed later (1.2.6)

'Katègorèma' is in ancient Greek "to say something about something", predicate. In Latin 'praedicabile' (hence 'predicabilia'). The categories belong to the distributive type.

In Aristotle's categories, a distinction can be made between the definition of essence and the definition of properties. The definition of essence includes: genus (universal), specific distinction (particular), species (particular). The definition of properties includes the normal property (always present) and the accidental property (sometimes present). The latter two provide additional information.

**1.** Definition of essence. Paradigm. Definition of a kind of murder. Three categories define the 'essence', that by which something is itself (and therefore distinguishable from the rest of total reality).

- Genus. Gr.: *genos*; Lt. : *genus*. (universal collection). Here: mortification.
- Specific difference. Gr.: *diafora eidopoios*, Lt.: *differentia specifica* (particular characteristic). Here: 'brutal' because of the many stab wounds.
- Species. Gr. : *eidos*, Lt. : *species* (private collection). Here: killing by stabbing. One sees that the species combines the two previous ones.

Structure. (1) Killing, (2) if by stabbing, (3) defines the being. Which the definition structure shows.

**2.** Definition of properties. Every being exhibits properties (in the broad Platonic sense that also includes relations), but these differ from the point of view of whether or not they belong to the being.

- Essential (normal) property. Gr.: idion, Lt.: proprium (essential trait). Here: attack. There is no killing without a minimal attack on something that lives.

- Accidental (non-normal) property. Gr.: sumbebèkos, Lt. : accidens (coincidence). Here: by means of seven stabs. Not every killing happens like this!

**Note:** In the list of Aristotelian categories (see further) the term 'sumbebèkos' (accident), chance, also occurs, but there in a non-distributive sense (as here) but in the collective sense.

**Coincidence.** The scope of coincidence is best demonstrated when one examines a given, a being or essence - in its 'course': from the defined concept 'murder', for example, 'attack' is strictly deducible and therefore predictable, but from that same defined concept 'murder' is not deducible and therefore not predictable 'by means of seven stabs'.

Which does not prevent the essential property “by seven stabs” from being deducible and therefore predictable as “no coincidence” from another defined essence – e.g. “murder by seven stabs” – (in his mind the murderer intends to proceed with a count of seven stabs)

In Other words : whether a property is essential or non-essential depends on the definition of essence.

Let us return to our paradigm. On the basis of the categories we can give a responsible definition: killing after an attack by means of stabbings to the number of seven. There you have a definition of a kind of murder and indeed in a reasoned way. One sees that the five distributive points of view form a kind of definition scheme that defines the separate characteristics into a coherent whole.

**Note:** In ancient Greece the Paleo-Pythagoreans (-550/-300) were apparently very concerned with defining, but on the basis of their arithmology (theory of number forms). Aristotle, Magn. mor., 1: 1, says that Pythagoras of Samos (-580/-500) expressed essential determinations (Gr.: horoi) by means of number forms. Thus virtues are 'measurable number forms' ('arithmoi'). Which is usually translated as 'measures'. Thus: if man, horse, god are 'measured' (understood: summarized in a general concept), then their measure is "living beings". Aristotle, Metaph. xiv: 1, 15,

disapproves of this arithmological method of definition, but is full of praise for Plato's Paleo-Pythagorean contemporary, Archytas of Tarentum, when he says: "What is calm? "Peace in the air mass" or "What is a still sea? Smoothness of the sea". This is how the ancient Greek definition began.

### **1. 2. 3 Definition as a regulated enumeration**

First, an example. Someone once defined 'conscience' as follows (we will clarify the arrangement (structure) here): "(1) An inner voice (basic concept) (2) that makes us aware that 'someone' is watching (added concepts), (3) is conscience (defined concept)". The 'basic concept' is that cognitive content that situates what follows in terms of "added concepts" in everything that ever was, is now, ever will be (reality). The most comprehensive basic concept is the term 'something' (which represents all possible situated concepts). We all know the expression: "That is something that ( ... )" for easy definition!

**Definition.** A definition is a judgment such that, thanks to the enumeration of (1) a basic concept ('genus') and (2) at least one additional concept ('specific or specific difference'), all and only all characteristics that together constitute the content of the concept to be defined ('species') are correctly represented. Incidentally: according to an old Latin tradition, the enumeration (basic concept and additional concepts) is called the 'definiens' (that which defines) and the concept to be defined is called the 'definiendum' (the thing to be defined).

**Collective example.** One can also use the parts of a whole (system) to define: "(1) A house (2) consisting of attic, cellar, ground floor (kitchen, sitting room, bedroom, toilet, storage room, garage), is (3) an average house". Which means that one uses the division to formulate the definition.

**Categories** (predicabilia, "quinque voces" (five basic terms), logical universals) are the system of commonplaces that ensure the structure of a good definition. The three main ones: basic concept (genus), additional concepts (specific difference), defined concept (species) have been clarified above.

**An example: the circle** . Let us take: "A geometric figure (basic concept), created by turning a line segment - in the sand (chance) as - in a plane around one of its end points (added concepts), is a circle (defined concept)". It is clear that "in a plane in the sand" is only a coincidence that has no place in the normal, i.e. essential, course of the creation of a circle, - except by chance. Coincidence is the fourth commonplace. The fifth is the 'essential' or

'necessary' property. In this case, for example, “in a plane” or “around one of its ends” because these characteristics are indispensable and an integral part of the added concepts.

**By the way** : the above definition sins by mentioning “in the sand” by redundancy.

**Another example** : “The cow, given its cloven hooves, multiple stomach, molars with flattened crowns and the exclusion of claws, single stomach, canines and molars with tubercles on the crown (typical of the predator), is a ruminant.”

One sees that one can define by excluding. This draws out the 'essence' of the definiendum much more clearly against the background of what it excludes.

**Example** . “An indefinite situation (1), if by controlled or guided transformation changed into a situation so well-defined as to essential distinctions and relations that the elements of the initial situation are worked out into a unified whole (2), is an inquiry or work of investigation (3).” Thus J. Dewey, *Logic ( The Theory of Inquiry )*.

#### **1. 2. 4 Eristics**

Bibl. Sample : EW Beth, *The philosophy of mathematics from Parmenides to Bolzano* , Antwerp, Nijmegen, 1944, 78/86.- The GG is a statement. The RQ is finding at least one counter-model. 'Eristics' is 'dispute-science'. She specializes in refuting.

Cl. Ramnoux, *Parménide et ses successeurs immédiats* , Rocher, 1979, 158. Parmenides of Elea (-540/-480) is called by G.E.M. Anscombe, as already cited under 10.1, as: “the basic text on which the whole of Western philosophy is merely a series of footnotes”. Which is quite something. Well, his pupil Zeno of Elea (-500/- ... ) reasons fundamentally eristically: “If an opponent of my teacher Parmenides presents his counter-model ('antilogia', refutation) and if contradictory after-sentences follow from this, then this is proof that his counter-model is impossible (absurd)”. Zeno's axiom states: “If the counter-model is valid, then no contradiction may follow from it”.

Ramnoux underlines the shift from Parmenides who emphasized 'being' (reality), the logical thinking of being, the ethical appreciation of being - he was an ontologist - to Zeno who preferred to 'finish off' an opponent as

mathematically (as that time understood it) as possible. Zeno shifts to eristics.

**“ Neither you nor I ”** . Beth, oc, 19, notes that according to Aristotle, Zeno’s counterarguments show one basic feature: “The opponent “nor” Parmenides presents sufficient, definitively convincing reasons for everyone”. He does not give a “final reason” either. The result: no logically decisive conclusion can be drawn from the assertions of either camp. What Aristotle will later call “dialectical situation”.

**Actualization** . Modern mathematics and logistics have applied such an eristic method “with great success” (Beth, oc, 84). It is called “the method of counter-models”. Beth, however, notes that, although this method has “full evidential force” (ibid.), it is only the introduction to “a more thorough investigation” (ibid.).

**Trick question** . Sextus Empiricus (Adversus mathematicos VIII: 10). “Tell me if you know your father”. “Yes!”. “I will now place a man wrapped in a sheet next to you and ask if you know him”. “I don’t know him”. “But he is your father! So if you don’t know this man, then you don’t know your father”. This is called ‘Electra’. This story, good as a bit of calendar humor, was directed against Aristotle’s criterion of evidence, which states that what is evident is to be trusted. The man to whom the man in the sheet is shown, if he relies on what is ‘evident’ – in the sense of “directly given” – must say that he does not know “the man” (who is not ‘evident’).

The eristic fallacy consists in interpreting Aristotle's concept of 'evidence' in too narrow a sense, because Aristotle, if confronted with such an 'evidence', would have asked for a second 'evidence', namely the evidence that comes after the sheet has been removed. In such a case, Aristotle knows more than one concept of 'evidence', while the eristician, contrary to Aristotle's position, makes one of the two and thus interprets Aristotle incorrectly. There is a first evidence (the man in the sheet) and there is a second evidence (the man naked). Aristotle is not so naive that he does not know the two.

### **1. 2. 5 The method of counter-models**

**General definition** . “If you assert that (model), then, upon closer examination, what you refute (counter-model) follows”. The basis is of course the dilemma “either model or counter-model”. This can be called a refutation

on the grounds of “the absurd”, understood as what is ‘unacceptable’ to the opponent. We will illustrate this by means of paradigms.

Bibl. Sample : WC Salmon, *Logic*, Englewood Cliffs (N.-J), 1970, 30. One aspect of the Socratic dialectic consisted in defining - especially ethical-political - concepts. The concept of 'justice', which can be translated as our "conscientious behavior", was therefore central together with the concept of 'virtue' - understand: being a virtuous person within the ancient 'polis' (city-state). So much for the background.

Cephalus' definition (model). "Well done, Cephalus," I (Socrates) replied. "But what is 'justice'?" Cephalus: "To tell the truth and to give back what is owed." Socrates: "Is that definition right? In other words: are there no exceptions to it? Suppose a friend of sound mind entrusts me with weapons and, no longer of sound mind, asks me to return them. Is it right to give them back to him? No one will say that I should give them back. ( ... )."

**Presuppositions on the matter** . 1. The content of a judgment is correctly defined only if it applies to all cases of the magnitude (and is therefore not refutable by any exception (counter-model)). 2. Entrusting weapons to someone who is not of sound mind is unjust. These logical and ethical propositions were put forward as axioms by the 'critical' Socrates, i.e., one prone to errors in reasoning.

**Protosophists** (-450/-350) held as an axiom: “Justice, if identified with expertise, is correctly defined”. They also stated, as citizens, that a society should at least be liveable, if not ‘ideal’ (their ‘model’). To which the fallacious Socrates replied: “Well, a thief can be defined as ‘an expert in taking other people’s goods’”. How can that be reconciled with ‘a liveable, let alone ideal society’? In other words: “If you assert that (your definition of justice as a ‘model’), then upon closer examination it follows that which you refute (the ‘counter-model’ of your model)”.

These are some paradigms of “the method of counter-models” within the world of Socratic dialectics.

### **1. 2. 6. The Aristotelian Categories (Predicaments)**

Bibl. Sample : F. Ildefonse / J. Lallot, prés., Aristote, Catégories, Paris, 2002. This historical study attempts to define the exact nature of Aristotle's categories, in order to establish their connection with ancient Greek grammar and with Plato's views. This does not interest us here and now so much as the usefulness of this list in composing a text. For the categories or

'predicaments' (as already said: to be distinguished from the 'categoremes' or 'predicabilia', see 1.2.2) are in fact a set of commonplaces with heuristic value. We follow the classification of some who link the categories.

**1. Basic couplet.** 'Ousia', Lat.: essentia, the essence, and 'sumbebèkos', Lat.: accidens, incidentality. We could say in fluent Dutch “essence / properties” of something that is the theme of a text. Application. Let us take something concrete, i.e. the murder of a girl. How do we define it using the categories?

**2. Further characteristics.** These are explained in turn in a linked manner.

**2.1.** 'Poion', Lat.: quale, how much, and 'poson', Lat.: quantum, how much. Here: the killing,

considering the stabbings, it is brutal (in nature) and there is exactly one dead (number).

**2.2.** “Pros ti”, Lat.: relatio, relation. Three types of relation can be distinguished.

'Pou', Lat: ubi, where, and 'pote', Lat.: quando, when. Here: in a city park and at night. 'Poiein', Latin: actio, to act, and 'paschein', Latin: passio, to undergo. Here: murder and a surprised victim.

'Keisthai', Lat.: situs, posture, and 'echein', Lat : habitus, equipment. Here: prostrate and partially undressed.

**Definition.** A report, reduced to the essentials ('ousia', essence), can be expressed as follows using the categories. Murder of a young girl. Given the stabbings, a brutal killing of one person in the city park at night by a violent man who surprised his victim, who was found beaten and partially undressed.

Of course, one can say that such a thing comes across as wooden. That is the case with all commonplaces. But it must be denied that the definition, if carried out with insight, loses itself in unreal details. It (1) characterizes (quality / quantity) and (2) situates (relation, place / time, action / undergo, attitude / equipment) an event.

**The distinction between categories and categories:** The categories (predicabilia) - genus / specific difference / kind and necessary and contingent property - define a being distributively (according to set theory). The categories, however, define collectively (according to systems theory).



A discussion is possible about the couple “attitude / equipment” because it cannot be denied that in and through that couple a couple more familiar to us moderns shines through, namely “situation / reaction”, where 'keisthai' means “being situated” (as given) and 'echein' means “responding to the situation” (as requested). That would bring to mind the existential couple “thrownness / design”: thrown into a situation someone designs a reaction to that situation. Such an interpretation, however free, is not without connection with the Aristotelian couple in question.

### **1. 2. 7 The Chreia (chrie) as a definition**

Bibl.st.: HI Marrou , *Histoire de l'éducation dans l'antiquité* , Paris, 1948, 241. The author says that the chreia in ancient secondary education, once filled in, amounted to a small page. 'Chreia' meant “usable configuration” of commonplaces. Just like Aristotle's categories, the chreia is a collective way of defining on the basis of the coherence of the 'places'.

JF Marmontel (1723/1799; *Eléments de littérature* (1787)) says that the chreia is a definition. Just like the Aristotelian categories, the chreia puts forward the multiplicity of a theme. Just as an 'essence' (core of the categories) provides a multiplicity of aspects, so does the theme, i.e. the 'what', of the chreia, as we shall see. We apply the method of a paradigm as a model that we explain.

#### **1. The two basic positions .**

A person either said something or did something. Those are the themes.

- **1.1.** Who. That is the one who speaks or performs an action. Isocrates of Athens (-436/-338) was a famous 'rhetor' (teacher of eloquence) and logographer (text editor). He enjoyed a very careful education. He took lessons from the protosophists Gorgias and Prodicus. And also from Socrates. As an advocate of panhellenism (the unity of all Greeks was his ideal) he placed his hope in Philip II (-382/-336), king of Macedonia. However, when he established that he was achieving the unity of all Greeks in an undemocratic manner, he let himself die of hunger. Such 'characterization' is appropriate at the beginning of the chreia so that one "knows 'who' one is dealing with".

- **1.2 .** What. In our paradigm a 'gnome', a saying of wisdom, by Isocrates: "The roots of education are bitter. The fruits have a pleasant taste". Note: Let us note: this statement is metaphorical. Whoever develops the theme, should not forget to translate the trope. Here: as the roots of a plant stand to its fruits, so does strict education stand to its pleasant results. With this one

does not slide into an exposition of the model instead of an exposition of the original.

**2. The second part highlights a number of aspects or perspectives.**

- 2.1. Reason. Note: One should note the distinction in Dutch between 'waardoor' (cause;- unconscious drive) and 'waarom' (conscious motive). Isocrates was very shy and had a weak voice. Which prevented him from acting as an orator in the 'agora' (people's assembly). He therefore stayed out of direct politics but nevertheless became very influential thanks to his 'bitter' efforts: he knew from his own experience what "bitter roots" are.

- **2.2.a.** Counter-model. (a contrario) If educators spoil, there is a risk that without "bitter roots" the result will be "unpleasant". Spoiled children are often unable to cope with the "bitter" life. It is unnecessary to provide arguments for this.

- **2.2.b.** Similar. (a similitudo). Here related data are cited that do not represent the same thing but are approximate. For example: "Education ( ... ) is the skill that consists in directing (the eye of the soul) and in finding the most effective ( ... ) method for this purpose. It does not consist in teaching the eye (of the soul) to see, because seeing is already there; ( ... ) it directs its conversion (to the good)". (Plato; Republic, 7). Note: Isocrates did not share all of Plato's insights, but that does not prevent their ideas on "bitter education" from being parallel.

- **2.3 .** Examples. (a similitudo, ab exemplo) Here Demosthenes of Athens (-384/-322) can be cited as an application: he had a weak voice but thanks to "bitter practice" he was able to appear in the agora and became the most famous orator of Hellas. Note: The 'example' is a sample from the extent to which the content of Isocrates' proposition applies and belongs to the inductive method.

- **2.4.** Testimony. These are arguments from authority. Opinions or opinion polls that confirm (or refute) Isocrates' thesis can be cited here.

Latin mnemonic formulas. There are two.

- A. Introduction. B. Middle. Quis (who). Quid (what).- Cur (reason). Contra (counter-model). Simile (similar). Paradigms (examples). Testes (testimonies). C. Conclusion.

Aphthonius of Antioch (270/ ... ) left us another formulation.

- A. Introduction. B. Middle. Paraphrasis (who/what).- A causa (reason). A contrario (counter model). A simili (similar). Ab exemplo (examples). Testes

(testimonies).- C. Conclusion. (in the form of “a brevi epilogo” (a short epilogue)

Thus, ancient teachers learned to define in the form of a shorter or longer text.

It should be noted that both Aristotle's categories and the 'places' of the chreia are based on both similarity and coherence.

### **1. 2. 8 Accumulating definition**

- Scenario. Someone comes to a large village. For days and weeks everyone has been talking about “a fatal quarrel between neighbors”: one person tells this, another that, a third something else. That is the GV. The RQ : finding out the true event, 'x'. This is defining x.

- **Structure of the definition** . The end point of the investigation that leads to the definition is a form of 'deictic' ('ostensive') or illustrative definition. R. Nadeau, *Vocabulaire technique et analytique de l'épistémologie*, PUF, 1999, 152, describes by means of a paradigm: 'The term 'red', if for example one shows a ripe tomato (one example from the scope of the concept) while saying: “The color of the ripe tomato is red”, is defined ostensively'. But before that end point regarding X is there, another way of defining is necessary, the cumulative definition. “X, if, starting with a 'lemma' (provisional definition), through an 'analysis' (testing of the lemma) in the form of an - at least sufficiently convergent (converging at one point) - series of actions (praxeological method) demonstrated as tentative samples (ostensive ending), turns out to be defined in an accumulative manner”. We will now explain this complex wording.

- *Lematic - analytical definition* . Its founder is Plato. One begins with a lemma, a hypothesis, here: one or other of the stories in circulation. All subsequent actions are called by Plato “the analysis”, here: the searching testing of the initial story with the X in mind.

- **Confluence**. Bible st.: H. Pinard de la Boullaye , *L'étude comparée des religions, II (Ses méthodes), 509/554 (La démonstration par convergence d'indices)*. The aim is a searching induction: (1) a series of samples in the form of, for example, all kinds of interrogations,

(2) which at a given moment point at least predominantly or even decisively in the same direction - 'converge' -, i.e. (quite / very / highly) likely reveal X.

Accumulation. One 'designation' (Latin: indicium) after another piles up.

- **Conditions** . The indicia must be both independent of each other (e.g., always questioning others) and yet interrelated (coincidence). To the extent that they become consistent (although they may contain different versions), to that same extent (“a pari”) they provide they are truth ('information') regarding X.

- **Treasure hunt** . Children play this structure when they are on a treasure hunt: the X, e.g. a jewel that the teacher has hidden away in the big forest, is found and 'shown' through a number of search attempts.

- Theories. The accumulating samples - in treasure hunts for example children search randomly now here then there (as well as in a judicial inquiry such as the TV series: Derrick's investigations) prove that induction is involved, a groping induction. L Newton (1642/1727; *Principia mathematica philosophiae naturalis* (1688)) defined the accumulating method of definition by means of a mathematical 'model': just as a regular polygon within a circle, when its sides are multiplied endlessly, has the circle itself as its limit value (limit), so do the indicia. They point, if the search is successful, gradually to the X as their 'limit'.

**Note:** “Omnis comparatio claudicat” (said the ancient Romans), i.e. “All comparisons are flawed”: Newton's model is mathematical in a regular and predictable way, while in the search for a treasure or the uncovering of a crime, for example, anything but mathematical regularity and predictability can be found!

### **1. 2. 9 Definition of the singular**

“There is now a girl playing in that meadow there”. This is an 'existential' statement, one that actually expresses existence, which is also 'singular' because it has as its subject a conceptual content (“a girl playing”) that refers to precisely one instance within the conceptual scope, namely “a girl playing now (time) in that meadow there (space)”.

Bibl. Sample : H. Pinard de la Boullaye, *L' étude des religions, II (Ses méthodes)*, Paris, 1929-3, 509/554 (Demonstration by convergence of probable indices). The method is (1) induction, i.e. loose samples that reveal characteristics. (2) By accumulation - cumulative method - one describes the singular to be defined until one is certain that the entire definition and only the entire definition can no longer be confused with the rest of reality

(complementation or division). In this way the singular can be distinguished in its uniqueness (oneness). Note: We refer briefly to the DNA method that can define precisely one human being on a biological-genetic basis.

- **An algorithm.** The Jesuits of Coimbra (Portugal), in their *In universam dialecticam Aristotelis* (1606), proposed a distich (two-line verse) as a defining algorithm: “Forma (essence), figura (appearance, configuration), locus (place), stirps (origin), 'nomen' (proper name), patria (fatherland), tempus (time), 'unum' (the singular) perpetua lege reddere solent”. The order is governed by the Latin art of verse, but the algorithm within it is valid.

- **Application.** (1) Anne (proper name), (2) if forma (woman), figura (large in stature), patria (Belgium), locus (Antwerp), tempus (27.06.1977 as date of birth), stirps (well-to-do family) are known, (3) then sufficiently (as not to be confused with anyone) defined. One sees that the 'notae' (characteristics) are listed in such a way that the unique is recorded. Each of the characteristics in itself is insufficient, but the complex (the coherence) saves the defining character.

**Note:** As already mentioned (see: 1.1.1; the classical and romantic concept) there is a strong tradition that states: “omne individuum ineffabile” (all that is singular is 'unpronounceable', understand: not definable in a businesslike manner). This in the context of 'science' of which it is claimed: “Non datur scientia de individuo” (no science is possible about the singular). The Jesuits of Coimbra are the only exception to this. In the romantic vein:

Wilhelm Windelband (1848/1915; founder of the neo-Kantian Heidelberg School) introduced the distinction between 'nomothetic' (formulating general laws) and 'idiographic' (describing the singular) sciences in the theory of science, so that the unique was given its due, also in 'sciences'. Consider geography and history: there is only one Antwerp; there was only one Napoleon! One can say many generalities about these two singularia, but does nomothetic science then talk about the real Antwerp and the real Napoleon?

### **1. 2. 10 Some more types of definition**

Bibl. Sample : I.M. Copi, *Introduction to Logic* , New York / London, 1972-4 (Definition). The author begins by noting the 'synonymous' definition as it can be found in bilingual dictionaries. For example, in an English / Dutch dictionary: 'advertisement' = 'announcement'. Copi restricts synonymy to

singular words, but on closer inspection every other definition is a synonymy but in the form of a plural of words.

### **'Connotative' and 'denotative' definitions**

Copi distinguishes between 'connotative' and 'denotative' definitions. 'Connotative' means "What expresses the content of the concept" (as above). 'Denotative' means "what expresses or uses either instances from a collection or parts from a system to lead to a general concept of the collection or system". In other words: one defines along the scope of the concept. Example. Someone who shows a computer in operation to someone who knows nothing about it, suggests a general concept in and through a concrete action with the computer as its object. The action - showing, manipulating - is essentially repeatable because the scope of a concept usually contains a plurality of instances or parts. The structure: "A repeatable action (basic concept) with as its object at least one instance from a collection or at least one part from a system (added concepts) so that the content of the concept of the collection or system penetrates the mind".

**Paradigm** . This method recalls traditional grammars which first give a concrete application in order to suggest the general rule in and through that application. The concrete example is called a 'paradigm'.

**Operational definition** . PW Bridgman, *The Logic of Modern Physics* (1927), as a physicist defines 'operational' (by means of action): "Repeatable physical actions (basic concept) with as object a physical thing (e.g. an electronic process) (added concepts) so that a physical concept content emerges". On a simple level: measuring the temperature of a sunlit stone (object) with a thermometer (repeatable action) gives a concept of the temperature (definition in degrees Celsius). Something like that gives a physical evidence of course. People have also tried to introduce this operational way of doing things in human science by operationally defining the physical phenomena that accompany e.g. mental processes (e.g. when we think, our brains react). Cognitivism is known for this method in 'cognitive' psychology.

**Causal definition.** Aristotle, *De anima* II, 2: 1: "Definition should not only express data ( .. ) but it should also express the 'aitia' (the reason)". Thus: "The sun (basic concept), when covered by the passing moon (additional concepts), shows an eclipse (defined concept)". The additional concepts here express the reason, the cause. Which leads to a causal definition.

O. Willmann, op. cit., 125, mentions in this connection the genetic definition which expresses in the added concepts the coming into being ('genesis' becoming) of the definiendum. Plato, but especially Aristotle, already adhere to this method: "If one can trace the data in their becoming from the beginning, then this is the most successful conception of meaning" (politica 1:2). Thus Aristotle (following Plato) defines the state of that time as having 'become' from the family and the village. That becoming is regarded as a kind of 'reason' which makes the state of that time understandable and ... defines it.

### **1. 2. 11 Definition of 'postmodern'**

What is called 'postmodern' is a type of culture. Culture is a given that is approached from a demand. The postmodern person approaches reality and his role in it differently than the modern person, from a different demand.

The term. 'Postmodern' contains two subterms: 'post' after, and 'modern'. Literally: "what comes after modernity". 'Post' implies that one distances oneself from what is modern, yes, that one does fundamental research concerning modernity and designs new foundations.

From one big 'story' to many small 'stories'. F. De Wachter, ed., On the use and disadvantage of postmodernism for life, Kapellen, 1993, sees it as follows.

**Conceptual content.** 'Story' here means "comprehensive view". The premodern Bible had a great story: God creates the universe and situates man in it with the task of cooperating in a future state of salvation, the kingdom of God. Marxism had another great story: modern industrial man in the role of the proletarian has the task of liberation from the slavery of capitalism towards a future state. The decay of a traditional Christian faith and the collapse of the communist states leave us with a fragmentation, i.e. a multitude of unpretentious and therefore 'small' stories.

Instead of establishing modern working culture, postmodern man strolls around: as if carried by the train of modernity, he enjoys the flashing impressions of the world outside. At most, warming up for those 'small' stories.

**Scope of concept.** Art (e.g. architecture), body experience, new social movements, new moral behaviors, not least multiculturalism and 'transculturalism' embody the postmodern content. And this rather as "the

end state of modernity" (L. De Cauter). From separated reality to merging reality. J. Gerits, *Recent tendencies in Dutch literature*, in: Streven (Antwerp) 1994: May, 416/417, sees it this way.

**Conceptual content.** Modern reason organizes, - keeping itself and the things around it clearly separated. Postmodern man, however, experiences himself and the things among themselves as converging. With the overall impression: "Everything is hazy".

**Scope of concepts.** Fact and fiction merge (the new historical or documentary novel; for example: E. Marain, *Rosalie Niemand* (1988)). Fiction and 'metafiction' (theory about fiction) merge (P. Hoste, *Ontroeringen van een forens* (1993)). Texts merge (intertextuality in which a text is processed within a text (P. Claes, De Sater (1993) in which fragments of Apuleius, Petronius, Homer - distinct literary genres - merge)). The I merges with the world and its data (I. Michiels, *Journal brut* with the title "*Ikjes sprokkelen*"; Bemlef, *Eclips* (1993) in which a man emerges from a car accident as someone who, due to memory loss, speech disorder, and an insensitive left half of his body, experiences himself and the world as hazy and merged). Overall impression: a disordered sense of self in a disorderly environment.

Both characteristics give as an approximate definition a set of characteristics to characterize a culture. Each of them emphasizes one or another characteristic but they agree on the critique of modernity which placed the rational self with its ordering power over itself and things at the center.

### **1. 2. 12 Perception: sensory and intellectual**

Fr. Joignet/ P. van Eersel, *Visions (Le chaos par Prigogine)*, in: Actuel (Paris) 1990: Oct., 91/93. The text begins as follows: "On an icy morning in the winter of 1961, Edward LoreCL, a very gifted mathematician, goes to his laboratory at MIT, the very famous Massachusetts Institute of Technology in Boston. But he does not yet realize that chaos is about to ensue. Because since the Second World War (1940/1945) he has been delving into mathematics. That day he becomes fascinated by a sequence of a numerical simulation (Note: a technical representation) of the development of a climate. In the silence of his laboratory he retypes on his coordinator - an old Royal Mac Bec - the data concerning the climate to be studied (... ).

LoreCL cannot believe his eyes: the course of the new curves - far from dutifully repeating the old model - moves away from it! First a few



millimeters. Later the coordinator draws the craziest figures. The new climate, shown in the simulation, has nothing to do with the predictions". Note: LoreCL discovers the butterfly effect: a tiny change in the weather in one place causes a maximum change in the weather, so that from a given tiny change in the weather the maximum is unpredictable (which means 'disorderly' course or rays.)

### ***Phenomenological analysis .***

1. What does LoreCL immediately perceive as a phenomenon, sensory speaking? The curves, the numerical description (simulation) of a climate - in - evolution.

2. What does LoreCL immediately perceive as a phenomenon, logically speaking as a thinking being? Through the sensory perceived representation he 'sees' with his mind the evolution of the weather, a chaotic evolution in this case. How should we interpret this phenomenologically? First of all there is a concept of 'perceiving'. In other words: there are two phenomena, i.e. directly given realities: that which he sees sensory (with his eyes) on the screen, and that which his mind grasps through that sensory perceived, the evolution of the climate. There is also a perceiving with the mind.

Consciousness-psychological analysis. - Let us imagine a twofold scenario.

**a.1** . LoreCL has fallen asleep at his coordinator. Physically he is at the screen. Note - One could suggest that while asleep his mind or even his senses still grasp something somewhere but that would not mean much scientifically.

**a.2.** A child comes walking up, looking from the sleeping LoreCL to the working screen. It perceives movements on the screen, but sees them not as meaningful curves but as screen movements: its consciousness in the latter case is as a phenomenon, the only phenomenon it perceives.

**b.** LoreCL The child wakes up, looks and resumes his perception of what the screen shows: he is now not only physically but also with his consciousness, sensory perceiving and at the same time intellectually perceiving, at the screen and through the screen at the evolving climate. The child's consciousness is at the screen. LoreCL's consciousness is also at the screen. But what a profound difference!

Immediate and mediate. - The child is immediately at the screen and its movements. LoreCL is immediately, like the child, at the screen and its

movements, but is also, through the movements visible on the screen, at the evolving weather: for him he is immediately there.

**(1)** Even though a behavioral psychologist, for example, will state that he has only an indirect perception of the weather. The behavioral psychologist limits the phenomenon to the physically observable on the screen. The rest is interpretation.

**(2)** But in terms of consciousness psychology, this interpretation is a form of direct perception. LoreCL is with the weather, not with the curves, unless he explains the theory about the meaning of these curves to someone. Then he only thinks of the mediation of these curves between him (perceiving) and the weather, in other words, of the standpoint of the behavioral psychologist.

**Conclusion** . When we describe consciousness processes faithfully, we establish what follows.

**1. The consciousness of something** - e.g. the evolving weather - is susceptible to evolution: a child shivering from the cold rain is conscious of "the weather". And this both sensory (wet epidermis, eyes that give off raindrops, the ear that catches the rustling, etc.) and intellectual (grasping "cold rain" as a phenomenon with many facets that mainly concern the individual senses). But a meteorologist who walks the child by the hand in exactly the same - objectively speaking) rain, is nevertheless conscious of that rain in a different way. In other words, the previous experiences (as memory data), the scientific education also determine in their own way the consciousness that thus appears to be a flexible, evolutionary data.

## **2. 2. The immediacy of the given,**

The immediacy of what consciousness perceives as a phenomenon, that is, directly or immediatly given, evolves along with it. We saw that very clearly in LoreCL's grasp (sensory, yes, but intellectual through the senses) of what weather is and in particular the susceptibility of weather to turns. For the child not trained as a meteorologist, that was a dark spot, an x or unknown, so much so that the curves on the screen told him nothing about weather evolution. For the unformed child, those images and their movements were not simulations (descriptions) of weather evolution and so those images were a full-fledged intermediate term in which the mediate or intermediate became abundantly clear.

**Simulations** . - Of course, it is assumed here that simulation is indeed a translation of, for example, the weather, but not a distorting translation: the curves actually simulate (although that will never be entirely) the weather. So that for meteorologists they are, transparent as in the correctness of the representation, presenting the weather itself. But that belongs to the theory concerning the essence of simulations as descriptions of data, in which their usefulness stands or falls with the degree of immediacy of the mediate means. Understood: the degree of correct representation inherent to the means of description as an informative translation of a given.

When LoreCL, seated in front of the screen, follows the curves in their evolution, he naturally perceives with his eye that they come into motion (we call that, with the psychologists, “sensory perception”), but he perceives more than that and in that purely sensory way: he is literally with his perceiving consciousness at the weather - in - motion (we call the latter “intellectual perception”). In other words, the distinctions that psychologists make in the course of their analyses disappear in the direct experience. LoreCL pays attention to the weather in evolution both sensory (via simulation) and intellectual (through the simulation). It is the direct contact with the phenomenon itself in its purity, not yet clouded by theory about sensory and intellectual perception. - Whoever finds the expression “intellectual perception” implausible, betrays an a priori view: why should our perception, that is, our direct contact with reality, not be possible with our mind? Man is a true unity of spirit - and - senses and that is evident in phenomenology.

Let us also refer, for example, to the process of learning to read. An illiterate person looks at a written or printed word very differently than a trained reader. Indeed, it will be impossible for the latter to look at the printed word without immediately evoking the corresponding sound image. The perception is sensory and intellectual. Previous experiences, in this case learning to read itself, play a role in the perception.

### **1. 2. 13 Indicate**

Interpretation is to react to a given so that one grasps it as accurately as possible. One speaks of meaning-making. In this, one can distinguish degrees, namely meaning-conception and meaning-making.

- **Conception of meaning** : This concerns the given “according to itself”, i.e. as given, in itself. When we try to grasp (the meaning or essence of)

something - an event, a saying, a landscape - correctly and realistically, we pay attention to that something itself, in itself.

So: A business owner looks at the figures: via that 'sign' he understands that his profit margin is decreasing. In this way he defines both the sign (the figures) and what they mean (the loss).

Edward LoreCL and the child who is watching the screen grasp reality. The child only perceives the sensory curves. LoreCL perceives sensory and intellectually: the curves give him information about the weather evolution.

**Note** : Parmenides of Elea (-540/ ... ), the founder of Eleatic philosophy, has left us an expression: “being according to itself” (“Kath'heautou”). This is: what is given (and asked for) according to the given (and the asked for) itself and not according to us. In other words, in modern terms: the object decides, not the signifying subject. In Aristotle's formula for “ontology / metaphysics” this is reflected as follows: “being as being” (“to on èi on”).

- **Meaning foundation** : Here it is about both the given (and the sought) and especially about what that given (with its requested) elicits in the one who is confronted with it. In other words: in modern terms: both the object and especially the subject as an interpreting being independent of the object. It is the second degree of interpretation: it takes courage to see “the writing on the wall” and at least as much to “find something for it”. That is the full reaction.

According to Peirce (1.2), whoever observes idiosyncratically, orthodoxly or with preference, does not adhere to the data, does not limit himself to the interpretation of meaning, but constructs his own meaning. The ABC theory (6.11) also states that observation A can be colored and clouded by the prejudices of the subject (B), so that behavior (C) becomes understandable as a result.

**Note:** In this connection reference is made to J. Kruithof, De zingeer (An introduction to the study of man as a signifying, appreciative and acting being), Antwerp, 1968, a work that sees the entire human existence as a threefold degree of signifying, i.e. 'signifying' (understood as judging), appreciating, acting. Making value judgments and 'acting' are two degrees of meaning-making.

**Broad meaning** . Ch. Peirce (1839/1914) places interpretation at the center of his complex theory: man is an 'interpretant'. But this level of interpretation is only the top of a general phenomenon: basically everything, if it encounters something else, indicates that other thing. The stone that catches a falling stone 'reacts' to that encounter on a physical level. The plant that catches the same stone 'reacts' on its biological level. The animal that catches that same stone 'reacts' on its biological level. In Peirce's metaphysics, signs play a central role in these encounters and reactions to them: they carry a message that emanates from what is 'encountered' and is grasped (and interpreted) by what is 'reacting', so that the universe is one large complex of things and processes that transmit and grasp such signs.

**Narrower meaning**. Bibl. Sample : H. Arvon, *La philosophie allemande* , Paris, 1970, 116/120 (L' herméneutique). 'Hermeneutics' was traditionally an auxiliary science in the interpretation of sacred or profane texts. Fr. Schleiermacher (1768/1834) was the first to reinterpret 'hermeneutics' in his *Dialektik* (1839) as a broad theory of knowledge (epistemology): all human expressions (written or not) are objects of interpretation as products in which the human soul or spirit shows itself. They are signs of human inner life. 'Understanding' one's fellow man through these signs is something fundamentally different from explaining these same signs scientifically.

- J. Droysen (1808/1884), W. Dilthey (1833/1911), G. Gadamer (1900/2002 ; *Wahrheit und Methode*, Tübingen, 1960) developed such hermeneutics. Cfr KO Apel, *Die Erklären / Verstehen - Kontroverse in transzendental -pragmatar Sicht* , Frankf am Main, 1979.

- The object here is therefore man as an animated and spiritually gifted being: to 'interpret' him is to grasp what he shows through his behavior (words, gestures), his works (products, works of art), in a word: his cultural expressions. Through these signs can the hermeneutician grasp the 'meaning' of what the fellow human being experienced internally. This is called the 'understanding' method.

**Cognitivist meaning** . The same inner world in fellow human beings can also be scientifically and biologically discovered - interpreted. Biological research indicates psychic life via the influences of DNA or indicates this via scanning methods that physically expose the brain activities that accompany inner life. The 'signs' via which cognitivism indicates the inner life of fellow human beings are now no longer the signs that can be grasped by the

common mind but biological structures (DNA for example) or biological processes.

**Note. Semioticism** . It should be noted that the extreme emphasis on signs as intermediate terms is not tenable, because only if one grasps the signified before or simultaneously with the sign, does one know that it is a sign, i.e. a reference (on the basis of similarity or coherence). What it means that indicating via signs stands or falls with the direct grasp of the signified, the inner life: grasping the inner life of one's fellow man oneself is the message.

**Note** : The disadvantage of signs is that they are far too few, insufficient models of similarity of inner life, but far too many, excessive models of coherence, and therefore only provide indirect knowledge, i.e. indirect 'interpretation'.

Let us explain further. When the text that you are now reading, reader, was written, according to brain scientists, the neuronal pathways in specific canters of the writer's brain were active. However, it is more appropriate not to think about these neural activities at this moment in order to 'understand' the intention (the 'message', the information) of what was written. One pays attention to what the writer wanted to communicate via the signs of the text. In this way, one can empathize with his mental life so that a similarity model of what he thinks comes through. The brain may already be necessary: it is only a coherence model!

There are biologists - geneticists - who, when they examine a love game, think (and say): "The persons involved pass on their genes to their offspring". Such a comment is correct. Yet, in order to 'understand' what that love game is as a soul life, it is more effective to empathize with what both partners are going through, without thinking about the passing on of genes! Only then does a similarity model of love game emerge and one does not end up in a coherence model. What is related to it is certainly informative, but what the soul life itself is, is much more accessible through empathy.

**Conclusion.** There are apparently things that escape biology. What it understands does have a sign value, but too indirect when it comes to interpreting human inner life. Let us now turn to 'signs' that are less scientific.

When we - archaeologists do this intensively these days - immerse ourselves in, for example, the dilapidated buildings in Central and South America, we encounter the evidence remains of ancient Indian cultures. In the absence of sufficient historical information concerning what the designers had in mind, we do see a similarity model as far as it is materially elaborated, but the further meaning of that 'sign' is often a question mark: "Did they worship deities? Or did they honor ancestors? Did they commemorate feats of arms? Did the buildings contain magical - healing or defensive - powers?". Not to mention the ceremonies that took place in them. Or "Did they not want to hide rather than show?". We do see the materializations of their inner world - even if it is in a dilapidated state - but what they had in mind remains a serious mystery via the remaining signs. The signs therefore do not mean that much. The inner life of those times can be explained to some extent, but in an 'unclear', understand: 'unclear' way. The signs - in the absence of direct contact with what they mean - give rise to question marks.

Again, signs without prior or simultaneous contact with their signified are indistinct.

### **1. 2. 14 Definition in story form**

Bibl. Sample : W. Wagenaar, *Where logic fails and stories convince*, in: OCLe Alma Mater (Leuven) 45 (1991): 3 (aug.), 258/278. It concerns a case in the Netherlands. The true event that we call 'x', is what investigators, judges and those involved try to define.

- Story 1. Miss A., who has been living with her boyfriend since she was 21, claims that she was "molested by her father six years ago". Her boyfriend pressures her to report the incident. 'Mollification' is a first definition of x.

- Story 2. The father tells that he was once alone in the house with his fifteen-year-old daughter "but only gave her a good beating". "Just a good beating" is a second definition of x.

- Report. The appointed physician determines that Miss A. is "no longer a virgin". "No longer a virgin" is a third - this time scientific - definition of x.

**Rhetoric** . 'Rhetoric' is either the theory of persuasion or the practice of persuasion itself. In this connection, the medieval pair of opposites 'material object / formal object' is appropriate. The object - in this case x - is called 'material' insofar as it is the brute, undefined given (for any interpretation). It is called 'formal' insofar as it is expressed in a 'forma', a concept, i.e. an

interpretation. A material object usually elicits a multitude of formal objects (interpretations). Here the concepts in which the daughter, the father and the doctor judge  $x$ , - each from their own perspective, i.e. the interests (daughter, father) or the role (doctor). One wants to persuade (rhetoric), the other communicates information (science).

**Logical** . Logically, the stories and the report are presentences from which postsentences can be deduced. If story 1 is true, then the father is necessarily guilty. If story 2 is true, then the father is necessarily innocent. If the scientific report is true, then the father is not necessarily guilty (because Miss A. lives with her boyfriend).

Logic does not fail but is applied. The axiom that each of the parties involved adheres to is “to be right” or “to contribute scientifically”. From there, all reason strictly logically and define their stories, respectively their report in such a way that the afterthought (guilty, innocent, perhaps guilty) follows. With the legal consequences thereof.

As already mentioned, La Logique de Port-Royal notes that very often common sense or even the intelligentsia (the intellectual and artistic vanguard) reason very logically, but from presuppositions that are open to criticism. (cf. primitives)

### **1. 2. 15 Peirce's pragmatic maxim**

Ch. Peirce, *How to Make Our Ideas Clear* , in: Popular Science Monthly 12(1878): 286/392, expresses his “pragmatic maxim”: “Consider what effects, that might conceivably have practical bearings, we conceive the object of our conception to have. Then our conception of these effects is the whole of our conception of the object”. Consider what effects - that might conceivably have practical bearings - we think the object of our conception must have. In that case, our conception of these effects is the whole of our conception of the object. In other words: if we have the conception of the effects, then we have the conception of the object itself.

**1. Peirce** . “This maxim has been called a skeptical and materialistic principle. In fact, it is only the application of the one principle of logic that Jesus recommended: ‘By their fruits ye shall know them.’ Which means that this maxim is closely related to the ideas of the Gospel. We should not therefore understand the term ‘practical scope’ in a low and common sense.” In 1905 Peirce would write: “If a certain prescription for an experiment is prepared, then a certain observation will follow.” Which amounts to



deduction of tests from a given concept, to their execution, to the subsequent determinations concerning the practical content of the concept.

**Note:** The text from Matthew 7:15/20 speaks about how to gain true understanding of false prophets: “By their fruits you will know them. Do men gather grapes from thorns, or figs from thistles?” Whether this is the only principle of logic that Jesus recommended is very questionable. But so far.

**2. J. Dewey** (1859/1952; instrumentalist on knowledge). Dewey writes in 1922 that the main idea of Peirce (whose influence he was subject to) is 'pragmaticism'. While W. James (1842/1910) espoused a 'pragmatism' that tests knowledge by its results, Peirce was a scholastic conceptual realist and emphasized knowledge as valid in itself and therefore changed James' name 'pragmatism' into 'pragmaticism'. This did not prevent Peirce from testing the per se value of our concepts by their practical results. In that sense he was 'pragmatic', i.e. focused on results.

### **“The world in the making”.**

Dewey emphasizes that pragmaticism exhibits the following characteristics.

**a** . The message is not to passively contemplate blindly on the mere contents of knowledge and thought, but to work with those contents of knowledge and thought. Experiment with concepts, and you will learn to know their correct cognitive value.

**b** . Not the endless investigation of the origins of our concepts, as the Western tradition has done too much, but rather the working with concepts and the investigation of their results that do not lie in the past but in the future, is the “pragmatic maxim”. The world not as it has been up to now, but the world in the making became central with pragmatism and pragmaticism.

This means that the content of the concept is defined on the basis of the results that are achieved when it is applied in practice (which is done by testing it on samples of their size).

### **1. 2. 16 What were Henok and Elias?**

Bible sample : Ch. Peirce, *Deduction, Induction and Hypothesis* , in: Popular Science Monthly 13 (1878): 470/482.

(Note: you can find this text by Peirce at the following address:

<http://www.archive.org/stream/popularsciencemo13newy#page/469/mode/1up>

The Bible, the book of Genesis 5:21/24 states that Henok was taken from the earth alive by God because of personal holiness and a role in extension thereof. 2 Kings 2:1/13 states that Elias was taken up by God "in the whirlwind - alive - to heaven" because of personal holiness and a role in extension thereof. Peirce now attempts to define their 'essence' ("What they were") in the form of a syllogism. And in a threefold nature. We already give here the names of the different syllogisms (Barbara, Bocardo, Baroco) that will be explained further in this text, under 3.1.3., "Combinatorics within the syllogism".

1. **Barbara** . All men die.  
Henok and Elias were human.  
Henok and Elias die.

In definition form. Henok and Elias (basic concept), if all people die and if they are people (added concept), then die (defined concept). The reasoning is apparently deductive (from universal set (all people) to subset (Henok and Elias)).

2. **Bocardo**. Enoch and Elias were not mortal.  
Henok and Elias were human.  
Some people are not mortal.

In definition form. Henok and Elias (basic concept), if they are not mortal and (yet) are people (added concept), are not mortal (some) people. One remains cautiously within the collection of people but drops the characteristic 'mortal' as applying to strictly all people. Some people are mortal in that interpretation, some are not. The reasoning, if formulated deductively, is: of all people one concludes on the basis of a subset that some are mortal and some are not.

3. **Baroque**. All men are mortal.  
Henok and Elias are not mortal.  
Henok and Elias were not human.

In definitional form. If all men are mortal, and if Henok and Elias (basic concept), are not mortal (added concept), then they were not men (defined concept).

One remains cautious within the collection of people but - unlike bocardo above - one retains the characteristic 'mortal' as applying to strictly all people.

**Deduction:** if all men are mortal and Enoch and Elias are not, then Enoch and Elias are not men! They are outside the collection of men.

One sees that defining depends on defined concepts. For, depending on whether one has already defined 'people' as either mortal or now mortal now not, the after-sentence is either "were Henok and Elias not people" (baroco) or "were Henok and Elias not-mortal people" (bocardo).

It is therefore not surprising that classical logic attaches such importance to concepts such as defined 'formae' (contents of knowledge and thought). In essence, judgments and reasoning can always be expressed in definition form, as has been demonstrated above. Which indicates that at least within naturally expressed logic - one either defines or builds definitions on defined concepts.

### **1. 2. 17 Definition of 'Psychiatric illness'**

We reproduce the following textual response from a reader: Thérèse Liechti (Pully, VD), *What is mental illness ?*, in: *Le Temps* (Geneva), 29.10.01, 20;

( ... ) "You state that neuropsychiatric mental disorders are responsible for almost one third of the world's work incapacities. From a psychiatric point of view, such a claim can be considered plausible. Yet psychiatry has been at work for a long time, and in all layers of our society, aided by millions of Swiss francs (1 Swiss franc = 0.6 euros). And yet the number of complete cures of individuals who "suffer from mental disorders" is unusually low. For more than a hundred years, psychiatry has promised to cure so-called mental illnesses. Despite unprecedented expenditure in this field, the rise of these illnesses continues. In 1952, the DSM (the American bible for psychiatry) counted 112 mental disorders. Today it has 374. The more we call upon psychiatry - or rather the more it imposes upon us - the deeper society sinks into mental problems. In Switzerland, the number of cases of Assurance invalidité for psychological reasons increased from 23,507 in 1986 to 62,000 in January 2001.

Proof of ineffectiveness? Not at all, because if psychiatry fails to solve a problem, it will simply claim that it is "an incurable disease". Before the seven billion people on our planet are labelled "mentally ill", our authorities should

once and for all test the validity of this pseudoscience to determine whether it still has a place in our society (..)".

So much for the submitted text in response to a previous article.

**Note.** It may be objected that the fact that the number of psychiatric disorders in its growth, cited above, may be due to a more thorough investigation of such disorders and is therefore not evidence of ignorance. The fact remains that the author is right when she brings to the forefront the definition of what is a "psychiatric illness". The fact that the DSM evolves from 112 to 374 'defined' disorders may be evidence of the fact that the general definition itself has evolved and that therefore the concept of "psychiatric illness" itself began by being unclear.

It may still be as the author clearly insinuates. If after research the latter would prove to be correct, then the failures - which are undeniable, especially when our Western psychiatry deals with "psychiatric disorders" of non-Western people - would have as a reason the pseudo-scientific character of established psychiatry.

Of course, before one publicly states that established psychiatry is pseudo-science, one must first prove it. It may be that psychiatry is still 'on its way' and that its undeniable failures do not prove that it is pseudo but that it still has a long way to go.

Regarding "psychiatric disorders" of non-Western cultures, we refer to the so-called Ethno-psychiatry. In essence, it comes down to the fact that our Western rationalistic psychiatry that works for us Westerners (if it works!) can hardly be applied to other cultures. There, people rather seek refuge and salvation in the healers of the tribe or clan, the shaman, who try to help the patients with traditional means (summoning spirits, incantations, etc.). In many cases, patients claim to be helped much better, much more fundamentally by their traditional healers than by (some of) our psychiatrists who sometimes want to see problems in the depths of the human soul solved with a pharmaceutical prescription for tranquilizers. See, among other things, Daryush Shaygan: *Le regard mutilé, Pays traditionnels face à la modernité*, Editions Albin Michel, 1989

***This chapter summarized:*** *Definition and classification are ways of enumeration. Defining concerns the content of the concept, classifying concerns the scope of the concept. A potiori enumeration means that the most important characteristics are mentioned by means of an approximate enumeration.*

*Categories and categories define the original. Categories refer to the essence of the definition, they define in a distributive way. Categories provide additional information.*

*A regular enumeration can also lead to a definition. If necessary, one can define by stating what is excluded in the definition.*

*Eristics or reasoning specializes in refutation: if contradictory sentences follow from a counter-model, then such a counter-model is absurd. Such a counter-reasoning can also remain undecided, so that neither its proponents nor its opponents can convincingly draw a logically decisive conclusion. Zenon expressed this with his immortal statement: "You, no more than I, convincingly prove your premises. Socratic maieutics consisted in refuting an incomplete definition with counter-models in order to arrive at a precise degree of definition.*

*Categories are a set of commonplaces with heuristic value and collectively define.*

*Just like Aristotle's categories, the chreia is a collective way of defining on the basis of the coherence of 'places'. The two basic places in this are 'who' and 'what'. Furthermore, the chreia highlights a number of aspects or perspectives: the definition is supplemented with a reason, a model for or against, examples and testimonies.*

*An accumulative definition attempts to trace a true event through various data and testimonies. If one arrives at a provisional definition, it must be tested further. Plato spoke of a lemmatic - analytical definition. One starts with a provisional hypothesis, which is tested for its correctness by searching.*

*The singular is defined through an accumulation of samples until it becomes distinguishable from the rest of reality.*

*In the classical way of defining, little attention was paid to the singular concept. The romantic way defines the concept in such a way that the unique comes into its own.*

*Synonymous definitions can be found, for example, in a bilingual dictionary. The connotative definition concerns the content of the concept, the denotative definition gives the scope of the concept.*

*Operational definitions show a conceptual content via repeatable physical actions. One can also define causally. The added concepts then express the reason.*

*If we try to define postmodern, it turns out that the postmodern person critically examines the foundations of modern culture from a holistic and multicultural perspective.*

*To indicate or interpret a reality means that one gives a given the most correct meaning possible. In this giving of meaning one can distinguish degrees, namely meaning-conception and meaning-foundation. LoreCL's story shows that the conception of meaning has a sensory and an intellectual aspect. Parmenides spoke of "being according to itself", whereby the object decides, not the interpreting subject.*

*The term 'interpretation' has a broad meaning, in which almost everything reacts to everything. Schleiermacher interpreted all human expressions as signs of his inner life. In this way he wants to come to an understanding of his fellow man, something that is much more penetrating than merely explaining his behavior in a scientific way. Understanding one's fellow man presupposes an empathetic attitude. This is based on similarity. Similarity models make the life of the soul much more accessible than coherence models.*

*Stories are also presentences from which post-sentences can be derived. Once applied, it becomes apparent whether or not the presentences correspond to reality. Peirce also argues for such a pragmatic rule, which tests knowledge on its results.*

*Defining depends on the concepts defined, which is why classical logic attaches such exceptional importance to correct definition. That this is not always easy is shown by the definition of 'psychiatric disorder', or rather, the lack of clarity about it.*

### **1.3 Textual Studies**

#### **1. 3. 1 Textuology**

'Textus' in Latin is "all that is joined together" such as a fabric, a truss, a building. 'Textuology' is the discussion of text, textual science.

Text. Everything that is a logically sound text can be summarized in a conceptual content. Seen in this way, the text is one long term that expresses

the content. The content and the scope, if logically sound, are summarized in the title above the text.

Bibl. Sample : HL Marrou, *Histoire de l'éducation dans l'antiquité* , Paris, 1948, 239. Pupils first listened to a story ('muthos', 'epangelia'; Lat.: narratio). They had to make a logically sound report of it, actually a 'paraphrasis', paraphrase, i.e. rewriting, preferably with a few of their own words that indicate the structure.

**Algorithm** . What does one pay attention to when one is logically paraphrasing? The elaboration of an algorithm that at first sight seems simple and that comprises two essential steps. We now provide a paradigm in such a way that in and through this paradigm one clearly gets the general concept of “logical paraphrase” in mind.

**Text** . (1) Sample from the scope of the concept. “A boy who had murdered his father and who feared the legislation on parricide fled into the desert. As he traveled through the mountains, he was chased by a lion. With the lion on his heels, he climbed a tree. Then he saw a 'dragon' (note: snake) rushing towards his tree, perhaps to climb it too. ( ... ). While he was fleeing from the dragon, he fell”. (2) Definition of the scope of the concept. “The villain does not escape a deity: The deity will bring the villain to judgment”. Note: the words quoted between quotation marks are, according to Marrou's explanation, words quoted from memory.

**Conceptual logic.** The text illustrates the conceptual logic.

**1. Conceptual content.** This emerges in what traditional textual studies (literatology, literary studies) call “the moral lesson”. Here: “The deity will cause the villain to undergo judgment”. Note: The 'judgment of God' is a fixed component of many earlier religions. Here: within that axiomatics, the lion and the dragon are not coincidences but interventions in the earthly life of some deity who restores a violated ethical order in this way (and are therefore steering (cybernetic) interventions).

**2. Scope of concept.** The content of this 'moral lesson' - the proposition or 'thesis' that is expressed and illustrated in the paraphrase - applies to all cases of divine judgment. However, the story is limited - for reasons of textual economy - to precisely one sample from the entire collection of divine judgments.

**Rule** . Without the sample from the size, the mere content is lifeless. Without the explicitly worded content, the sample is too 'anecdotal'. An 'anecdote' is, logically defined at least, a sample from an entire history without any sense of its logical thread (in the 'moral lesson' or general conceptual content that it illustrates, expresses).

A logical paraphrase - like any logical story - takes into account the algorithm in two steps. Since the seventies, people have wanted to teach children to 'philosophize' by means of stories to which they respond logically. If the two-part algorithm, in the story itself and in the processing by the teacher and the children, comes into its own, we will arrive at "philosophy for children" because then the applied logic in it will ensure that.

### **1. 3. 2 Thematics**

Bibl. Sample : O. Willmann, *Abriss der Philosophie*, Wien, 1959-5, 10/12. The medievals distinguished a plurality of textual themes. Two presuppositions. One cannot simply fall upon a subject without any rule concerning textual composition.

**1.** Every theme is a concept, that is, a content and a scope. The first reflex is therefore to search for the definition of that content and to choose at least one example from the scope.

**2.** Each theme is in itself a "material object", that is, a given for any interpretation, which is nevertheless susceptible to a plurality of "formal objects" (perspectives, points of view). The second reflex is therefore to grasp the uninterpreted given and to check whether in the question either no formal object is given or one or more.

**1. Just one term** . "Quaestiones simplices de uno vocabulo" ("Simple tasks concerning one word"). For example: 'The girl' or 'Labour'. In the mere title, no formal object is noticeable. Consequence: the elaboration of such a theme is, in principle, encyclopaedic, namely in the following sense: the concept content as well as all instances (distributive scope) and the whole that they form (collective scope) should be discussed. Which would be an endless exposition. Note: When such an 'endless' theme is presented, this almost always means that one expects the definition of the concept content with samples (inductive method) from the distributive or collective scope. Why also the collective scope? Because girls are not only instances of a collection but also 'members' of their own coherence that could be called "the



world of girls". Likewise for the theme 'labor'. There are instances of labor and there is "the world of labor."

**2. A relation** . We add this type of theme to what Willmann says on the matter. For example: "The girl and the boy" or "Labor and economy". Here one formal object is indicated, namely the relation. The endlessness of the previous theme is strongly restricted. But pay attention: not two essays are requested but a definition of both terms of the theme and especially of the relation between the two: the girl in her relation to the boy and labor in its relation to the economy.

**3. A judgment** . "Quaestiones coniunctae de propositione aliqua" ("Compound statements concerning a judgment"). For example: "Girls always have their own problems" or "Work can be a pleasure but is also a burden". The formal object is therefore: "having one's own problems" or "the pleasant but also the difficult".

**4. A whole text.** We also add this type of theme to Willmann's exposition. The task is then to capture the text in its conceptual content (with possible samples from the distributive or collective scope). What summarizing involves. For the rest, what was said above regarding formal objects applies.

Only if text formation is conceived logically will it be logically justified and not become an emotional or otherwise illogical affair.

*This section summarized: A logically sound text has a conceptual content and a conceptual scope. The theme can refer to just one term, to a relation or a judgment. The assignment for an entire text can also be to grasp the conceptual content, possibly with the distributive or collective scope.*

## **2 Theory of Judgment**

### **2. 1. The judgment**

Sophie went to the doctor with her mother.

- "And, Sophie, what did the doctor do?" Father asks in the evening.

- "First he grabbed my wrist, and then he looked at the time."

A judgment is the assignment of models already present in the mind (memory) to an original (the subject) as shown by Sophie's judgment.

### **2. 1. 1 The judgment (quantity / quality)**

“To judge is to assert something,” according to Aristotle, in *De Interpretatione*. His title says it all: to interpret the subject (subject as original, S) in terms of the predicate (predicate as model, P) is to judge. In this Aristotelian sense, the theory of judgment is part of 'hermeneutics' (the theory of interpretation).

- **The sentence in itself.** Bernhardt Bolzano (1781/1848), known for his four-part *Wissenschaftslehre* (1837), conceives of judgment as a cognitive content or forma that is independent of the knowing and thinking mind as a psychological being: for him, logic immediately differs from judgment, psychology from judgment. He therefore speaks of “the judgment, expressed in a sentence, in itself”.

- **Quality and quantity.** Bibl. st: Ch. Lahr, *Cours ( Logique )*, 502/506 (La proposition). The concept is expressed in a term. The term of the judgment is the sentence (proposition, statement). The term of judgment is, like the term of the concept, a total term that can be divided into subterms.

- **Sentence and complete sentence.** The sentence takes two grammatical forms, the simple sentence and the complete sentence. For example: “The girl walked onto the beach” and “Because she wanted to know how warm the seawater was, the girl walked onto the beach”. The complete sentence represents a larger conceptual content of course.

- “S is P”. Do not misunderstand this symbolic abbreviation because it symbolizes both an inherence judgment and a relation-expressing judgment. J. Lachelier (1832/1918) distinguishes between inherence judgments and relation-expressing judgments. For example: “Piet is a person” means “To Piet, being a person is his own or ‘inherent’”. One can also say: “Piet includes (implies) being a person”. “Piet is the son of Jef” means “The relationship of Piet to Jef is that of son (to father)”. However, logically one also states “That Piet is the son of Jef, is inherent to (inherent to) Piet”. A ‘relationship’ is a partial identity (analogy) and this is a property (in the broad Platonic sense) that something has insofar as it is thought including something else. Conclusion: one should not confuse grammatical signs (words here) with logical terms. If then relations do play a role, logically speaking, then these are, as emphasized several times above, similarity and coherence. In the sentence “Piet is the son of Jef” this is coherence, because they do not resemble each other under the conscious point of view but are mutually connected.

**Quality** . One pays attention to the identifying nature of the saying that is affirmative (is), negative (is not) or restrictive (with reservation: is in a certain sense and is in a certain sense not) with respect to a subject. These are three 'qualities'. Figurative judgment. "This wall is white". "This wall is not white". Suppose two house painters look at the wall with an expert's eye and one says: "This wall is white and not white". Logically: "This wall, if pure white is 'white', is not 'white', but, if impure white is still 'white', then it is 'white'". In other words: logically perfectly in order with a certain appearance of being contradictory. A restrictive judgment: "white with reservation". Living life contains many restrictive - cautious - statements. One thinks, for example, of "in my opinion", "as far as appears" and the like.

**Quantity** . The quantity is betrayed by the numerals near the subject.

- **Distributive**. Singular, private, universal.

"The Platonist Speusippus was Plato's cousin".

"Some Platonists were skeptics."

"All Platonists put Plato first."

"God alone is the creator of the evolving universe" is a way of saying "God is the only one who ( ... )". Which is a singular judgment.

- **Collective** . One-piece, multi-piece, all-piece.

"This feather of this bird is brown".

"This bird's head and neck are injured."

"The whole bird makes a poor impression".

As already mentioned (1.1.5), the Scholastics borrowed the letters A (all) and I (some) from 'affirmare' ('affirm') and 'O' (some not) and 'E' (none) from 'nego' ('I deny').

**Geometric models**. O. Willmann, *Abriss* , 73f, mentions that the quantitative of a judgment is 'depictable' in circles or Venn diagrams, after John Venn (1834/1923) , English mathematician and philosopher.

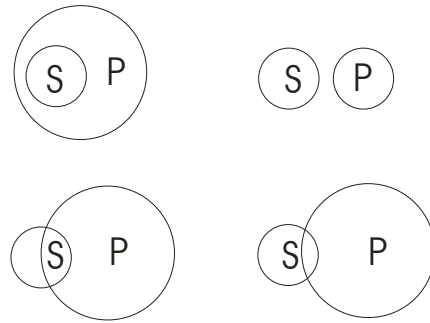
We get respectively:

S a P  
All S is P

S e P  
No S is P

S i P  
Some S is P

S o P  
Some S is not P



### 2. 1. 2 The judgment in itself and in context

A judgment includes a term that determines the rest as original, and a striking term that is the core of the model. But in addition there are the 'determinations' that specify both original and model. A word about that.

The attributive clause is placed with (specifies) a non-verbal term. For example: “She appeared beautifully on the beach”. 'She appeared beautifully' and not, as would seem, given the local proximity, 'appeared'! “She, the owner of the café, did not let herself be done”. The clause “the owner of the café” has a noun and specifies 'she' (and is called 'adjustment' or 'apposition') and as a reason-giving specification.

The adverbial phrase is used with a verbal form. For example: “She suddenly appeared” (where 'suddenly' is an adverb).

**Grammatical 'modalities'** . This aspect of a judgment seems important to us, given the nuances that concern the reality character in the verb.

1. Interrogative. Indicative of an interrogative. “Is a girl appearing on the beach?”
2. Dubitative. Expressing doubt. “Would a girl appear on the beach?”. Understood as: “It seems unlikely” or “It is doubtful that ...”.
3. Potentialis. Indicating possibility. “Perhaps / perhaps a girl will appear on the beach”. Or “It is possible that..”.
4. Realis. Indicative of fact. “A girl (actually) appears on the beach”.
5. Concessive. Indicative of giving in. “Nevertheless (notwithstanding that) a girl appears on the beach.” Or “Against all expectations ...”.
6. Irrealis. Indicating unreality. “No girl appears on the beach”.
7. Conditionalis. Conditional. “In that case (under that condition) a girl will appear on the beach”.

**Contextual** . A judgment is, in life, usually not an isolated statement. We now give a paradigm of this.

1. "Hilde runs". If that sentence is an answer to the question "What is Hilde's profession?", then that sentence means "Hilde is a runner". She is then one example of the collection of 'runners'.

2. "Hilde is walking". If that sentence is an answer to the question "What is Hilde doing at this moment?", then that sentence means "Hilde is walking now". She is then represented in a current activity.

**The 'unsaid'** . In recent years, a number of linguists have been talking about "the unsaid".

That which is not said within a conversation, or within a judgment, can be of decisive importance for the correct understanding of the 'saying'! Apparently absent is that which is not said, yet present! It is depicted - without words but contextually - in the meaning of a judgment. This is very clear from the sentence "Hilde walks" when one asks the question to which the sentence is an answer.

Conclusion. Both "in itself" and "in connection" (contextual) a judgment is subject to all kinds of meanings!

### **2. 1. 3 The reason for a judgment**

"The semiotic turn". The tendency to place everything that is sign at the centre dates from Ch. Peirce (1839/1914), F. de Saussure (1857/1913) and Ch. Morris (1901/1971).

- Ch. Peirce *Collected Papers* (1931/1935)), defined the sign as "something which stands to somebody for something in some respect."

- Ferdinand de Saussure, *Cours de linguistique générale* , a posthumous work published by three of his students in 1916), the theory of signs was called 'semiology' and emphasized the system of signs.

- Ch. Morris; *Foundations of the Theory of Signs* , Chicago Univ. Press, (1938) advocated the three-part 'semiotics' that had become current since he did so, following in Peirce's footsteps.

- Finally, Lady Welby (1837/1912), who with her 'significa' emphasized the 'language act' as a means of human understanding and found followers in the Netherlands, could also be mentioned here

#### **The semiotic reason. Morris distinguished three main aspects.**

- **1. Syntactic** . "It is sunny today". 'Syntax' pays attention to the well-formed formulation of a linguistic sign, here the sentence "It is sunny today".

The parts of the speech fit together linguistically well: the grammatical rules come into their own. That is the syntactic reason for the validity of the statement.

- **2. Semantics** . “It is sunny today”. 'Semantics' pays attention to the truth of the statement.

If it is indeed - demonstrably - sunny today, the sentence is a semantically 'meaningful' (meaningful) statement, a judgment in the true sense. Syntax situates the sentence within the language system with its rules, but semantics situates it within the whole of the surrounding reality with its 'facts', here the fact that the sun is shining. "What is so, is so": the sun is shining and so the speaker says truthfully and realistically that "it is so"! That is the semantic reason for the validity of the statement.

- **3. Pragmatic**. “It is sunny today”. 'Pragmatics' pays attention to the intended result of the statement. The man who speaks says to his wife at sunrise in the morning: “It is sunny today” with the intention of making her a proposal, namely to take advantage of that sunny day to go out. The sentence is an invitation. That is the pragmatic reason for the statement.

Think of Einstein's formula " $E = mc^2$ ". In itself, that formula is a mathematical equation. Nothing more. That is syntax. But the day Einstein fills in the empty shells (Platonic lemmas) of that formula, i.e., indicates, interprets them, they become descriptive terms: 'E' stands for energy, 'm' for mass and 'c' for the speed of light. In this way, Einstein describes the structure of the set of elements that comprises E, m,  $c^2$ .

Expressed in model-theoretical terms: the syntactic but empty formulas or 'shells' acquire semantic content and become pragmatic, usable. They are physical models that provide information about physical or physical realities.

**The actual speech act.** The main thing in signification is some form of understanding between people with a language use as an instrument that serves that understanding as effectively as possible. Signification, if consistent with itself, reverses the order of the semiotics explained above in a paradigm. First there is the pragmatics that steers towards understanding - here: to encourage the woman to go out with them, - which had long been the intention of both who were only waiting for the favorable opportunity, i.e. a sunny day. Then there is the semantics: finally the main condition of the day out is a fact and so it resounds "It is - by which I mean: finally - sunny today". Lastly comes a well-formed sentence, an expression of syntax.

**The reason** . Everything that is, has its reason. Even an utterance. Morris taught us to grasp them semiotically. Lady Welby taught us to indicate them significatively. Two 'perspectives', i.e. approaches, on one and the same utterance or 'language sign' that thereby shows its multiplicity.

#### **2. 1. 4 Testability of statements**

Bibl. Sample : J.M. Bochenski, *Philosophical methods in modern science*, Utrecht / Antwerp, 1961, 74ff. (Semantic meaning and verifiability).

##### **The author defends two theses.**

**1.** A judgment, if a method can be demonstrated by which it is 'verifiable' (testable for its truth), is "semantically meaningful" (meaning something).

**2.** An expression (e.g. a word) that is not a judgment, if it can be used as part of a semantically meaningful judgment, is "semantically meaningful".

Meaning and testability are not totally identical. The thinkers who identify both are refutable.

The testability is not further specified and in a twofold sense: there is a multitude of test methods (for example, sensory testing is only one method) and as soon as, if not truth, then at least probability is shown, there is sufficient reason to value a judgment as meaningful, i.e. providing information, saying something instead of "saying nothing".

**Some types.** H. Reichenbach (1891/1953) considers confirmation or refutation of a scientific judgment possible in four ways: logical, technical, physical and transempirical. There are also other classifications.

- **1. Logical** . A judgment, if it contains no contradiction, is logically (understand: logistically) verifiable. For example: "A physical body, if it moves with a speed of 350,000 km per second, becomes extremely light". Physically such a judgment is unverifiable, but purely logistically it contains no contradiction.

- **2.1. Technical**. A judgment, if there are technical means to test it, is technically verifiable. "The temperature of this sunlit stone is 25° C." is verifiable by means of a thermometer because the thermometer is a technical means to verify the truth of the judgment.

- **2.2. Physical** . A judgment, if it does not conflict with the laws of physics, is physically verifiable. "A physical body, if it moves at a speed of

350,000,000 km/second, becomes extremely light” is contrary to the laws of physics and therefore 'falsifiable', refutable.

- **3. Transempirical** . 'Transempirical' means “that which goes beyond empirical methods”. Reichenbach chooses as a model the judgment of a certain religious sect: “The cat is a divine being”. What test method can be found for this? In other words: how can such a thing be made evident? For the empiricist (or positivist) such a statement belongs to the nonsense of metaphysics because he accepts only technical, physical and logical criteria (means of distinction).

- But there are other classifications. A Husserlian phenomenologist will accept the pure uncovering of a given (phenomenon) as verification. Psychologists who apply the introspective (based on self-observation) method scientifically, accept a judgment arrived at in this way as verified. Religious judgments have their own means of testing which Bochenski calls 'transnatural'. Such methods exceed those of the logical positivist (= logical empiricist) who was Reichenbach.

**Tolerance axiom.** R. Carnap (1891/1970), who founded the journal *Erkenntnis* with H. Reichenbach , claims: “Everyone is free to determine what kind of verifiability he considers admissible”. Of course, in such a way that at least probable judgments arise!

**Note:** Intersubjective testability consists in the fact that, in addition to an individual who forms a judgment according to one or another method, others can also test that judgment. At least in principle. This applies to all methods, but especially to the introspective method that makes judgments about one's own mental life. But this also applies to judgments that concern a (physical or non-physical) fact observed only once by a single witness. Someone who is the only witness to a murder cannot - certainly not directly - be helped intersubjectively in court! But that does not mean that the witness is not credible, i.e. does not speak the truth or probability.

## **2. 1. 5 Semantic steps**

Bibl. Sample : I. M. Bochenski, *Philosophical methods in modern science* , Utr./Antw.,1961, 72v .. R. Nadeau, *Voc. techno. et anal. de l'épistémologie*, PUF, 1999, 403s. (Métalangue). 'Semantic' means “that which has to do with the meaning of a sign (words for example)”.

One can distinguish a semantic zero-level, a first level or 'object language' and a second level or 'metalanguage'.



- **1. Semantic zero-degree.** This phase is still pre-semantic. GG. In the country. A hare jumps out of the grass there. That is the phenomenon that has not yet penetrated consciousness and is not yet expressed in signs (language). GV. The semantic degrees.

- **2.1. First stage or 'object language'** . It penetrates my consciousness and within myself (with the inner word) I say: "A hare jumps out of the grass there". I meet a friend and say: "A hare jumps out of the grass there". The phenomenon enters the inner and spoken language. As a result, both sentences become 'semantic', i.e. indicating something, meaning something. The object, the hare jumping out of the grass, is depicted in language, which is object language.

- **2.2. Second stage or 'metalanguage'**. Further on I say to a good acquaintance: "I just said to my friend: "A hare jumps out of the grass there"". (Direct speech (language use)). Or: "I just said to my friend that a hare jumped out of the grass there". (Indirect speech (language use)). Direct and indirect speech are "quoting speech or language use". The main clause is metalanguage (if you like: language about language). The subordinate clause is object language, language that is mentioned or quoted.

**Semantic rule.** The rule of meaning is: "All language that speaks of itself - without quotations - has no meaning". It is "semantic nonsense". The paradox of the liar. Since Plato, the following sentence has been under discussion: "What I am saying now is untrue".

- **Colloquial** . The statement contains a subject - "what I say now" - and a predicate, "is untrue". The subterm 'now' can indicate what is said immediately before or after. The sentence only gets its meaning from the context because the subterm 'what' is a fillable lemma (empty shell). Filled in by what is said before or after, the sentence can contain truth or untruth (i.e. meaning). Without the context, the sentence is undecidable due to a lack of information.

- **Strictly semantic.** The sentence is object language ("what I say now") and at the same time metalanguage ("is false"). It violates the rule of meaning. Because the subterm 'now' does not refer to what is said before or after, but to the sentence itself at the moment it is spoken. The unfulfillment (by a quoted sentence) of the subterm 'what' ("what I say") clearly takes its toll.

Father Bochenski, op. cit., 72, sees it this way: "Every expression in which there is talk of this expression itself is meaningless". Reason: such a language would belong, at the same time, to the two semantic language levels, i.e. it would be both language and language about that language. Or, in grammatical terms: it would be both direct and indirect speech, "which is incompatible with the doctrine of the semantic levels". The paradox of the liar does not give us any judgments: "In this pseudo-statement, something is said about the statement itself". (Ibid.). Only in a metalanguage can something serious be said about it. But that does not exist.

**Note** . The logician Alfr. Tarski introduced the semantic steps to formulate the concept of judgmental truth: "The snow is white" (object language) is true if and only if the snow is white (metalanguage). The quotation marks mean "The sentence "The snow is white" is ( ... )". In oblique speech: "That "the snow is white" is true if and only if the snow is white". Susan Haack, It is True What they Say about Tarski, in: *Philosophy* 51:323/336, paraphrases: "The sentence "The snow is white" is affirmed ex cathedra by the pope if and only if the snow is white". Note .. "Ex cathedra" means "on the authority of the author".

**Conclusion** . If one speaks of linguistic phenomena (object language) (metalanguage) in order to express the judgmental truth of object language, then this leads to such sentences which, when heard by non-semantics, i.e. the common man, give the impression that one is selling some kind of learned humor!

**This section summarized:** *"Judging is of something, asserting something," according to Aristotle. Immanuel Kant states that judgment is independent of the knowing and thinking mind.*

*Lachelier distinguishes between inherence judgments and relational judgments.*

*Judgments can be qualitative or quantitative. Additional terms specify the judgment. A judgment has grammatical modalities. The unsaid also plays a role in the language context.*

*Semiotics attempts to place all that is sign central. One can distinguish a syntactic, semantic and pragmatic aspect. Significa, as human understanding, reverses this order.*

*Statements can be tested for their truth by a variety of methods. Reichenbach distinguished between logical, technical, physical and transempirical testing.*

*Other classifications testify to a phenomenological, a psychological and a religious assessment.*

*In language, a number of semantic levels can be distinguished. A sentence that simultaneously expresses object language and metalanguage, as expressed in the paradox of the liar, leads to semantic nonsense.*

## **2. 2. The intentionality of a judgment**

### **2. 2. 1 Intentionality**

F. Brentano (1838/1917; *Psychologie vom kundigen Standpunkt* (1874)) in his study of psychic phenomena discovers that they are invariably “consciousness of something” and thus revives the scholastic term 'intentio' (meaning: orientation of consciousness towards something). (H. Arvon, *La philosophie allemande*, Paris, 1970, 139). Ch. Lahr, *Cours*, 494, defines “the objective scope” of a concept by means of the medieval concept of 'intentio'. Note: our word 'intention' (intention) is not to be confused with that 'intentio' which since Brentano has been called 'intentionality'. E. Husserl, in his *Méditations cartésiennes* says: “The word 'intentionality' means nothing other than that thorough and general property which consciousness displays, namely, consciousness of being something”. In 1913 (*Idées*) he calls consciousness in this respect 'noësis' and something 'noëma' as the subjective and objective poles.

***Intentio prima / intentio secunda*** . We define the two degrees of consciousness (noësis) of something (noëma).

- First intentionality. If something attracts attention in someone's consciousness, if it shows itself directly, then it is the object of first intentionality ("intentio prima"). Everything that is not-nothing can be 'noema', object of consciousness (a triangle, a boy walking there, a utopia, for example).

- Second intentionality. Something, if it shows itself in someone's consciousness while he becomes aware of that presence, is the object of second intentionality ("intentio secunda"). Everything that the medievals

called "entia rationis" (entities merely within our mental life) belongs to that domain. So concepts, judgments, reasonings, categories, contradictory statements, insights expressing absence ("not seeing") etc.

**Concept** . Something, if it is present in someone's consciousness to the extent that it accurately grasps that something, is a 'concept' of that something. In other words, there is a degree of consciousness that accurately grasps something in its mode of being and at least puts it into words with the inner word.

**Judgment** . Something, if it is in someone's consciousness to the extent that it is capable of judging about it, is the object of a judgment. This is a step further than the conceptualization that grasps and formulates what is present but does not pronounce a judgment about it. The judgment takes a position on the existence and mode of being of what it has conceptually grasped.

**Conclusion** . Intentionally, a judgment is always: about something (A) something is said (C) by someone (subject, person) (B). In other words, in logical language: "If A (subject) and B (judging person) are known, (C) then the saying is understandable". A judgment is only understandable if one sees it as the expression of someone with a mind who, however thoughtless, knows what judging is, even more: if one sees it as at least partly determined by the own input (prejudices, axioms) of the judging person. That input is depicted in the saying. What is said is the judgment. Whoever says it is also the judgment. In that sense, Aristotle was right when he called his theory of judgment "Peri hermèneias" (De interpretatione, On interpretation). One can put 'judgments' in an coordinator, but these are the intellectual product of the programming person, not a purely mechanical process. A machine does not judge except in a very figurative sense, as a figure of speech.

### **2. 2. 2 Every judgment is based on comparison**

Bibl. Sample : Ch. Lahr, *Cours* , 226s. ( *Le jugement et la comparaison* ).- We assume that a judgment is "to say a model (predicate) of an original (subject)". This means that one thinks the subject including the predicate and immediately makes a statement about the subject in terms of that predicate. But to think something including something else is to compare both. Let us now follow what Lahr says.

1. All logicians hold that some of our judgments have a comparative basis, namely, insofar as the judge consciously and thoughtfully compares subject and predicate.

2.1. Some logicians deny that judgments which unconsciously connect subject and predicate rest on comparison. Th. Reid (1710/1796), V. Cousin (1792/1867) et al. maintain that sentences such as “I exist”, “I suffer”, “It is cold”, “The snow is white” etc. do not immediately rest on comparison because only afterwards is the judge able to really compare both components of such judgments.

2.2. Aristotle and with him a whole series of logicians in antiquity, the Middle Ages, and modern times maintain that even thoughtless and unconscious judgments are in fact based on a kind of comparison. Thus says J. Locke (1632/1704; founder of the English Enlightenment):

“A judgment is the perception of a relation of either a fitting together (note: affirmative judgment) or a non-fitting together (note: negative judgment) of two 'ideas' (note: contents of consciousness) that have already been perceived and compared with each other”.

“It is cold”. ‘It’ is either the weather itself around us or our physical reaction to the weather or the meeting of both. That tropologically abbreviated subject (it says either a part (weather / reaction) or the whole (the meeting of both) in any case asks for information as an original and therefore elicits a model (that information). Our mind with its language memory then retrieves the term that is the request, the predicate. If our shivering impression is one of ‘cold’, then the corresponding word spontaneously rises from our vocabulary. Note: The same analysis fits all the better with a sentence that we spontaneously blurt out: “The snow is white” (understood as an exclamation) because in such statements the subject is not replaced by an abbreviation.

**Note:** The whole question is: “Is our thinking – in the comparative form – only conscious (thoughtful) or is there also an unconscious (unthoughtful) thinking?” (cf. 5.5. transcendence and light metaphysics). A. W. Dilthey (1833/1911) or a W. Wundt (1833/1920) state that “das unmittelbare Erleben” (“the direct experience”) is the presupposition of our thinking. According to them, that direct experience would already be a truly thinking experience. An E. May (1905/1956) claims that, for example, the axiom of identity – “What is, is” or “What is so, is so” – is neither consciously

presupposed nor in any way constructively (note: created from one's own mental contents) thought out but is "urtümlich geschaut" (note: directly perceived)". For such thinkers it is not so difficult to interpret every judgment – even the abbreviated ones – as "directly comparatively perceived".

We experience that our natural logical disposition works essentially comparatively. What is natural logic without "the data including each other's thinking" and "speaking them immediately in terms of each other"? That is what the common sense does without ever having explicitly studied logic. And that is of course little or no thought!

### **2. 2. 3 Truth of Judgment**

Bibl. Sample : Ch. Lahr, Cours, 677/682 (Divers états de l' esprit en présence du vrai). This concerns the truth of judgment (also called 'logical truth), i.e. the fact that what is asserted in a judgment corresponds to the reality intended by it. This truth is governed by the axiom of identity which states that "all that is (so) is (so)". A given, if encountered directly, demands our honesty in the matter which compels us to assert what shows itself (phenomenological truth).

**Zero degree** . What is true may be unknown so that ignorance reigns on our part.

**Truth-levels** . Lahr first distinguishes 'probability' ("It seems that it is as it now appears"). Lahr: "That grounds opinion", an uncertain judgment.

**Evidence** . What is true can be 'obvious' or 'evident' given, i.e. present. That leads to 'certainty'. "People say: 'It is evident. I am certain, precisely because it is evident'" (oc, 680). An ancient definition is: "Fulgur quidam veritatis mentis assensum rapiens" (literally: "A certain obviousness inherent in truth that compels the mind to affirm"). That is the foundation of all phenomenology: the given that shows itself directly elicits evidential certainty in the person who is confronted with it.

**Note: Certainty** . An ancient definition states that certainty is "quies mentis in vero" (translated: "the tranquility of the mind concerning the truth"). Whoever affirms objective evidence does so without the risk of being mistaken. Moreover, such certainty knows no degrees: what is evident is there with the entire force of its presence. In this sense, such certainty is always absolute certainty. If not, it lapses into 'opinion' ("It may be true").

**Note: Objectivity.** 'Object' is "everything that presents itself to our mind". Objectively, that is, in itself, only 'true' data or events exist because what is true is the same as what is! 'True' is used here in an ancient sense in the sense of "being as possibly showing itself (or as demonstrable)". Consequence - according to Lahr -: either something is true or it is not true (which is the axiom of contradiction) and apart from true or not true there is no third (which is the axiom of excluded third). Truth and being obey the same axioms.

**Misrecognition** . What is true is subject to our - possibly passionate - reactions. Truth can be distorted (partially misrecognition) or even denied (completely misrecognition). This can happen consciously or even more or less unconsciously. An annoying degree of this is called 'negationism', i.e. trying to get rid of a truth that is in principle well-known by dialectical (using contradiction) or rhetorical (persuasive) means. A saying is attributed to FM Voltaire: "Mentez! Mentez! Il en restera toujours quelque chose!" ("Lie! Lie! There will always be something left!"). In other words: spreading lies through thick and thin ensures that a remainder of them will always pass for the truth.

Paradox of GE Moore (1873/1958) and L. Wittgenstein (1889/1951). A propositional attitude is an attitude towards a given that is expressed in a proposition (judgment): "X believes that A". Where 'believes' can also be 'wishes', 'desires' and the rest of the attitudes. "Anneke believes that the earth shakes, while in fact the earth does not shake" still seems plausible as a statement. "I believe that the earth shakes, while it does not shake" seems contradictory. Both sentences, insofar as they are spoken by the same person, make Anneke's assertion 'plausible' while the statement in the first person is contradictory because I am supposed to be telling the truth and therefore not committing a contradiction.

B. Sylvand, *Les paradoxes pragmatiques* , in: *Sciences et Avenir ( Les grands paradoxes de la science )* 135 , Paris, 2003 (June / July) 31, discusses GE Moore's paradox as follows: "There is a coconut in the kitchen but I don't believe it". According to Sylvand, this involves: 1. that I assert something and 2. that I assert that I don't believe it. Because the sentence "There is a coconut in the kitchen but I don't believe it" is a judgment that claims to be true, there is a contradiction. Object language and metalanguage are used interchangeably (cf. 2.1.5). Whether such paradoxes teach us much is very questionable!

**The existence of the truth of judgment** . One hears the assertion: “There is no truth” or “Nobody possesses the truth” or “everybody has his/her truth”. A recent example is given by Joseph Ratzinger and Paolo Flores d' Arcais, *Est-ce que Dieu existe? (Dialogue sur la vérité, la foi et l' athéisme )*, Paris, 2005. d' Arcais as a sceptic states that the truth is an illusion and immediately that whoever pretends to possess and proclaim it will not survive the unmasking by scepticism. - The certainty with which the sceptic of the d'Arcais type pronounces his judgment, at least implicitly presupposes that it is true that truth is an illusion. The sceptic implicitly presupposes what he denies. Incidentally: radical sceptics suspend all judgment and remain with the undecidable regarding the existence or non-existence of truth. - Moreover, d'Arcais uses the term 'illusion'. How can he be so sure that there is illusion if he does not postulate the non-illusion? Whoever judges a statement to be untrue can only do so if he already knows the truth about it.

**Incidentally:** the axiom of identity (what is (so) is (so)) is the foundation of all truth inherent in judging. What is reverence for what is and is so, is put forward together with the honesty with which one responds to what is and is so.

#### **2. 2. 4 Partial Evidence**

Bibl sample : J Hacking ; *L'émergence de la probabilité* , Paris, 2002 (or.: The Emergence of Probability, Cambridge, 1975). The theme is “factual evidence” in the context of *La logique du Port Royal* (1662). The distinction between direct evidence and what witnesses claim about it is made clear: “In order to ascertain an event (...) one takes into account all the circumstances that make up the event, both internal and external. “Internal circumstances” are those circumstances that belong to the fact itself. “External circumstances” are those that are connected with the persons whose testimony induces us to believe the event. We will briefly discuss this issue.

#### **Scenario.**

(1) Someone unsuspectingly walks into a dense forest. After a while, his nose catches passing odors that resemble the smell of a wood fire. The initially almost imperceptible smells seem to become stronger. “It is as if someone lit a wood fire or something in that direction”. Note: One apparently perceives part of a wood fire. Which represents a partial or partial evidence. The wood fire is partly directly given.

(2) Suddenly the forest becomes brighter. The smell of burning wood becomes very clear. Until an open space in the forest shows itself with the



forester sitting by a burning fire. Note: The whole of the burning wood fire is now given directly.

It is clear: the “internal conditions” of the wood fire are directly observed in two degrees of factual evidence (phenomenal givenness).

For comparison. Hacking cites a text by J.L. Austin, *Sense and Sensibilia* (1962) in which he presents as elements of evidence that ground a judgment as correct: (1) the earth that shows tracks that resemble those of pigs, buckets with pig food in them, grunting and smells of pigs. This first factual evidence elicits the judgment: “There are pigs somewhere here” (2) Until the animals themselves can be seen directly around the corner. This second factual evidence elicits the judgment: “Here they are, the pigs!”

Not so new. Hacking states - following M. Foucault (1926/1984) who divides cultural history into periods separated by cognitive 'gaps' - that such factual evidence is radically new in epistemology. Yet he should read Plato: in the allegory of the cave (10.2) the cave dwellers only see shadows of those who pass by who remain invisible to them. The shadows resemble those of people and are connected to the passers-by. That is a partial evidence. The difference is that the cave dwellers have to forgo the total evidence but they realize it indirectly.

**evidence.** It is interpreted by Hacking as a 'sign' of the entire evidence. Not apparently on the basis of 'atomic' facts, i.e. facts without relations (that resemble nothing and are not connected to anything). What can be experienced in a first phase of perception is a part of a whole (system or collective concept as the scholastics said) that can only be directly observed in a second phase. A part that essentially - not coincidentally - resembles and is especially connected to its whole.

**Probability.** Hacking's book focuses on probability. Applied here: the part that is directly experienced is a sign of the whole and makes the whole (or rather the rest) 'probable'.

**Previous experiences** . What should not be underestimated in the assumption based on an experienced part, are the memories: whoever has never smelled wood fire, - whoever has never known pigs, will see the probability that Hacking emphasizes, vanish considerably. The resemblance to what has already been observed involves a 'recognition' that plays a very

decisive role in considering the not directly experienced part or the whole probable.

**Conclusion** . Not atomic facts but facts that resemble or are related to something else are the reason or ground of the sign value of partial evidences.

**This particle summarized.** *Consciousness is always consciousness of something. What shows itself directly is the object of first intentionality. If one becomes aware of this, then this is the object of second intentionality. Judging means that someone says something about something or someone; someone says a model of an original. Thus judging is always a form of conscious or unconscious comparison.*

*The truth of judgment is governed by the axiom of identity “whatever is, is.” Truth and being obey the same axioms.*

*Partial evidence, as signs, refers to the entire body of evidence, revealing similarities and connections.*

## **2. 3. Typology**

### **2. 3. 1 Analytical and synthetic judgment**

Bibl. Sample : Ph. Thiry, *Notions de logique* , Paris / Bruxelles, 1998, 87s .. Under the title “Scientific contextualization” the author mentions a classification of judgments that was mainly advocated by I. Kant (1724/1804) - in the service of his criticism. We rewrite.

**1. Analytic** . A subject A, if in its conceptual content it reveals B as a predicate when 'analyzed', is an 'analytic' judgment. Thus according to Kant: “All bodies are extended”. Reason: all (physical) bodies are extended as if situated in space.

**Note:** In the form of an argument it appears that from the subject A the predicate B is deducible. Thiry gives as a model: “The triangle has three sides” and “Man is a thinking being”. Analytic judgments do not depend on any experience called ‘sensory’ by Thiry. The predicate does not provide any new information about the subject... which leads to calling them ‘tautologies’, i.e. the predicate only provides other words for the subject. Whether the contradiction axiom ‘the’ is a sufficient reason for such statements may be correct in Kant’s thinking but is subject to criticism: in natural logic the identity (especially the partial) between subject and predicate is the basis. Which is already evident from the name ‘tautology’ itself.

**2. Synthetic.** Kant distinguishes between “synthetic a posteriori (empirical)” and “synthetic a priori (metaphysical)”.

**2.1. Empirical.** 'Synthesis' here means "addition of predicate to subject" and especially 'after' (a posteriori, afterwards) experience. Thus according to Kant: "All bodies are heavy". Which is only correct if the feature 'heavy' does not occur in the definition of 'body' of course. 'Empirical' means "on the basis of empiricism (experience)". Thiry gives as models: "The table is green" and "The dog is sleeping". That predicate B belongs to subject A is only apparent from empirical data outside the analysis of the given conceptual content.

**2.2. Metaphysical** . That of subject A the predicate B can be asserted, becomes possible but not on the basis of sensory experience. What Kant calls “a priori”, is on the basis of what is already given and therefore 'before' experience. Kant gives as models: “All lines are the shortest lines between two points” or “ $5 + 7 = 12$ ” (mathematical) and “Everything that occurs has a cause” (physical). In other words: the two basic sciences of the then exact natural sciences rest to a very important extent on 'metaphysical' judgments.

Thiry's judgment. Such a 'famous' classification is clearly debatable. For example, "The earth is round" has been an analytical judgment since Copernicus (1473/1543) and heliocentrism, because the characteristic 'round' has since been part of the physical definition of 'earth'. As is well known, heliocentrism states that the sun is at the center of the solar system and that the planets revolve around the sun. In the period prior to that of Copernicus, however, the geocentric viewpoint prevailed: it was believed that the earth was at the center and that the planets revolved around it. The judgment: "The earth is round" could until then be considered a metaphysical judgment (synthetic a priori).

The following can be added to this: One could not blame Ferdinand Magellan (1480/1521) and his fellow travellers if, after their journey around the world (1519/1521), which they were the first to complete, they were to state: “The earth is round” and this on the basis of their own and particularly difficult experience - Magellan did not survive the journey -. In that case, however, it is an empirical judgement (synthetic a posteriori) for his travelling companions. Even for a child, who still has to discover with difficulty that  $5+7$  is indeed - and always - 12, this seems more of an empirical judgement than a metaphysical one.

Thiry: In any case, the classification is a kind of philosophical milestone, since numerous philosophers respond to it to accept or criticize it.

**Note:** Kant's groundbreaking book, *Critique of Pure Reason* (1781-1, 1787-2), has as its main task the answer to the question: "How are synthetic judgments a priori possible?". Their content as general judgments does not come from samples that sensory experiences provide. That content therefore has only one origin, our human mind that thinks and 'imposes' such judgments on the sensory data.

But since our data are purely sensory and therefore limited to what he calls the phenomena (the phenomenal world), what he calls "the things in themselves" escape, which he supposes to be hidden in, behind, above the sensory experienceable data (the phenomena). The knowledge of the things in themselves would be what he calls "an absolute knowledge". That is therefore not within the reach of our knowledge. - Consequence. - The propositions of traditional metaphysics which are synthetic judgments a priori, are irresponsible by reason. -

Thus: "The soul is a substance" (understood: a being or given that exists in itself). Thus also: "God exists". - Note: Such a statement betrays that Kant had no sacred experience. Traditional religions - and in their wake traditional metaphysics - stated on the basis of experiences (exit of the soul, contact with ancestral souls, for example) that the soul was a 'substance', however much it surpasses and exceeds Kant's sensory experience. Traditional religions - for example the Biblical ones - also stated on the basis of experiences (Yahweh appears to Abraham or to Moses, for example) that God was and exists a 'substance', even though such experiences of God exceed what Kant calls "the phenomena" of sensory knowledge.

**Note:** In his Prolegomena (1783), Kant uses the terms 'analytic' and 'synthetic' in a methodological sense. There, a deduction - which derives a particular truth from a general truth - is called 'synthetic'. An argument which presupposes a question as if it were already given and examines this 'lemma' (provisional solution) for its conditions of possibility, is called 'analytic'. One can clearly recognize Plato's distinction between 'sunthesis' (deduction) and 'analysis' (reduction). The plurality of meanings given to both terms leads to confusion, because a subject from which one can 'deduce' the predicate thanks to 'analysis' of the conceptual content, Kant calls 'analytic' and a predicate which, thanks to experience, is sayable from the subject, leads to a 'synthetic' judgment!

### **2. 3. 2 Axiom**

Bible sample : Ch. Lahr, *Cours* , 562/566 ( *Les axiomes et les postulats* ); A. Virieux-Reymond, *L'épistémologie* , Paris, 1966, 48/52 ( *La méthode axiomatique* ); IM Bochenski, *Philosophical methods in modern science* , Utr./Antw., 1961, 91/124 ( *The axiomatic method* ). An 'axiom' is one kind of judgment. We now specify.

**Definition** . If given a finite number of propositions (judgments) such that the meaning of all other propositions deducible from them within a set of connected propositions is deducible, then that finite number of basic propositions is an axiomatics. An 'axiom' is one proposition of such axiomatics. Within such an axiomatics there are a finite number of concepts - basic concepts whose meaning only becomes apparent from the propositions deducible from them.

**Origin** . A. Herreman, *Axiomatisation et formalisation (Mathématiques)*, in: D. Lecourt, dir., *Dict. d 'histoire et philosophie des sciences* , PUF, 1999, 90/95, says that the axiomatisation of the sciences in ancient Greece is controversial: some maintain that the Eleatics Parmenides (-540/... ) and Zeno (-500/... ) were at the cradle of the method that finds its elaboration in Euclid's *Elements* (4th / 3rd century) (think of the proof by contradiction); others maintain that Plato and his academy or Aristotle's *Analytics* form the origin.

**The great change.** The obsolete terminology called 'axiom' a general presupposed proposition and 'postulate' a particular presupposed proposition. The axiom applied to the whole system of deductions; the postulate, richer in content but poorer in extent, applied to a part of it. A. Virieux-Reymond, *oc*, 49, says that the recent terminology banishes Euclid's distinction between axiom, postulate and even hypothesis (supposition).

**Formalization** . The renewed (current since the 19th century) view banishes any intuitive (experiential) content - called "semantic filling" - into an axiom (the sentence becomes, as it were, an "empty shell") so that its content only becomes apparent later from the deductions within the system. This is called "the hypothetico-deductive method". The sentences are formulated according to a mathematical model. Hence the term 'calculus' (logical calculation).

**Deduction** . Lahr emphasizes: deduction is not done on the basis of an axiom but by means of an axiom. GG:  $x = a + b$ . GV: proof that  $a < x$  and  $b < x$ . If the axiom holds that every partial sum is smaller than its total sum and  $a$  and  $b$  are partial sums of the total sum  $x$ , then  $a < x$  and  $b < x$ . In other words: an axiom, thanks to its presumptive meaning, contains a multitude of deductions within the system derived from it.

**Note:** In Platonism, an axiom is a 'lemma' whose wealth of deductions is worked out thanks to the appropriate 'analysis'. We call this, with O. Willmann, "the lemmatic-analytic method". 'Lemma' is 'prolepsis', presumption, hypothesis which reveals its meaning thanks to analysis. One usually says, but less clearly, "analytic method" because an analysis does not hang in the air but works out a given - lemma.

### **2. 3. 3 The value judgment**

Bibl. sample : R. Nadeau, *Voc. techno et analyt. d'épistémologie* , PUF, 1999, 350s.. A. Brunner, *Die Grundfragen der Philosophie* , Freiburg, 1949-3, 77.

Two rules regarding the ontological basis are obvious.

- **1** . "Omne ens est bonum" ("All that is, is good (valuable)). The correct meaning is this: before making a value judgment, define what that value judgment is about. That corresponds to the 'characterizing' value judgment that E. Nagel, *The Structure of Science*, New York, 1961, proposes as a necessary condition for an 'estimating' value judgment. What is present in terms of 'being' (reality) decides on the possible 'being' of value.

- **2** . "All that is, is a material object susceptible to a multitude of formal objects" (10.4). 'Being' (reality) is essentially identifiable and this from a multitude of perspectives ("formal objects"). This also applies to the value content in what is.

"Value is valid". The conclusion of both previous points is that value – in ancient scholastic language 'good' – 'is valid', that is, it can be felt, appreciated and estimated. The one who "feels, appreciates, estimates" value, however, is not an automaton but an I with a margin of manoeuvre concerning reality and value. Yet that I cannot get around it: "What is valid, is valid".

**Axiological subjectivism and relativism** . 'Axiology' is the bringing up of 'axia', value. Value subjectivism defines value as "What someone considers valuable". In other words: the appraising subject decides whether or not

something is valuable - Value relativism states that value depends on circumstances and is basically nothing "in itself". - Brunner's critique. - How does one then understand that the I as appraising subject can be mistaken if the value exists entirely because of the I? In the error, the valued is found to be different - found to be different - than the 'I' stated. That other is apparently the objective and therefore not the essence of value, except in part taking the I into account. - Value is therefore 'relative' in the sense that the I, the group, the circumstances (situational aspect) feel, appreciate, estimate value and thus do justice to it, but this is ultimately due to the objective essence of value.

Material object and formal objects.- One and the same piece of information - e.g. a poison - is for the snake specialist "certainly not that bad" because of immunization, but for someone bitten by a cobra in the African steppe, it may be "fatal" and therefore "very bad". The poison itself is the material object. The various value judgments do not deny the objective, material object but show the multitude of formal objects to which it is susceptible.- This is not 'relativism' that denies "being in itself". This is 'a sense of perspectivity' that knows that what is "in itself" is subject to perspectives.

### **2. 3. 4. Value judgments.**

Bibl. Sample :AO Bettermann, *Psychologie und Psychopathologie des Wertens*, Meisenheim am Glan, 1949. - We are particularly interested in the first part, which characterizes some basic attitudes of man towards values. The second part attempts to define the pathological attitudes.

**1. The naive appreciation.**- Especially children and 'childish' adults are appreciated without 'problems' and this with a conviction that comes across as 'self-assured'. Surrender to one or more values is striking.-- "One gets absorbed in it". Usually it concerns hereditary values.

**2. The emphatic appreciation** . - 'Emfase' is a kind of speaking, i.e. with emotional emphasis. Surrender is also striking here because - according to the author - the most intimate of the person, without taking the environment into account, makes the value the center of "the world". Thus: real love as well as true self-sacrifice for something and especially for someone. Thus also: real religion (which shows this in worship). In the strong degree "the appreciative sees nothing else"!

**3. The appraising valuation** . - 'Appraising' is valuing something else with a view to something. Social prestige, making a profit, assertiveness, for example, are first-rate, the rest "serves", is valued "in function of". Such appreciation is not spontaneous but testifies to the calculating mind. - The bourgeois society that does not place the person as a person central but "the position" in that society, 'appraises' frequently.

**4. The alienation of values** . - The person stands aloof from every value. Even the appraising valuation carries something like that in germ within itself. What becomes impossible above all within this attitude is surrender to a value. At most it comes to some kind of psychic experience "in response to" value, - in the form of 'aestheticism' (aesthetic values are 'subjectivized'), of 'criticism' (truth values are reduced to subjective affections), ironic - sarcastic attitude to life (the world, fellow human beings, culture are 'viewed' as if by an outsider with a preference for what Bettermann calls 'humor' "but which in fact amounts to what is generally called 'irony' and 'sarcasm'"). - The person immersed in the "modern masses" is easily able to do this because he belongs to that mass but "does not count". Intellectuals who are ready for cultural nihilism display alienation of values in their elitist way. - According to Bettermann, however, complete alienation from values only occurs among psychotics.

**What is surprising** - according to critics - is the fact that the author puts the very essence of value - what value actually is and by which it stands out against the rest of reality - in brackets as completely as possible "for methodological reasons". For that essence is constantly presupposed! His value judgments alone about the basic attitudes towards values require it. Was 'value' not something that is grasped by the mind (intellectual insight, feeling and emotion) as making demands on us, as demanding commitment because it is considered "something higher", how could Bettermann describe alienation of values as substandard?

Bettermann sees his typology as a temperament table. He continually reacts against the typology of Ed. Spranger (1882/1863) who, following in the footsteps of W. Dilthey (1833/1911), designed a 'verstehende' structural psychology. Spranger has left us a typology of life forms. This is based on the values themselves as contents. "Tell me what value you hold, and I will tell you what kind of soul you have". Spranger's basic insight can be summarised in this way: the theoretical, economic, aesthetic, social, power-hungry and religious soul are the main 'life forms' that Spranger perceives as reactions to the various cultural areas. So that he establishes a cultural psychology.



Note: a life form tolerates other valuations but as subordinate. Thus the economic soul asks: "What does that yield?". And so, in the field of religion, economic success is the sign par excellence of "divine grace". And fellow human beings are first and foremost 'useful'.

### **2. 3. 5 Ethical judgment falls back on axioms**

Bibl. Sample : R. Barthes, *L' aventure sémiologique* , Paris, 1985, 115 and 148. The author discusses a system (pair of concepts) in ancient and medieval rhetoric that is still relevant today and that John of Salisbury (1115/1180), the humanist, considered central.

In his *Metalogicus* (On Logic) he opposes an excessive separation of theoretical philosophy (then called 'dialectics') and literatology (then called 'rhetoric'). Dialectics is limited to the universal, while rhetoric is interested in the singular. In a story, for example, or a drama, people appear in singular - concrete situations that include a multitude of details (time, place and other circumstances).

**“Thesis / hypothesis”**. This system can be understood within the rhetoric of the time.

- **1** . Thesis . Latin: *positio, propositum*. This is the domain of dialectics, because a 'thesis' is a generally valid proposition or judgment. For example: "The tyrant, if he transgresses boundaries, may in conscience be killed" or "Man, if he does not want to become extinct, is obliged to marry". Note: You see: 'ethical' or 'moral' judgments have as a predicate "obligatory / not obligatory (allowed) / not obligatory (forbidden)". That is dialectics, theoretical morality.

- **2** . Hypothesis . Latin: *causa, negotium*. Rhetoric expresses itself in situated (singular - concrete) propositions. For example: "This dictator here and now, since he is harmful beyond his limits, may in conscience be killed" or "This girl here and now, if of marriageable age, must marry". Especially in this last case, but also in the case of a tyrant, one feels that a practical problem of conscience arises. Very singularly concrete: "If marrying is a duty for man and Anneke is a man, marrying is a duty for Anneke" poses the problem of the transition from a universal judgment to a singular judgment. Common sense will immediately protest: "That marriage is a duty for mankind as a whole, yes! But this does not yet imply that marriage is a duty for a singular - concrete person like Anneke!"

**Situational morality** . R. Le Senne (1882/1954) posed the problem from his spiritualistic philosophy of mind in the form of an objection to what is called “rationalistic morality”: “The complete program of a rational ethic (note: moral theory) was promised rather than elaborated by rationalistic morality because, like deductive science, it too has come up against the always to a certain extent unforeseeable diversity of experience”. ( *Traité de morale générale* (1942)).

What Le Senne says here in a moderate form - to deduce a practically feasible code of conduct solely from general moral axioms - is to overlook the unpredictability of practical life. But an extreme - to be more precise, influenced by an existentialism - situational morality goes so far as to deny every general axiom concerning conscientious conduct. Which results in an individualistic - subjectivistic form of conduct.

**Contextual judgment** . Contextualism on the matter puts it differently:

- (1) a problem of conscience can only arise and be resolved
- (2) within the context of already accepted axioms
- (3) which in turn cannot be doubted except by appeal to other axioms.

Killing a dictator in a responsible manner assumes as an axiom that in some cases this can or even must be done in good conscience, but a circumstance within the actual situation - for example, the act that is too impossible in the eyes of the wise - calls for a fallback to another axiom, namely: “It is better not to commit an act that is too impossible to carry out”.

Maw: contextualism does not deny axioms but foresees situations that call for other axioms. We borrow the definition of (ethical) contextualism from R. Nadeau, *Voc. technique et analytique de l'épistémologie* , PUF, 1999, 111.

*This part summarized:*

*Kant advocated a classification of judgments. An analytic judgment does not provide new information about the subject in the saying, a synthetic judgment does. According to him, synthetic judgments can be empirical or metaphysical. Empirical judgments are based on sensory experience. Metaphysical judgments precede experience. Not everyone agrees with this classification.*

*An axiom is one statement within a set of related statements or axiomatics.*

*The recent formalization bans any semantic filling in such an axiomatic so that its content only becomes apparent later from the deductions within the system. This is called “the hypothetico-deductive method”*

*To make a correct value judgment requires correct definitions in advance. Even then, a material object can lead to a multitude of formal objects. Despite the fact that things exist “in themselves”, they are nevertheless subject to perspectivity, to different value judgments.*

*In many value judgments, the basic attitude of the individual person also plays a role. This attitude can be naive, emphatic or appraising. The basic attitude can also take a sick form: the person then shows himself - almost psychotic - as alienated from values.*

*Spranger left us a typology of life forms.*

*The ethical judgment falls back on axioms. The thesis or generally valid proposition can be overshadowed by the hypothesis in singularly concrete cases. Life shows a variety of experiences that cannot always be foreseen, so that after careful consideration one can foresee situations in which one falls back on other axioms than the original ones. This is called a contextual judgment.*

### **3. Theory of reasoning**

#### **3. 1. Syllogistic reasoning**

##### **3. 1. 1 Syllogistics**

Bibl. Sample : Ch. Lahr, *Logique* , 5I5ss. Let us begin with a paradigm as a basic type:

“All flowers are beautiful.  
Well, this is a flower,  
so this flower is beautiful”.

Let us rewrite this syllogism in full. The wording becomes more extensive, its structure all the clearer: even what is understood but unsaid is explicitly worded. Here the letters 'PP' stand for preposition, 'CL' for conclusion.

PP1 “The collection of all flowers” belongs to “the collection of all that is beautiful”.

PP2 Now, “this flower” belongs to “the collection of all flowers”,

CL so “this flower” belongs to “the collection of all that is beautiful”.

This rewriting makes it clear, for example, that the sentence: “Well, this is a flower” locates this singular flower here and now in “the collection of all flowers”, of which it is one instance.

**Basic structure:**

|     |                        |          |
|-----|------------------------|----------|
| PP1 | me belongs to M.       | $me < M$ |
| PP2 | Well, m belongs to me. | $m < me$ |
| CL  | so m belongs to M.     | $m < M$  |

'Syllogistics' means 'theory of conclusion'. The basic form of a syllogism or conclusion consists - if reduced to its minimal essential core - of three terms processed in three judgments and in such a way that from the two preceding clauses ('premises') a subsequent clause ('conclusion') can be logically 'validly' derived either without reservation (deductive conclusion) or with reservation (reductive conclusion). (cf. 4.2)

**The three terms are:**

- **the 'big' term** , or maior, symbol abbreviated: capital 'M'. In the rewritten example, the big term 'M' stands for “the collection of all that is beautiful”. It is called 'big' because it has the largest size. It occurs in PP1 and CL as a predicate.

- **the 'small' term** or minor, symbol abbreviated: small letter 'm' stands for "this flower". It is called 'small' because it has the smallest size. It appears as a subject in PP2 and CL. The major and minor terms together are called 'extremes', to characterize them with respect to the middle or common term.

- **the middle term** , comparative term or medius, symbol abbreviated: 'me'. In the example: "the collection of all flowers". The medius is the subject in the first clause, and the predicate in the second clause. It is like a catalyst that connects the large and small term and seems to have disappeared in the conclusion.

One sees that the size of the large term M is larger than the size of the middle term me. And the middle term in turn has a larger size than the small term m. There are indeed many other things in the example that are also beautiful than just “the collection of all flowers”. This last collection also includes “this flower”.

**The three judgments contain, in succession:**

- the first clause (PP1 or propositio maior, symbol abbreviation: the capital letter 'M'),
- the second predicate (PZ2 or propositio minor, symbolized by the small letter 'm'), both called 'premises'.
- Finally, there is a third sentence, the after-sentence, CL, or 'conclusion'. The use of the capital letter 'M' to indicate both the concept and the judgment 'Maior' can be confusing. The same goes for the small letter 'm' which can also refer to the concept and the judgment 'minor'. The context will show whether the concept or the judgment is meant. However, we avoid the terms 'M' and 'm' for the premises but use the terms PP1 and PP2.

The two preliminaries have the medius 'me' in common. The major and minor terms are compared with the medius to see whether and how they agree or disagree. Each of the two preliminaries also has a common term with the postliminary clause: either m or M. It can be seen that a syllogism in the three judgments contains six places: 'M', 'me' and 'm' are each expressed twice.

Summarized in size: “The collection of all that is beautiful” contains “the subset of all beautiful flowers”. And “the subset of all beautiful flowers” in turn contains “this flower”. Schematically: “M > me > m” or: “m < me < M”.

The syllogism can of course be expressed both singularly (“this flower”) and in particular (“some flowers”):

PP1 “All flowers (universal) are beautiful.

PP2 Now, this is a flower (singular); these are some flowers (particular);

CL so this flower is beautiful (singular); these single flowers are beautiful (private)”.

The conditions concerning the terms. Medieval logicians put it as follows.

- **1.** Three and only three terms are essential (maior, medius, minor). If fewer terms, it is no longer a syllogism; if more, the syllogism is no longer valid or resolves itself into several syllogisms one after the other.

This rule is also not respected if the same term has more than one meaning or scope. For example, in the following reasoning, the term 'coat' is first thought of as not folded, then as folded, which means that it is used twice in a different meaning and the syllogism is immediately experienced as invalid:

“I can fit in my coat. Well, my coat fits in the suitcase, so I can fit in the suitcase.”

- **2.** The size of the clause must never exceed that of the premises. Indeed, one cannot infer what is more from what is less.

- **3.** The middle term is expressed in its entirety either once or twice, otherwise it creates more than three terms. Thus:

"All lions (universal) are (a kind; particular) animals.  
well, all wolves (universal) are (a different kind; particular) animals;  
so all lions (universal) are wolves (universal)".

We put the fallacy in brackets. It was said:

"All lions are animals.  
Well, all animals are wolves  
so all lions are wolves".

then the derivation would be logically valid because the middle term 'animals' is then universal ('genus' and not 'species'). The logical validity is shown for example in the hypothetical formulation: If all lions are animals, and if all animals are wolves, then all lions are wolves. As applied logic the reasoning is of course wrong because PP2 "all animals are wolves" is incorrect.

- **4.** The middle term may never appear in the following clause. It does indeed have its role in both preceding clauses.

The conditions concerning the sentences. These are as follows.

- **5.** No subsequent clause can be derived from two negative preceding clauses.

Indeed; what sensible conclusion could be conceivable from the preceding sentences: "Roses are not animals, well, pears are not roses, so...".

- **6.** No negative clause can be derived from two affirmative clauses.

No conclusion can be drawn from "All flowers are beautiful, well this is a flower, so this is not a..." either.

- **7.** The after-clause shows the same information (cognitive content) as the least informative pre-clause. The conclusion of the syllogism with the beautiful flowers indeed only says that 'this flower' is beautiful. A negative pre-clause is less informative than an affirmative one. The judgment "these flowers are not yellow" tells us much less than the judgment: "these flowers are yellow".

- If one predicate is negative and the second is affirmative, the subsequent clause is negative. From the premises: "Pears are not flowers, well now this is a pear.." only the negative conclusion "therefore, this pear is not a flower" can be concluded. A particular predicate contains less information than a universal one. If one predicate is particular and the second universal, then the subsequent clause is particular. This was very clear in the syllogism concerning the beautiful flowers.

- **8** . No dependent clause can be derived from two particular clauses. There is no information available. The basic insight according to La Logique de Port-Royal is as follows: "The most extensive clause (PP1) must include the dependent clause and the least extensive clause (PP2) must show that it is so".

Here is a sample of the refined syllogistic that Scholasticism (800/1450) has left us.

### **3. 1. 2 If, then - connections**

Bibl. Sample : G. Jacoby, *The arguments of the logistics specialists on logic and its history*, Stuttgart, 1962, 59ff. In logistics, "if, then" is the decisive connection in reasoning. This is only logical insofar as it represents (total, partial or absurd) identity.

**1.** "When the weather is warm, metals expand." In itself, the connection is causal. It only becomes logical if that causal connection is also a form of identity.

**2.** "If today is Saturday, then the day after tomorrow is Monday." Note: As a today stands for the day after tomorrow, so a Saturday stands for a Monday. This makes sense because the order of days in the week involves such a derivation: the general rule ("As a today ...") is partly identical with the application ("so stands ...") because an application is one instance of a general set.

**Hypothetical sentences** . Logistical refers to Aristotelian categorical reasoning that leads to predicate logistics, and to Stoic hypothetical reasoning that leads to statement logistics. Logistically, there is a - logistical distinction between these two calculi. But logically, this distinction is without reason. For both are merely different subject-related language forms that represent the same logical sequence.

- Categorically. All men are mortal. Athenians are men. Therefore they are mortal.

- Mixed hypothetical. If men, then mortal. Now, the Athenians are men. Therefore, they are mortal. Note: “Now, the Athenians are men” is a illogical statement.

- Purely hypothetical. If human, then mortal. If Athenians, then human. So if Athenians, then mortal. Note: The statement just made is now hypothetical.

To be human is to be mortal, to be Athenian to be human, so to be Athenian to be mortal. Note: As a subset is to a universal set, so to be Athenian is to be human, and to be human to be mortal. The partial identity is the reason why the “if, then” formula is strictly logical.

**Theory of reasoning** . Decisive for logical validity are 1. (distributive or collective) quantity (distributive quantity: singular, particular or universal, and collective quantity: part, parts, whole) and 2. (affirmative or negative) quality of the judgments. For they decide on identity (in its total, partial or absurd form).

**Hypothetical formulation** . The hypothetical formulation is logically the best because it puts the presuppositions in a hypothetical form and therefore limits itself to the strictly logical nature of the reasoning. 1. Herbart (1776/1841) said that in logic the totally categorical reasonings are nevertheless hypothetical in their true meaning.

Logic focuses on identity (total, partial, absurd) and not on establishing facts and therefore not on truth or untruth. As a result, logic distinguishes more sharply between mixed hypothetical and pure hypothetical. Because pure hypothetical reasoning belongs to pure logic while mixed hypothetical reasoning belongs to applied logic (methodology) since the second preamble expresses an assertion (see above).

**Two types of theories of reasoning** . The history of theories of reasoning shows two types, the Aristotelian, which as strictly logical, pays attention to identity, and the Philonic, which pays attention to truth and falsity. Predicate logistics 'logisticizes' Aristotelian; statement logistics Philonic. According to Jacoby, one acts wrongly if one calls logistics 'logic', because one thereby confuses two strictly distinguishable systems.

**Note:** Hypotheses are imaginary judgments. This means that the events referred to therein “are in themselves”, not out of themselves but on the basis of 'positing', arbitrarily positing them as being in themselves. “A be B” means



that A and B must be treated as if they are identical in their own right, independently of their 'position', even if that is not the case in fact. Also: that statement lacks the copula 'is', i.e. the claim to truth. The fiction that something is real is not the affirmative judgment that something is real.

### 3. 1. 3 *Combinatorics within the syllogism*

*combine* - from the Latin 'cum' + 'bini' ( always two) - is to give a place (at least in our case here ) to a multitude of (to be placed) data in a ' configuration' (a set of places).

Syllogisms are divided into a number of figures on the one hand and into a number of modes on the other.

The syllogism has four figures.

If one pays attention to the place that the middle term or medius can occupy in a syllogism, one distinguishes four possible 'schemata' (Lat.: figurae), 'figures'.

- the medius can be Subject in PP1, and Predicate in PP2.
- the medius can be a Predicate in both PP1 and PP2.
- the medius can be Subject in PP1 and also in PP2.
- the medius can be Predicate in PP1 and Subject in PP2.

In these schemata it is common practice to represent the medius by... the capital letter 'M'.

We get:

|     | Fig. 1 | fig. 2.1 | fig. 2.2 | fig. 3 |
|-----|--------|----------|----------|--------|
| PP1 | M-     | -M       | M-       | -M     |
| PP2 | -M     | -M       | M-       | M-     |
| CL  | SP     | SP       | SP       | SP     |

The letters 'S' and 'P' in the CL stand for Subject and Predicate. In the conclusion, 'something' of 'something' is pronounced: "S is P". The open spaces '-' in PP1 and PP2 of the various figures are now filled by the letter 'S' or 'P'. 'S' if the expression contains the same term as 'S' in the CL. 'P' if the expression contains the same term as 'P' in the CL.

The configuration above defines four possible 'schemata' (Lat.: figurae), 'figures'. We will now fill this in with some examples.

#### 1. **Barbara:**

MP All flowers (M) are beautiful (P),

SM Well, begonias (S) are flowers (M),  
SP so begonias (S) are beautiful (P).

**Celarent:**

MP Mammals (M) are not fish (P),  
SM Well, whales (S) are mammals (M),  
SP so whales (S) are not fish (P).

**Darii:**

MP All people (M) are gifted (P).  
SM Well, Jan (S) is a human being (M).  
SP So Jan (S) is gifted (P).

**Ferio:**

MP All people (M) are not immaterial (P).  
SM Well, Jan (S) is a human being (M).  
SP So Jan (S) is not material (P).

**Note :** This filling is the basic filling.

**2.1. Cesare:**

PM All pure spirits (P) are not human (M).  
SM Well, Flemish people (S) are people (M).  
SP So Flemish people (S) are not pure spirits (P).

**Camestres:**

PM All mortals (P) are an animated body (M).  
SM Well, all angels (S) are inanimate bodies (M).  
SP So all angels (S) are not mortal (P).

**2.2. Darapti:**

MP The Seven Sages of Hellas (M) are conscientious (P).  
MS Well, the Seven Sages of Hellas (M) are pagans (S).  
SP So some pagans (S) are conscientious (P).

**3** . The fourth figure is rejected by Lahr for example, but is explained by Willmann as follows. It is called 'Galenic' because Galen of Pergamon (129/199; Aristotelian and physician) introduced it. It is a reversal - see the completions 1 and 4 above - of the first, the basic figure. Willmann admits that it offers virtually no new insight ('information') into the subordinate clause (and thus agrees with logicians such as Lahr).

We now show how Willmann fills in the first and fourth figures.

MP All animals with cloven hooves (M) are mammals (P).

SM Well, cattle (S) are animals with cloven hooves (M).

SP So cattle (S) are some mammals (P).

PM All cattle (P) have cloven hooves (M).

MP Well, animals with cloven hooves (M) are mammals (P).

SP o some mammals (S) are cattle (P).

**Conclusion** . The first figure - highly regarded by Aristotle (it is reason-giving) - is the figure to which figures 2.1. and 2.2. can be reduced. The Galenic one is negligible.

### ***The syllogism has 64 modes.***

In the scheme under 1.1.5. the quantities (all, some, none) and the qualities (yes or no) of the judgments were expressed in four ways. We already mentioned that the scholastics borrowed A (all) and I (some (yes)) from the vowels of the word 'affirmare' ('affirm'), and O (some not) and E (none) from the vowels of the word 'nego' ('I deny'):

- A: All flowers are beautiful. all (universally affirmative).
- I: Some flowers are beautiful. Some are (private affirmative).
- O: Some flowers are not beautiful. some are not (particular negative).
- E: No flowers are beautiful. none (universal negative).

In this way, one can distinguish four modes in PP1. But this also applies to PP2. For example, PP1, mode A, can be combined with PP2, also in mode A. Both predicates together then give 'AA.'. One can just as well combine A in PP1 with I in PP2, (AI) or O in PP2 (AO), or E in PP2 (AE). Then, with PP1, mode I, one can combine with all the modes in PP2: IA, II, IO, IE... Both predicates can be filled in in 16 ways. But there is more. The after-clause can also have one of these four modes. In this way, one arrives - theoretically - at 16 x 4 or 64 possible fillings and therefore there are 64 modes.

### ***The syllogism has 256 types.***

The continued combination of the 4 figures with the 64 modes gives 256 types of syllogism. Of these, 19 are valid. In practice, about 5 or 6 are used.

Let us illustrate this with the following valid syllogism, belonging to figure 1, in which both PP1, PP2, and CL are universally affirmative (affirmare).

Hence the small letter 'a' between the schematically represented sentences of the syllogism.

|     |     |                                     |
|-----|-----|-------------------------------------|
| PP1 | MaP | All flowers (M) are beautiful (P),  |
| PP2 | SaM | Well, begonias (S) are flowers (M), |
| CL  | SaP | so begonias (S) are beautiful (P).  |

General: All M is P (Map), now all S is M (SaM), therefore all S is P (SaP). Three times 'a'. As a mnemonic device, the scholastics gave this form of syllogism the name 'Barbara'. They looked at the vowels in the word: three times an 'a'; which means that each of the three sentences in the argument is universally affirmative.

The chapter concerning Peirce's pragmatic maxim (1.2.15) already gave us an example of such a 'Barbara' syllogism:

|     |     |                             |
|-----|-----|-----------------------------|
| PP1 | MaP | All people die.             |
| PP2 | SaM | Henok and Elias were human. |
| CL  | SaP | Henok and Elias die.        |

The same chapter also gave us an example of a syllogism according to Figure 1.

|     |     |                                  |
|-----|-----|----------------------------------|
| PP1 | MoP | Henok and Elias were not mortal. |
| PP2 | MaS | Henok and Elias were human.      |
| CL  | SoP | Some people are not mortal.      |

The letter 'o' in PP1 and CL indicates negation (nego). Schematically: Some M are not P (Mop), well every M is an S (MaS), so some S are not P (Sop).

The Scholastics called this form of syllogism, with successive vowels: o, a, o, Bocardo.

Finally, let us also give Peirce's third example, belonging to the second figure.

|     |     |                                 |
|-----|-----|---------------------------------|
| PP1 | PaM | All men are mortal.             |
| PP2 | SoM | Henok and Elias are not mortal. |
| CL  | SoP | Henok and Elias were not human. |

Schematic: All P are M, now some S are not M, so some S are not P. The Scholastics called this form of syllogism Baroco, the successive vowels: a, o, o. Schematic: All P are M, now some S are not M, so some S are not P.

This naming can also be traced in the syllogisms such as Darii, Ferio, Cesare, Camestres and Darapti, all given above. There are many more types. The consonants also have a function in this naming, but that is beyond the scope of this text.

**Note:** M. Hunyadi, *On peut enfin lire le grand Peirce en français*, in: *Le Temps* (Geneva) 14.12.2002, 43, says that Peirce (1839/1914) is considered the greatest logician of his time and that he was always a great admirer of the utmost akribia (accuracy) of the medieval logicians whose legacy he wanted to continue. Hunyadi refers to Cl. Tiercelin / P. Thibaud, dir., *Charles Sanders Peirce, Pragmatisme et pragmatisme*, Paris, 2002.

**Incidentally**, 'pragmaticism' is a pragmatism (thinking that judges concepts by their results) that attributes an objective value to concepts (as with the medieval conceptual realists). Peirce was a conceptual realist in the wake of the medieval conceptual realists.

### **3. 1. 4 Enthymeme (unstated reason or inference)**

Tear-off calendar humor is teeming with enthymemes. What is precisely unspoken (supposedly known) in: "Mom, when did you first meet Dad?" - "Two years after our wedding, child".

Natural logic tolerates such enthymemes; logistics absolutely not, but, to avoid needless repetition, it tolerates its own set of enthymemes. (1) Humor (2) Irony (3) Sarcasm) in statements says with the unsaid including the knowledge of the person concerned.

'Enthymema' (ancient Greek: "that which is in the mind") in logic has a plurality of definitions. We will consider one of them. "A syllogism, if either its reason (one of the pre-clauses) or its conclusion (the post-clause) remains unsaid, is an enthymeme".

**Example** . P. Foulquié / R. Saint-Jean, *Dict. de la langue philosophique*, Paris, 1969-2,215 (Enthymème), puts it this way. PP1 (maior) is omitted: "You have lied. Therefore you no longer deserve trust". PP2 (minor) is omitted: "Anyone who has lied no longer deserves trust. Therefore you no longer deserve trust". CL is omitted: "Anyone who has lied no longer deserves trust. Well then, you have lied".

### **Explanation .**

(1) It is not necessary to say unnecessarily what is GG (given or phenomenon) about the situation in which one reasons.

(2) Now, within a syllogism there is a coherence between the reason (the preceding clauses, PP1, PP2) and the inference (the subsequent clause, CL) such that, within a given situation, one of the clauses can be omitted (synecdochic structure).

(3) So, based on an application of the principle of economy (principle of thrift), one of the sentences should preferably not be said.

**Note** : Petrus Aureolus (+ 1322) is often mentioned in connection with the principle of economy which states: “Entia non sunt multiplicanda praeter necessitatem” (Beings need not be multiplied without necessity). But this nominalist means the abstract presuppositions which, according to him, are superfluous.

Here: “What can be said with sufficiently clear words need not be said with superfluous words.” That is the axiom of the natural logic of common sense.

G. Jacoby, *Die Ansprüche der Logistiker auf die Logik und ihre Geschichtschreibung* , Stuttgart, 1962, 53/55 (Relationslogik), draws attention to the fact that logisticians, when they criticize natural logic concerning relations, forget precisely the enthymemes. “If today is Sunday, then the day after tomorrow is Tuesday”. Logisticians claim that natural logic cannot account for this within its language use. To which Jacoby replies: “Given a general sequence of days valid for all weeks “Sunday / Monday / Tuesday / Wednesday / Thursday / Friday / Saturday”. Well, today is Sunday. So (given the well-known sequence given with the situation) the day after tomorrow is Tuesday”. The given (GG) sequence of the weekdays is unspoken, (= enthymeme).

**Note:** S. Gerritsen, “ *Het verband ontgaat me*” (*Understandability problems with concealed arguments*) , Amsterdam, 1999, discusses enthymematic reasoning at length and, among other things, the rewriting of texts to bring out the unsaid. The author has been discussing such issues since antiquity.

### **3. 1. 5 The role of the middle term**

Bibl. Sample : G. Bolland, Hrsg., *Hegel's kleine Logik* , Leiden, 1899,257. Hegel summarizes the configuration (set of places) of one type of syllogism:

“If two things are equal to a third, then they are equal to each other”. Symbol abbreviation: A and b; the third is C.

**Example.** Let us equate the large term 'viviparous' with P, the middle term 'all mammals' with M, the small term 'all whales' with S. The large term is Predicate in QZ1 and in the NS. The small term is Subject in QZ2 and in the NS. The middle term is Subject in QZ2 and in the NS.

|     |     |                                       |
|-----|-----|---------------------------------------|
| PP1 | MaP | All mammals (M) are viviparous (P)    |
| PP2 | SaM | Well, all whales (S) are mammals (M). |
| CL  | SaP | So all whales (S) are viviparous (P)  |

The middle term (M) is necessary as a 'catalyst'. The role of the catalyst in chemistry is well known: it activates the chemical reaction but is hidden when it is finished. - The middle term (M) is necessary as a catalyst of the reasoning process in PP1 (subject) and in PP2 (predicate) but is hidden in the CL. Which may become visible when one introduces a linear configuration instead of the above configuration and makes it hypothetical: "If M = P and S = M, then S = P". - As said: M has disappeared in the final formulation.

**Quantitative or mathematical reasoning** . This is how Hegel formulates the basic configuration and Bolland explains it. Such reasoning - "If S and P are equal to M, then S is equal to P" - occurs in mathematics as an axiom. Now, it is customary to claim that this and other axioms are unprovable, indeed that they do not even need proof. Yet they are valid in the sense of "applicable again and again". Reason: they are - normally speaking (if sufficiently developed understanding is present) - almost immediately evident or directly given ('phenomenon'). Every normal form of syllogism, for example, presupposes the "mathematical axiom".

Of course Bolland situates the above configuration (either in rectangular scheme or linear) in Hegel's metaphysics. This, however, does not interest us here. This: our human mind works with configurations and their fillings. It possesses something like this somewhere in its 'depths' as a kind of 'depth structures' (as structuralists say) in mostly unconscious degree. They become conscious as soon as one explicitly does logic.

**Note:** Of course, a configuration is present in an argument such as:

|     |     |                                     |
|-----|-----|-------------------------------------|
| PP1 | MaP | “Everything that thinks (M) is (P). |
| PP2 | SaM | Well, I (S) think (M).              |

CL            SaP            So I (S) am (P).

This resembles the famous statement of R. Descartes “I think; therefore I am”. But beware: in Descartes' opinion his statement is not a reasoning but the expression of a direct inner perception or 'intuition' which is indeed expressed in the form of a (enthymematic, because the first predicate is not there) reasoning and gives rise to misunderstanding of what he is actually describing.

***This part summarized.*** A syllogism consists of three terms, the maior, the medius and the minor, processed in three judgments and in such a way that a subsequent clause can be logically 'validly' derived from the two preceding clauses. Terms and sentences must meet specific conditions.

*Reasoning can be formulated categorically or hypothetically. The hypothetical formulation is logically the most appropriate. Logic focuses on identity and not on establishing facts and therefore not on truth or untruth.*

*Aristotelian logic pays attention to identity, Philonic logic pays attention to truth and falsity.*

*Syllogisms are expressed in four figures, depending on the position of the middle term in the syllogism. Furthermore, each figure has 64 modes: expressions in which quality and quantity differ. Each sentence of the syllogism can be said combinatorially in four different ways. This means that one figure can be combined in  $4^3$  ways. The four figures together give  $64 \times 4$  or 256 possible combinations or types. Most of these are logically incorrect. Only 19 are logically valid and 5 or 6 types are actually used, which strongly relativizes the importance of this entire combinatorics.*

*The names of the various types have been chosen to reflect their properties.*

*Sometimes a sentence in a logical argument is misunderstood and can be omitted.*

*In a syllogism, the middle term has a connecting role between major and minor and has disappeared in the conclusion.*

### **3. 2 Three basic schemes**



### **3. 2. 1 Reasoning (deduction / reduction)**

**First scheme** . With I.M. Bochenski, Philosophical methods in modern science, Utr./ Antw., 1961, 93/95, we distinguish - following I. Lukasiewicz (1878/1956) - between deduction and reduction (Platonic: 'synthesis' and 'analysis'). We explain.

**Deduction.** Scheme. "If A, then B. Well, A. Therefore B."

Filled in.        If all (cases), then at least one, possibly all (cases).  
Well, all (cases).  
So at least one, possibly all (cases).

**Reduction.** Scheme. "If A, then B. Well, B. Therefore A."

Filled in.        If all (cases), then at least one, possibly all (cases).  
Well, at least one, possibly all (cases).  
So all (cases).

**Deduction** . One reasons from all cases (which is summative) to at least one, if not all cases. A deductive after-sentence is a necessary inference ("If all, then certainly at least one of them"). Deduction is said to be 'predictive'. Indeed: if (according to e.g. a physical law in normal circumstances) all water at sea level boils at 100° C, then it is predictable that this water and that water boil at that temperature.

**Reduction. This is twofold, generalizing and generalizing.**

- **Generalizing.** If (by observation, sample) this water and that water boil at 100°C, then all the water (which is summary or summative induction), then it seems likely that the rest (and therefore all the water) will also boil at 100°C.

One reasons from a number of tested cases to all (possible), in principle testable cases. From summative to amplifying (knowledge-expanding, 'extrapolating') induction. The basis is similarity.

- **Globalization.** To explain this, we must extend the subject of the sentence with a context.

**Deductive:**    All instances of water within this pond boil at 100° C.  
Well, this water is from this pond.  
So it boils at 100° C.

**Reductive globalization** .

This water boils at 100° C.

Well, all instances of water within this pond boil at 100° C.

So this water is from this pond.

One reasons about “this water with its 100° C.” including “all cases of water with its 100° C in this pond” and ventures the hypothesis that this water comes from this pond solely on the basis of one and the same characteristic - boiling at 100° C. Both boiling points have been tested (summative induction). Untested is the fact that - to be valid - only this one pond is considered as the only whole in which there is water. In other words: the globalizing is hypothetical and awaits further information. One has grasped it: deduction is predictive with certainty, reduction only offers a guess.

**Note:** From GV and RQ (= task) to SOL. In both the deduction and the reduction, the two preceding clauses are the given (GV). The requested (sought) is an at least hypothetically (preferably necessary) valid derivation (conclusion) that shows itself as RQ in the subterm 'thus'.

**Phenomenology as the basis of logic.** IM Bochenski, oc, 174v., is looking for a philosophical method “which must have phenomenological analysis as its basis”. We see this clearly in any case when we define 'phenomenology' as “representation of the given as given”. The request in reasoning (and therefore logic) is to draw a logically valid conclusion from that given (observed and represented as accurately as possible). But there is no known reasoning that does not start from a given. Which means that logic always has a phenomenological basis. As - what Bochenski calls - “indirect knowledge” it always rests on “direct knowledge”, i.e. phenomenological description and formulation of the given. The preceding clauses are nothing other than “direct knowledge”. The following clause is “indirect knowledge”.

**Conclusion** . Before we reason, let us look carefully so that we first grasp the given correctly!

### **3.2.2 Reasoning: some formulas**

O. Willmann, Abriss, 93, mentions old sayings which are still valid.

**1. Modus ponens** (affirmative or affirmative) and **Modus tollens** (negative)

**Modus ponens** . If A, then B. Well, A. Therefore B. Given the pair that constitutes a conditional sentence, namely “Condition, inference” (“If A, then B”). The affirmative mode of reasoning in a hypothetical syllogism is: “From the affirmation of the condition follows the affirmation of the inference.”

Maw: “If the presupposition (condition) of a valid argument is true, then the postulate (inference) is true, and if in fact the presupposition is true, then the postulate is also true”. This is the structure of, for example, the syllogism that the tradition calls 'Barbara' (cf. 3.1.3.). Some examples:

|                   |  |
|-------------------|--|
| If A,<br>then B.  | “If all flowers are beautiful and if begonias are flowers,<br>then begonias are beautiful. |
| Well, A,<br>so B. | Well, all flowers are beautiful and begonias are flowers,<br>so begonias are beautiful”.   |

Or again:

|                  |  |
|------------------|--|
| If A,<br>then B. | “If everything that possesses spirit immediately possesses freedom<br>of will, and if all people possess spirit,<br>then all people immediately possess freedom of will. |
| Now, A,<br>so B. | Now, whatever possesses spirit, possesses at once freedom of will,<br>and all men possess spirit,<br>“so all people immediately possess freedom of will”.                |

Now not hypothetically but categorically formulated:

|     |     |  |
|-----|-----|--|
| PP1 | MaP | Whatever mind possesses (M) possesses freedom of will (P), |
| PP2 | SaM | Well, all people(S) possess spirit(M),                     |
| CL  | SaP | so all people (S) possess freedom of will (P).             |

It seems self-evident, and yet Wikipedia, the free encyclopedia on the Internet, mentions (in 2011) as an example of a modus ponens:

|      |   |
|------|---|
| PP1. | If democracy is the best form of government, then everyone should vote. |
| PP2  | Democracy is the best form of government.                               |
| CL   | Everyone must vote.   |

This example is presented as a syllogism and explained as follows: “The argument has two premises. The first is the "if-then" or conditional statement, namely that AB implies. The second premise is that A is true. From these two premises you infer that B is true.”

Now what is given in PP1 of this example is not a predicate at all, but itself an incomplete syllogism of which PP2 is not mentioned and of which the NS is that everyone should vote. From the hypothesis that democracy is the best form of government, it is not logically deducible that everyone should vote. This presupposes that everyone chooses democracy. But this predicate is omitted.

What should then pass as PP2 ("democracy is the best form of government"), is the repetition of the first part of PP1, but now formulated categorically. The deception is further increased by the fact that the terms 'democracy' and "everyone must vote" are related in meaning and we are dealing with a tautology.

The reasoning, fully and hypothetically stated, is:

|        |  |
|--------|--|
| If A,  | If the best form of government is universal suffrage |
|        | and if everyone chooses the best form of government, |
| then B | then everyone chooses universal suffrage.            |

And in its categorical continuation:

|        |  |
|--------|--|
| Well A | Well, universal suffrage is the best form of government. |
|        | and everyone chooses the best form of government,        |
| So B   | So everyone chooses universal suffrage.                  |

In syllogism form: (barbara)

|     |     |   |
|-----|-----|---|
| Map | PP1 | The best form of government is universal suffrage.  |
| SaM | PP2 | Well, everyone chooses the best form of government. |
| SaP | N Z | So everyone chooses universal suffrage.             |

Let us illustrate the logical error in Wikipedia's reasoning with a similar, and equally incorrect, example:

If flowers are beautiful, then 'X' is beautiful.  
 Well flowers are beautiful  
 So 'X' is beautiful.

What is concealed is what 'X' is. From the fact that flowers are beautiful it cannot be inferred that 'X' is beautiful. It is different when it is also added that 'X' refers to a flower, e.g. a begonia. Then we obtain the hypothetical formulation of the syllogism as mentioned at the very top of this chapter.

It is surprising that the text in Wikipedia combines part of the hypothetical wording with part of the categorical wording, into an apparent syllogism, and thus, instead of logically clarifying the theme, actually creates confusion.

**Modus tollens.** If A, then B. Well, not B. Therefore not A. The negative reasoning in a hypothetical syllogism is: "From the negation of the inference follows the negation of the condition". "If the preceding clause is true, then the

subsequent clause is true, and if in fact the inference (subsequent clause) is not true, then the condition (presupposition) is equally not true". This is the structure of the syllogism called 'Celarent' (cf. 3.1.3.):

|              |   |
|--------------|---|
| If A,        | “If papilionaceous plants are not composites, and if the sunflower is a papilionaceous plant, |
| then B.      | then the sunflower is not a composite.  |
| Well, not B, | Well, the sunflower is a composite,   |
| so not A.    | so the sunflower is not a papilionaceous plant”.  |

Categorically formulated:

|     |     |   |
|-----|-----|---|
| PP1 | MeP | Composites (M) are not papilionaceous (P),              |
| PP2 | SaM | Well, the sunflower (S) is a composite (M),             |
| CL  | SeP | so the sunflower (S) is not a papilionaceous plant (P). |

|             |  |
|-------------|--|
| If A,       | “If mammals are not fish and if whales are fish, |
| then B.     | then whales are not mammals.                     |
| Well, not B | Well, whales are mammals,                        |
| so not A.   | so whales are not fish”.                         |

Categorically stated:

|     |     |                                   |
|-----|-----|-----------------------------------|
| PP1 | MeP | Mammals (M) are not fish (P),     |
| PP2 | SaM | Well, whales (S) are mammals (M), |
| CL  | SeP | so whales (S) are not fish (P).   |

Here too, Wikipedia provides an incorrect example in which hypothetical and categorical terms have been confused:

If there's a fire here, there's oxygen here.  
 There is no oxygen here.  
 Then there is no fire.

From the fact that it is fire, it cannot logically be deduced that there is oxygen. For that, a second presupposition is needed stating that fire requires oxygen. Let us formulate the reasoning completely and as Celarent:

|             |   |
|-------------|---|
| If A,       | If lack of oxygen does not cause fire, and if there is a lack of oxygen here, |
| then B,     | Then there is no fire here.   |
| Well, not B | Well, lack of oxygen does not cause fire. And here is lack of oxygen          |
| So not A    | So there is no fire here.   |

In syllogism form:

|     |     |  |
|-----|-----|--|
| MeP | PP1 | Lack of oxygen (M) does not cause fire (P) |
| SaM | PP2 | Well here (S) is oxygen deficiency (M),    |
| SaP | CL  | So there is (S) no fire (P).               |

**2. Disjunctive reasoning** . Structural formulas also apply here.

**Modus ponendo tollens** . If A is either B or C, and if A is in fact C, then A is not B. Applied: “If viruses are either inorganic or organic, and they are in fact organic, then they are not inorganic.” In a disjunctive syllogism (“either... or”) the affirmation of one member of the disjunction entails the negation of the other.

**Modus tollendo ponens**. If A is either B or C, and if in fact A is not C, then A is B. In a disjunctive syllogism the negation of one member of the disjunction entails the affirmation of the other member. “If bacteria are either vegetable or animal, and if they are not in fact animal, then they are vegetable.”

For example, anyone who wants to solve the following problem will notice that this requires constant disjunctive reasoning. Given are three cookie boxes, each with a label. The labels state: cookies with chocolate, cookies with sugar, and finally a mixture of the previous cookies. Furthermore, it is given that the label on each box is wrong. The question is from which box or boxes one must take a cookie in order to be able to provide all the boxes with the correct label. Anyone who thinks about it all logically will notice that one cookie, taken from the box with the mixture, is sufficient to provide three boxes with their correct label.

So far some formulas that are structural formulas. We have kept them in the hypothetical wording because after all logic as logic and not epistemology focuses on hypothetical sentences. 'Structure' here means "abstract or summary structure" so that an infinite wealth of 'fillings' is possible. Incidentally, they are offered in symbolic abbreviated language, which makes the abstract - summary stand out.

### **3.2.3 Reasoning (deduction / generalization / generalization)**

Second scheme. We now first give the three-part argument as formulated by Ch. Peirce (1839/1914).

**Deduction.**

All the beans in this bag are white.

Well, this bean is out of this bag.  
So this bean is white.

**Induction.**

This bean is from this bag.  
Well, this bean is white.  
So all the beans in this bag are white.

**Abduction .**

This bean is white.  
Well, all the beans in this bag are white.  
So this bean is from this bag.

**Note :** These are Peirce's terms. We replace them by other terms.

**Deduction.**

All the pears on this tree are ripe.  
Well, this pear is from this tree.  
So this pear is ripe.

**Generalization .**

This pear is from this tree.  
Well, this pear is ripe.  
So all the pears on this tree are ripe.

**Globalization .**

This pear is ripe.  
Well, all the pears on this tree are ripe.  
So this pear is from this tree.

**Explanations .** Peirce himself confused abduction with causal explanation. Result: he distinguished between “inductive sciences” and “abductive sciences”. F. Korichel / J. Sallantin, *Abduction*, in: D. Lecourt, dir., *Dict. d' histoire et philosophie des sciences*, PUF, 1999, 1/4, elaborate on the true nature of 'abduction'. Misled by Peirce's confusion between abduction and causal explanation, there are those who try to explain his abduction as a kind of deduction (Hempel); others try to see in it an application of the theory of probability (Gärdenfors) because Peirce's abduction contains a guess (which varies from weak to strong probability). Still others introduce a kind of 'revision theory'. Conclusion: endless confusion.

**Our definition .** Both generalization and generalization are hypothetical reasoning.

Compare a predicate like “All pears are ripe” with our predicate “All pears of this tree are ripe”. The difference lies in the subject, which with “all pears” remains within similarity, while with “all pears of this tree” it includes both

similarity and coherence. Peirce's causal coherence is precisely one kind of coherence. The 'abduction' as he formulates it in his example is general. His explanation of it is not! This proves once again that the basic concepts of logic are truly fundamental.

**Hypothesis** . How a Hempel can try to see a deduction in Peirce's abduction is surprising. The generalization is hypothetical because it is not because this one pear is ripe that all (other) pears on the tree are ripe. The generalization is hypothetical because, as long as it is not established that in the whole environment ("the universe in question" some say) there is only the one tree, one does not know for sure that this one pear is his! In that sense the probabilistic definition of abduction goes in the right direction but it does not capture the very essence of generalizations.

**Applicability** . Let us give an example.

|            |  |
|------------|--|
| Deduction. | All data within our experience are material.<br>Well, this fact is within our experience.<br>So it's material. |
|------------|--|

Reduction

|  |   |
|--|---|
| <b>1. Generalization.</b><br>(induction) | This fact is within our experience.<br>Well, it's material.<br>So all the data within our experience is material. |
|--|---|

|   |  |
|---|--|
| <b>2. Globalization</b> .<br>(abduction or<br>Hypothesis) | This data is material.<br>Well, all data within our experience is material.<br>So this given is within our experience. |
|---|--|

Thus judges, for example, a kind of materialism. Thus every system of thought, as soon as it expresses its axioms, can be tested by means of our triad, because every system of thought contains deductions (from axioms in the first place), generalizations (on the basis of inductive sampling) and generalizations (on the basis of the situation of data within a whole).

### **3. 2. 4 The concept of “logical modality”.**

The word 'modality' has more than one meaning in language usage. Its common property is 'reserved' ('condition', 'restriction'). Psychological modality. - The police are looking for the perpetrator of a crime and find him. To the question: "Were you in the main street in Haarlem yesterday?" the man answers: "I certainly wasn't there". The reservation is: "As long as you don't



prove it in black and white, I won't admit the truth". Incidentally: every lie shows that restriction! Legal: As in a text such as: "The agreement (the legal act, etc.) is valid to the extent ("under the condition of)". The restriction can be an additional agreement or simply a condition.

**Note** : 1. In other words, a conditional sentence is always present (spoken or not). 2. In Hegelian language, the term 'modality' means something like 'manner of appearance' or 'form'. Thus Hegel sees the all-encompassing idea (the essence of the entire reality) in the course of all that ever was, is now, ever will be (more concretely: in the course of the history of the universe and culture) in its many 'modalities' (forms) becoming history. Hegel calls the description of that all-encompassing process 'phenomenology'.

**Logical modalities** . G. Jacoby, *Die Ansprüche der Logistiker auf die Logik und ihre Geschichtschreibung* , Stuttgart, 1962, 61/64, says that natural logic strictly speaking only knows the following differential: Necessary / not necessary (possible) / not necessarily (impossible). Let us explain briefly.

**1. Within the judgment.** "A is (necessarily) A" (A is necessarily totally identical with itself). "A and B are (not necessarily, possibly) identical" (A and B are possibly partly identical or analogous). "A and not-A are (necessarily) not identical" (A and not-A are contradictory or inconsistent). Note: Here we encounter the threefold basic structure of identitive logic (totally identical / partly identical / totally not - identical).

**2. Within reasoning.** What Plato calls 'sunthesis' (deduction) and 'analysis' (reduction) differ from the modal point of view.

- Deduction. If A, then B. Well, A therefore B.

If A is the sufficient reason for B, then, if A is given, then B is necessarily given.

- Reduction. If A, then B. Well, B therefore A.

If A is the sufficient reason for B and B is given, then perhaps (possibly) A has been given.

### **3. 2. 5 Deduction and reduction in terms of modality**

Natural logic exhibits three modalities: necessary / non-necessary / not necessarily. Thus G. Jacoby, *Die Ansprüche der Logistiker auf die Logik und ihre Geschichtschreibung*, Stuttgart, 1962. Let us now examine this with regard to certainty of reasoning.

- **Deduction** . Paradigm. If all the flowers of this plant are white and these flowers are of this plant, then these flowers are white.

Proportionate. As a universal collection stands to its particular collection, so all the flowers of this plant stand to these flowers of this plant. Note: 'particular' here is to be understood in the logical sense of "precisely one or more or even all specimens".

The derivation (basic concept), if from a universal set to one of its particular sets (adjunct concept), is necessary and therefore deductive ('a-priori') (defined concept).

- **Similarity reduction**. Paradigm. If these flowers are from this plant and these flowers are white, then all the flowers of this plant are white.

Generalization with reservation, i.e. "unless the rest of the flowers of this plant are not all white". Proportional. As a particular collection stands to its universal collection, so these flowers stand to all the flowers of its collection.

The derivation (basic concept), as long as the entire set (summative induction) has not been tested (as white) (added concept), is unnecessary and therefore reductive ('a posteriori') and immediately refutable (defined concept).

- **Cohesion reduction**. Paradigm. If these flowers are white and all the flowers of this plant are white, then these white flowers are of this plant.

Generalization with reservation, i.e. "as long as the entire context, i.e. outside this plant, has not been tested for the presence of other plants with white flowers".

Proportionate. As a part stands to its whole, so these white flowers stand to its whole of which they are a part.

The derivation (basic concept), as long as the entire environment (summative induction) has not been tested for the presence of other plants with white flowers (added concept), is not necessary and therefore reductive ('a posteriori') and immediately refutable (defined concept).

Cognitive role (informational scope). In deduction, further summative induction with a view to the modality is 'necessarily' superfluous because everything that is called 'universal' is by definition summative. In reduction, however, further summative induction (testing of the unexamined (the rest of the entire collection; the rest of the entire context)) with a view to the modality is 'necessarily' a necessity. Deduction, although necessarily valid and therefore certain (that is its value), actually teaches nothing. Reduction, although not necessary and therefore uncertain but probable, encourages total testing and immediately learning (that is its value).

It immediately becomes clear that the Aristotelian or summative induction is decisive regarding the universality and necessity of the derivation.

### **3. 2. 6 Induction as generalization or globalization**

Induction - 'epagogè', inductio - is a reasoning that, on the basis of at least one sample either from a collection (at least one example) or from a system (at least one part), concludes to a common property that can be confirmed or refuted in further samples. In this sense it is a reductive reasoning because it results in a hypothesis.

**1. Generalization.** The basis is similarity. Summative induction: a teaching method works with one group of students. Amplifying induction: *ceteris paribus* (under identical circumstances) it will probably work with other groups. That is the hypothesis. Summative induction: the inspector questions 4 out of 24 students. Differential: 2 good; 1 less; 1 bad. Knowledge-expanding induction: he can generalize according to that differential to all 24. Which is hypothetical.

**2. Globalization.** Basis: coherence. Summative induction: an economist studies the economic life on the Meir in Antwerp. Amplifying induction: he generalizes to the whole of Antwerp. Although with gaps, he obtains some insight into the whole of the Antwerp economy, but it remains highly hypothetical. Summative induction: in a medical laboratory, a blood sample of a sick person is analyzed. Amplifying induction: one obtains some information about the whole state of health of the person in question, but with reservations.

**Historical research.** Bibl. Sample : IM Bochenski, *Philosophical methods in modern science* , Utrecht / Antwerp, 1961, 169v. (Historical explanation). Historical science as an explanatory (reason-providing) science practices a type of generalization, namely diachronic generalization. Let us take the origin of the French Revolution. Let us call that fact 'C'. As Bochenski says, a genetic explanation is the question: "How did C come about?" Symbolic abbreviation: "If A (the reason), then C". That would be a kind of causal explanation. But human history is not that simple because man is an interpreting being. So: "If A and B (interpretation), then C". If the conditions under the principality and the interpretation thereof by contemporaries (e.g. the Encyclopedists) are known (GG), then the origin of the French Revolution (GV) is understandable. That is a human-scientific scheme.

Induction occurs as soon as at least one sample is taken. For example, one examines the interpretations of the Encyclopedists one by one (which amounts to just as many samples). In that sense, historical science is inductive science. More broadly: if one examines other revolutions for their conditions of origin, one is engaging in induction: from at least one sample one summarizes (summative induction) and generalizes (amplifying induction).

Bochenski speaks of experimental induction in historical science. That would mean that one investigates the origin of historical facts experimentally - as in physics, for example - by means of samples! "Experiment cannot be used because it concerns past individual phenomena" (according to the author). The much-praised repeatability of natural phenomena does not exist in the domain of human history, which consists of unique, unrepeatable data. Hence the radical dependence of the historian on his documentation, which often risks making the studied fact incompletely accessible.

### **3. 2. 7 Reasoning (inclusion / exclusion / partial inclusion)**

Third scheme. Aristotle in *Analytics 1: 1: 4/6* gives a threefold syllogism which we shall now explain on the basis of O. Willmann's interpretations.

#### **1. Inclusion.**

The abstract scheme reads: "All M is P. Well, all S is M. So all S is P."

S denotes a subset of M and also of P. We recognize the Barbarasyllogism in this.

|     |     |  |
|-----|-----|--|
| PP1 | MaP | All languages that are essentially in agreement with each other in declension (M) are related (P). |
| PP2 | SaM | So, Latin, Greek, Sanskrit, German are in Declension of essentially similar languages              |
| CL  | SaP | So these four languages are related.   |

Note: Scholastics in this inclusion do not pay attention to the size as above but to the content: "Nota notae est nota rei ipsius". Translated: "A characteristic of a characteristic (of the thing) is a characteristic of the thing itself.

#### **2. Exclusion.**

The abstract scheme: "No M is P, now all S is M, so no S is P". We recognize the Celarent syllogism in this (cf. 3.1.3.)

- VZ 1    MeP    No borrowing (M) explains agreement regarding inflection (P).
- VZ 2    SaM    Well, Latin, Greek, Sanskrit and German (S) show regarding inflection agreement (P).
- CL        SeP    So no borrowing (S) explains such agreement regarding inflection between those four languages (P).

**Note:** Instead of the scope as above, the scholastics express the content: “Nota repugnans notae repugnat rei ipsi”. Translated: “A characteristic that does not belong to a characteristic of the thing does not belong to the thing itself either.

### **3. Partial inclusion.**

The abstract scheme: Every M is P, now every M is an S, so some S are P. We recognize the Daraptis syllogism in this (cf. 3.1.3.)

- PP1    MaP        Every buttercup (M) has yellow flowers (P),
- PP2    MaS        Well, every buttercup (M) is a plant (S),
- CL        SiP        so some plants (S) have yellow flowers (P).

Or again:

- PP1    MaP        Whales (M) live in the water (P),
- PP2    MaS        Well, whales (M) are mammals (S),
- CL        SiP        so some mammals (S) live in water (P).

**Note:** Scholastics formulate the content instead of the size: "Quae conveniunt in uno tertio, conveniunt inter se. Quae repugnant in uno tertio, repugnant inter se". Translated: "What agrees with respect to a third, also agrees with each other. What does not agree with respect to a third, also does not agree with each other". 'What' means 'characteristics'. Indeed: a partial inclusion also includes another partial inclusion, so that the subsequent sentence can read: "So some mammals (S) live in the water (P)".

**4. Galenic syllogism** . Willmann mentions a fourth type of conclusion (3.1.1). It comes from Galen of Pergamon (129/201), an Aristotelian. The abstract scheme: “All A are B. Now, all B are C. Therefore, some C are A”. Compare this with the scheme of inclusion under number 1 above: “All A are B. Now, all C are A. Therefore, all C are B”.

Willmann's interpretation: All cattle are cloven-hoofed animals. Now, all cloven-hoofed animals are mammals. So some mammals are cattle.

So much for a glimpse into a piece of Aristotelian syllogistic and its later continuation into scholasticism. We immediately see that one can reason on the basis of concept ranges - compared with each other - and on the basis of concept contents - compared with each other -. It immediately becomes apparent how the comparative method repeatedly governs all reasoning: concepts, if compared, lead to judgments (one claims a model from an original); two judgments as presuppositions, if compared, lead to some aftersentence. As a result, classical logic is the analysis of concepts and judgments as presuppositions of reasoning.

***This chapter summarized:***

*- A first scheme distinguishes between deduction and reduction. Deduction has the scheme: "If A, then B. Well, A. Therefore B". Derivation is necessary. Reduction: "If A, then B. Well, B. Therefore A". Reduction is twofold, generalizing and generalizing. The basis of generalization is similarity, the basis of generalization is coherence. Logic always has a phenomenological basis. The preceding clauses provide direct knowledge, the subsequent clause indirect knowledge.*

*Some structural formulas:*

*The Modus ponens. If A, then B. Well, A. Therefore B. The syllogism called 'Barbara' has that structure.*

*Modus tollens. If A, then B. Well, not B. Therefore not A. This is the structure of the syllogism called 'Celarent'.*

*Modus ponendo tollens. If A is either B or C and if in fact A is C, then A is not B. Modus tollendo ponens. If A is either B or C and if in fact A is not C, then A is B.*

*- A second scheme gives the threefold reasoning deduction, induction or generalization and abduction or generalization as formulated by Ch. Peirce. Peirce wrongly saw in abduction only a causal explanation.*

*The many meanings of the word 'modality' have 'reservation' as a common property. Logic knows the following modalities: Necessary / not necessary / not necessarily.*

*Within judgment, identity is total, partial, or absent. Reasoning has the modalities of deductive and reductive. In deduction, deduction is necessary, but deduction brings nothing new. In similarity reduction, deduction is only necessary after the entire collection has been tested. The basis is similarity. In coherence reduction, deduction also remains unnecessary as long as the entire system has not been examined. The basis is coherence. Both reductions encourage learning. In this way, historical science practices a type of generalization in time.*

*- A third scheme gives a tripartite syllogism.*

*The scheme of inclusion, as a Barbara syllogism, is: "All M is P. Now, all S is M. Therefore, all S is P". The scheme of exclusion, as a Celarent syllogism, is: "No M is P, now all S is M, therefore no S is P". Finally, the scheme of partial inclusion is: Every M is P, now every M is an S, therefore some S are P. We recognize the Daraptis syllogism in this.*

*Finally, Willmann mentions, "All A are B. Now, all B are C. Therefore, some C are A." One notices that in classical logic the comparative method, with its analysis of concepts and judgments, governs all reasoning.*

### **3. 3 Induction**

#### **3. 3. 1 Plato's concept of induction**

Bibl. sample : L. Brisson, éd., *Platon, Lettres* , Paris, 1987, 194ss .. The author reproduces the Seventh Letter with the passage which reads as follows. "For everything that is, three elements must be present for knowledge of it to be possible. The fourth is that knowledge itself. Fifth, there is what is the object of that knowledge, and what is really real." Now follows our commentary in two parts.

**1. The Socratic part.** The "three aspects" are the 'image' (understood: sample), the name and the definition. Name. For example, 'circle'. Definition. That is the conceptual content that the name means: "That whose edge is everywhere equally far from the center". 'Image' (picture). For example, a child draws a 'kuklos', a round figure, with his finger in the sunny Greek sand. Seen from a Socratic perspective, that accidental (not perfect) circle is a paradigm of "the circle" without more, because in and through that one 'image' (instance) our mind grasps the general concept of 'circle'.

**Note** : “Plato had already become acquainted as a young man with Cratylus (Note: a Heraclitean) and the Heraclitean doctrine which states that “all sensible things are in an incessantly fluxing state and that therefore no knowledge of such things is possible” and he also held on to this later”. (Aristotle, *Metaph.* 1:6 (114)). What the child drew comes into being ('genesis') and passes away ('phthora'). But not in the sense of the definition, i.e. the general essence of the circle as Socrates had taught Plato. Knowledge itself. The fourth aspect is knowledge itself which includes name, definition and specimen.

**2. The Platonic part.** The real object of that threefold knowledge - which is inductive knowledge in its Socratic form - is "that which is truly real". If the Paleopythagoreans had posited all that ever was, is now, and ever will be as 'true' (understood: knowable, rational) and 'one' (understood: one in all multiplicity), Plato adds to that duality that all that ever was, is now, and ever will be is 'being' (reality) and 'good' (understood: solid, valuable).

**Idea.** Therefore, what the definition means, 'idea' or also 'eidos', is the real reality which is e.g. "the circle" and which is depicted in all possible concrete - individual circles however transient (arising / far-reaching) they may be. Just as the Paleopythagoreans taught that sensible things are 'mimèsis' (image, representation, imitation, model) of abstract ideas, so Plato teaches that they are a 'methexis' (participation, share) of the really real (and not deceptively real) idea and that what is really real in e.g. the circle drawn by the playing child, 'exists' in and at the same time above that same material circle as its idea.

That is induction, understood platonically. That is immediately Plato's theory of ideas.

“The name ‘share’ (participation) was new, because the Pythagoreans already stated that things are based on imitation of numerical forms (‘arithmoi’, usually misleadingly translated as ‘numbers’), but Plato changed the name to share (participation)”. (Aristotle, *Metaph.* 1:6-114). Note: ‘mimèsis’ in ancient language is representation, but then representation or ‘imitation’ or ‘image’ which is at the same time ‘share’, ‘participation’, just as Plato’s ‘share’ is at the same time ‘representation’ or ‘imitation’ or ‘image’.

**Note:** 'Arithmos' in ancient Greek usage is both a number (e.g. 2) and a geometric figure (in the case of 2 a line) and, if Pythagorean, a musical sound. Therefore the translation 'numerical form' is much more appropriate than our 'number'.



### **3. 3. 2 Dialogical induction**

Plato of Athens (-427/-347) in his Apology has Socrates of Athens (-469/-399), his teacher, appear as a defendant before his judges: Socrates refutes the charges by arguing; he defends his own life choice by arguing. In other words: he dialogues until the face of his death sentence. Socrates continued his heuristics (method of definition) until the end of his life, with the aim of his maieutics (education to self-thinking definition). This is what one can call the main content of the Platonic dialogues.

**Plato's dialogues.** He is the only one who ever wrote philosophy (which he called 'dialectics') in the form of dramas: with life problems (of that time) he confronts living persons who are forced to choose while still alive and especially by arguing Socratically. Time and again in every dialogue the different opinions on a main theme clash with each other. Thus E. De Strycker, *Beknopte geschiedenis van de oude filosofie*, Antwerp, 1967, 88. Let us now discuss both the inductive value of such dialogues and the role of the idea therein.

**An update** . Current theories on social justice are extremely diverse. Liberalisms, collectivisms, social critiques, communitarianisms, nationalisms, populisms, solidarisms - note the plurals - all talk about the same 'idea', namely that both the whole of society and all its parts should have "each their right" to "the good life" (as Plato says).

**Induction.** Induction is essentially taking samples in a comprehensive theme. In this case: social justice. The conversation partners, in works such as *The State* or *Laws* (two main dialogues) come to their right to speak. This was - incidentally - an Athenian method that was common in the 'agora' (popular assembly as direct democracy). Herodotus of Halicarnassus (-484/-425) methodically lets other opinions speak first in his *Historiai* and then puts forward his own opinion. This method thoroughly dominates Plato's dialogues: even if one person - usually Socrates - leads the debate, what he states is still closely related to what the others claim. Now, it is clear that the idea of "social justice", as soon as it is discussed from a plurality of - sometimes contradictory - interpretations, always shows a plurality of samples. However incorrect some opinions may be, they nevertheless illuminate the complex (the coherence) that society is as a place of social justice, from one point of view or another. This induction naturally contains generalizations, but it is first and foremost a generalization, i.e. the situating of a component within the system

of the total society. Each speaker exposes as a sample one aspect of the complex.

**The idea.** Plato starts from 'chance' situations in his dialogues, but he does not lose himself in anecdotal talk, but he leads all opinions to a principled theme. In Plato's case, this is one or another idea. What is an 'idea'? It is always a summary of different data - here the components with their own interpretations concerning social law -, a summary that includes both the general and the overall. There are those who deny the Platonic idea, but to stay with our actualization - the current social theories - it is evident that everyone, however differently they think as conversation partners, is talking about the same theme.

**Material object / formal objects** . Scholasticism left us a pair of opposites: one and the same material (understood: undefined) given is susceptible to a plurality of 'formal' (understood: perspectival) approaches that reveal the unfolded wealth of the undefined, i.e. directly given, theme in bits and pieces (10.4). Thus, social justice is a material object (direct given or phenomenon) that is susceptible to a plurality of formal, i.e. one-sided samples (in the case of social law: one-sided samples determined by partial interests). Now, what is the idea in this case? The one encompassing social justice. An idea is an encompassing material object that sees its wealth unfold in the history of the formal objects that it provokes in people.

### **3.3.3 Biological induction**

The term 'biology' was introduced by G. R. Treviranus in his treatise *Biologie oder Philosophie der lebenden Natur* (1802) and independently by J. - B. Lamarck (1744/1829) also in 1802 in his *Hydrogéologie*. This was to give a name to everything that is the study of living things.

Bibl. Sample : Ch. Lahr, *Cours* , 604/624 ( *Méthode des sciences biologiques* ). Lahr designates “living matter” as the object of biology. In doing so, he separates this type of matter from inanimate matter, but without minimizing the material - and therefore susceptible to physics - character of living matter. Indeed: the method of biology is highly physical. A number of layers can be distinguished in it.

**1. Natural scientific layer.** - Anatomy, physiology, ethology, - pathology (the study of diseases) indeed show a physical (i.e. biochemical) slant.

Application model: A veterinarian, called to a cattle breeder with beautiful, milk-rich cows, is confronted with a cow that is “not doing well”. The

veterinarian breaks through his animal-friendly relationship with the animal in order to, as a scientifically trained person, get to know the animal. Result: Symptom research, questioning of the cattle breeder, anamnesis (research into the past). Once this far, he can prescribe a medicine.

**2. Biological layer** . - Biology is science not of “life” or “living matter” but of living individuals. Studies science “facts” (and “laws”), a veterinarian (like a physician) stands for individual beings.

**2.1. Individuological layer** . - This cow - “a particularly affectionate and sweet animal” says the farmer - is not that other one over there. A living being - certainly on the animal level - is much more individual than a lifeless matter. It is therefore much more unpredictable and complex.

**2.2. Typological layer** . - the “cuddly - sweet” cow is also a member of a biological type or species. She is a ruminant. (a) split hooves, multiple stomach, molars with flattened crowns. (b) Excluding claws, single stomach, canines and molars with tubercles on the crown (which defines a predator). Analogical induction. - Analogy is both similarity (a ruminant and a predator are both living beings) and difference (a ruminant excludes a number of characteristics of a predator). Analogy is both coherence (cows live in their own groups, possibly, as in tropical Africa - next to predators in the same biotope) and gap (ruminants avoid predators). In other words: the induction both as generalization (similarity / difference) and generalization (coherence / gap) leads to species distinction or typology.

Anyone who actually interacts with animals, even in the form of a pet or something, (circus people first and foremost) will confirm the above from experience - with animals that are more than 'living matter' in the materialistic sense.

**Facts but also 'beings'** . Biology - always according to Lahr - pays attention to facts that represent life phenomena, so that laws can be established, but it also pays attention to beings - living beings - whose forms and individuals can be summarized in 'types'. In this last sense, biology includes its own typology (type theory). It is this last aspect that interests us somewhat more here and now.

**Note** : Ethology.- (a) In a first sense, 'ethology' dates from 1. Stuart Mill (1806/1873) and W. Wundt (1832/1920) who positively studied the habits of people within historically developed societies. (b) Konrad Lorenz (1903/1989)

and Nik. Tinbergen (1907/1988) and their fellow thinkers made it a kind of natural science - derived from zoology - with animals and their behavior within their natural environments as its object. Such a study is intertwined with other biological disciplines such as physiology, ecology but also with psychology.

**Type theory** . Let us take a cattle farmer standing in front of his cows. He looks at one of them. This living 'being' - the term 'being' here is in the sense of "individual being" - is to begin with an individual: "this cow here and now"! He distinguishes it from all others on the basis of unique characteristics, its shape, hair color, markings of its coat, inclination towards him, etc. But - according to Lahr - it is at the same time a biological type or species, namely a ruminant. There is no law here, but there is a type. A 'law' formulates at least two phenomena insofar as they mutually obey a necessary order. A type is a coherence of inclusion of a number of characteristics and exclusion of a number of other characteristics. For example, ruminants and predators do not belong to the same type.

**Induction** . This form of induction has two characteristics. 1. Observation: not so much experimentation and 2. Generalization: i.e. from a summative induction (a number of observed individuals) one concludes to amplifying induction (generalization to all specimens of the same type).

**Teleology** . Lahr argues that the inclusive and exclusive structure of the type finds its reason in the purposefulness of the living. So many mutually independent individuals, in such diverse environments, survive together from generation to generation, passing on the type.

**Ideal type**. Lahr realizes that the type is associated with larger or smaller deviations (on the basis of evolution). This makes him speak of "un type idéal", an ideal type that plays a summarizing role amid deviations.

**Note** : Lahr refers here to the comparative sciences as the basis par excellence for revealing the type. In this way, the coherence "organ / function" is central. The ruminant is 'cut' as e.g. herbivore which refers to the environment in which the ruminant naturally moves.

### **3. 3. 4 Human induction (understanding)**

Bible sample : *Sciences de l'homme compréhensives* , in: G. Thinès / A. Lempereur, dir., *Dictionnaire général des sciences humaines* , Paris, 1975, 199/202. It may be that D. Lecourt, dir., *Dictionnaire d'histoire et philosophie*

*des sciences*, PUF, 1999, does not mention W. Dilthey (1833/1911) at all, but in any case we grant this figure a place in our logic!

Joh. G. Droysen (1808/1884), the historian of Hellenism, states that 'Verstehen' is the strict and autonomous method to interpret history. W. Dilthey, H. Rickert (1863/1936) and especially M. Weber (1864/1920) further elaborate Droysen's specifically human-scientific method.

A first step is to intuitively 'understand' a singular phenomenon that offers a probable, plausible and particularly evident explanation if the phenomenon to be understood is 'zweckrational', i.e. rationally dealing with instruments

A scientifically valid interpretation, however, uses an 'Idealtypus'. Dilthey derives such a theory of types from the "organic worldview" of his teacher Fr. Ad. Trendelenburg (1802/1872), an Aristotelian. The 'ideal type' is a construction - it is a quasi-unattainable ideal - so that cultural phenomena are 'understood' not on the basis of the experiences of individuals but on the basis of a summary overview of a cultural whole. Two of Dilthey's works stand out in this respect: *Einleitung in die Geisteswissenschaften* (1883) and *Ideen über eine beschreibende und zergliedernde Psychologie* (1894).

**Hermeneutics.** That is the name of the method as an understanding of human soul life. The fellow human being experiences something. That is 'Erlebnis' (experience). He shows this. That is 'Ausdruck' (utterance). Such expressions are 'signs' that make the inner life of the soul (spirit) observable: getting to know the neighbor through those expressions is 'Verständnis'. (H. Diwald, Wilhelm Dilthey (*Erkenntnistheorie und Philosophie der Geschichte*), Göttingen, 1963, 153/170 (*Der Ausdruck als Mittelglied zwischen Erlebnis und Verständnis*)). One sees it: a kind of psychology plays an essential role.

Fellow human beings also express themselves in cultural systems that transcend the individual and his or her experience: they express their soul life in art, science, religion, jurisprudence, etc. These 'objective' expressions are also objects of understanding.

**Type theory.** Dilthey studies 'beings', individual beings, as realizations of types. Which is a form of induction, starting from historical facts that thus acquire a 'structure'. In this way he distinguishes three basic worldviews as cultural types: naturalism (the soul is oriented towards the satisfaction of man as a biological being in the midst of material living conditions), freedom idealism (the soul of man as independent of the material living conditions by

its spirit seeks free development in creative work), objective idealism (the soul of man seeks a balance between the individual and the world as a whole in harmony).

**Philosophy of life** . For Dilthey, “life” is the basic concept: “Life is the basic fact that must be the starting point of philosophizing. After all, that is what we know from within”. It is clear that this hermeneutic view of man as an animated being is fundamentally different from any physically oriented human science (cf. 1.4, H. Bergson's intuition). Which does not prevent Dilthey from granting such physically oriented human science a place, but not an absolute natural one.

### **3. 3. 5 Probability in syllogism form**

Bibl. Sample : Ch. Peirce, *Deduction, Induction and Hypothesis* , in: *Popular Science Monthly* 13 (1878): 470/482. Peirce has attempted to clarify the probable in simple words. At the front a differential: none - but few / most - all (whole).

#### **Barbara.**

GV. Most of the beans in this bag are white.  
This handful of beans comes from this bag.

RQ. Most of the beans in this bag are probably white.

Deduction. From the GV that most of the beans in this bag are white and that this handful comes from this bag, one concludes that probably most of the beans in that handful are white. As the universal set, so also - probably (because the GV includes a statistical component) - the subset. From most to probably most.

#### **Bocardo.**

GV. Most of the beans in this handful are not white.  
This handful comes from this bag.

RQ. Most of the beans in this bag are probably not white.

Or slightly rearranged:

GV. Very few beans in this handful are white.  
This handful comes from this bag.

RQ. Probably only a few beans in this bag are white.

Reduction. From the GV that in this handful only a few beans are white and that it comes from this bag, one concludes that probably in this bag only

a few beans are white. As the subset, so probably also the universal set. From only a few to probably only a few.

**Baroco .**

- GV Most of the beans in this bag are white.  
Most of the beans in this handful are not white
- RQ This handful probably didn't come from this bag.

Or slightly rearranged:

- GV. Very few beans in this handful are white.  
Most of the beans in this bag are white.
- RQ. This handful probably didn't come from this bag.

Reduction. From the GV that only a few beans in this handful are white and that most of the beans in this bag are white, it is concluded that this handful probably did not come from this bag.

Compare:

- GV. Most of the beans in this handful are white.  
Most of the beans in this bag are white.
- RQ. This handful probably came from this bag.

This too is a reduction. So this reduction also leads only to a probable afterthought, as does every reduction. But the inverted percent in the Baroco reasoning above leads to an enhanced negative probability. But even that afterthought is not more than probable, because the statistical component plays the role of "dog - in - bowling".

One recognizes Peirce's triad: "deduction / generalizing reduction / generalizing reduction". Some have difficulty distinguishing generalization from generalization. This is because Peirce took "this bag" as a model to indicate the whole, but take another model, and one sees the difference clearly.

- GV. All the flowers on this broom are yellow.  
Well, this handful of flowers is from this broom.
- RQ. So this handful of flowers is yellow.

What a deduction is.

- GV. This handful of flowers is from this broom.  
Well, this handful of flowers is yellow.
- RQ. So all the flowers of this broom are yellow.

What a generalizing reduction is.

GV. This handful of flowers is yellow.

Well, all the flowers of this broom are yellow.

RQ. So this handful of flowers is from this broom.

Which is a globalizing reduction.

Where “this bag”, because the connection between the beans in it and itself is merely local, leaves room for doubt, “this broom”, because the connection between its flowers and itself is not merely local but organic, undoubtedly indicates a whole (system) and therefore clearly the basis of globalization, not of generalization.

But Peirce, who had causal coherence in mind above all - and not general coherence - seems not to have seen this important nuance. Which does not prevent his triad from being very revealing.

### **3.3.6 Statistical induction**

Bibl. Sample : w. Salmon, *Logic*, Englewood Cliffs (New Jersey), 1963, 55f. An induction is called 'universal' if it gives a conclusion about 0 (none) or 100 (all) percent. It is called 'statistical' if it gives a conclusion, not about 0% or 100%, but about all values in between.

#### **Syllogistic.**

X% of the copies of a set exhibit the feature.

Now, e is one copy of it.

So e has X% chance (the probability) of exhibiting feature k.

This is deductive reasoning (from all instances to just one instance).

#### **Syllogistic** . Borrowed from Ch. Peirce.

These beans come from this bag.

Well, these beans are 75% white (summative induction).

So all the beans in this bag are probably 75% white.

What an amplifying or knowledge-extending induction is. This is a reductive reasoning: from 'this' (subset) to 'all' (universal set).

**Sampling** . Induction is essentially taking samples. For example, in opinion polls: starting with 1000 respondents (summative induction), the information obtained is expanded to e.g. 6,000,000 Flemish people (amplifying induction). What is a reductive method.



**1. Conceptual scope** (quantitative aspect). The larger the number of samples, the more approximate the generalization. Note the a fortiori reasoning: the reason of probability or chance increases with the multiplication of samples. If one tests only two beans from Peirce's bag for their white color, then that is a very narrow basis.

**2. Conceptual content** (qualitative aspect). The more random the samples, the more objective (more true to reality) the samples are. Again, note the a fortiori reasoning: the reason for the chance of correctly interpreting increases. Primitives often speak to strangers (as ethnologists have experienced more than once): a reason to pay attention to the content of the sample! The way in which questions are asked can influence the answer: a reason to pay attention to that aspect of the content of the interview.

An application. A list is in circulation of men who were baptized and raised Catholic and who held high political office as extreme rightists: Hitler (Germany), Mussolini (Italy), Franco (Spain), Salazar (Portugal), Pétain (France), Pilsodski (Poland), Horthy (Hungary), Dollfus (Austria), Schusznigg (Austria), Tiso (Slovenia), Degrelle (Belgium), Pavelitch (Croatia). That is the GG. The RQ reads: "What evidential value does this sample have in the entire Catholic world?"

**Sample answer.**

**1.** This sample should certainly be supplemented ("counter-model method") with a list of Catholics who were also baptized and raised as Catholics and who held high political office but were convinced democrats.

**2.** The mere enumeration that the list is does not mention the time circumstances that were favourable to the extreme right, which would become apparent if one were to test non-Catholics on their political choice within exactly the same period.

**Conclusion** . One should therefore exercise some caution in drawing conclusions - especially generalizations concerning the entire Catholic world - on the basis of the theory of statistical induction. It remains true that in the same period so many Catholics - baptized/raised - as far right - came to power, which gives food for thought regarding the atmosphere that prevailed in Catholic circles in that period. A sample - however small - always provides its own information, however limited.

### **3. 3. 7 Hume's concept of 'induction'**

Bibl. Sample : J. Hacking , *L'émergence de la probabilité* , Paris, 2002. Oc, 23, Hacking states with M. Poovey, *History of the Modern Fact* , Chicago, 1998: "The fact in the modern sense is an atomic, isolated, independent fact, to be sure, but which can nevertheless serve as an 'indicium' (indication) and even as positive evidence for another isolated, independent fact". The "other isolated, independent fact" is, to be exact, a future fact.

**Criticism** . Is there anything in all that ever was, is now, ever will be, that is 'atomic'? Is there even one fact that is radically like nothing or connected with nothing? The concept of 'atomic fact' is at best a fiction. Every relation (partial identity) is pasted on afterwards, which makes it an artificial relation - not an organic - concrete one.

**Induction** . In this light, Hacking situates D. Hume (1711/1778) with his inductive statement: "Will this bread feed me?". Or: "How does one know that the sun will rise tomorrow?". Generally speaking: how can we predict future events based on observations from the past? We explain. Everything starts with singular, resp. particular atomic facts: Hume fed himself with bread a number of times (which is summative induction). These facts make future facts (which are equally singular, resp. particular) 'probable': "Will this bread here and now feed me?". Which is amplifying induction. La Logique de Port-Royal (1662) says on the subject: "One must believe that a fact will probably occur if the circumstances are given that are usually followed by the fact in question". (Quoted in Hacking, oc, 21).

If, then, Hume can expect - on the basis of 'habit' - that, just as in the past (knowledge-summarizing induction), future bread will nourish him (knowledge-extending induction), then the term 'habitual' implies minimal resemblance to the previous bread and minimal connection with it (e.g. same baking method, same bakery). Atomic facts cannot make that probability come true, unless one introduces resemblance and connection.

**Interpretation** . The previous loaf had its own essential total identity with itself. The future loaf also has its total identity (with which it coincides with itself). The difference between the two is in that sense undeniable. Thinking of both their total identities as one entails contradiction, because they are essentially different. What is true at the same time is that both loaves are partly identical: similarity and coherence between the two are undeniable. That entails predictive value and at the same time the probability that Hacking emphasizes so much.

**Novelty** . Hacking argues that the Renaissance first exposed this possibility.

However, we refer to the ancient Greek term “to eikos” or (plural) “ta eikota” in Aristotle (*Analytica priora* 2:27; *Rhet.* 1: 2: 15 e.g.). He opposes a positive fact with a sentence that expresses the probable. The terms in question are already common in Herodotus (*Rist.* 1: 155) and in Thucydides (1: 121; 4: 17). They mean “It is probable”. It is remarkable that the Greek term 'eikos / eikota' first of all means 'resembling' (which shows resemblance) and in that vein 'probable'. Immediately also 'reasonable' in the sense of 'acceptable'. If one were to ask an ancient Greek: “Will this bread feed me?”, he would - probably - say: 'Eikotos' (probably, plausibly, with reason yes). 'Eikos' in Aristotle also means "what is usually but not necessarily always to be found". Thus it is 'eikos' that parents love their children - with exceptions! The predictability of "Will these parents love their children?" is for Aristotle 'eikos' (yes, but not necessarily always) which implies that individually taken parental love for children for reasons in the past (summative induction) is 'eikos', probable, but never certain, although it is certain that 'usually' parents love their children. Whether the gap - in Foucault's style - between the cognition that precedes the Renaissance and the cognition that the Renaissance sees emerging, is as deep as Hacking seems to suggest, is therefore very questionable.

### **3. 3. 8 Analogical reasoning**

Bibl. Sample : J.F. Harris, Jr., *The Epistemic Status of Analogical Language* , in: *International Journal for Philosophy of Religion* (The Hague), 1 (1970): 4 (Winter), 211/219. The author claims: “Only if something is literally known about X is any analogical talk about X justifiable”. He cites W. Quine, *Word and Object*, New York, 1960, 15 on this subject: “Analogy in its basic sense is about things that are already known outside of analogy”. W. Blackstone, *Religious Language and Analogical Predication* , in: *The Iliff Review* XVII: 2 (1960: Spring), 24, is also quoted: “If one is to know something about God (or any other object) by analogy, then one must know something about God (or any other object)”. We will explain this further.

#### **Analogy.**

- “John is the cockerel the foremost of the children” (cf. 2.4) asserts that, as the cockerel stands to the hens, so John to the children. There is a connection twice, but the emphasis is on the similarity of the connections (going before) so that the cock and John are exchanged. Whoever speaks in this way does so from a given knowledge of both terms of the comparison.

- "Fire is smoke" asserts that as cause is to effect, so fire is to smoke. There is a double connection, but the emphasis is now on the connection (causation) so that fire is partially identified (causally) with smoke. Whoever speaks thus does so from a given knowledge of both terms of the comparison.

- ***In summary*** .

If GG is the role of the rooster and that of Jantje, then Jantje appears to be the rooster of the children. If GG is the role of the cause and that of the fire, then fire 'is' (the cause of) smoke. The GG means "the already known". Only then can analogy with reason be spoken of.

- ***Analogical reasoning***.

This is knowledge-expanding reduction. Within the solar system, the Earth is a planet with, for example, an atmosphere that makes life possible. Mars is also a planet within the same solar system. Could Mars - similar to Earth in this respect - also have an atmosphere with life? One reasons from given (GG) similarity to possibly more similarity. As long as Mars has not been tested in this respect, it remains a hypothesis.

"God is infinite insight". If both God and insight as well as infinity are not already known - GG - the sentence is irresponsible. Whoever speaks like this, does so from an experience of God and indeed as an infinitely exalted being and from an experience of insight in people and in God.

- ***Analogical reasoning***.

"God saves man in need". Just as a man in need is helped by a fellow man on the basis of his ability to help and his willingness, would God, who has the ability to help and willingness in an infinitely sublime way, also help a man out of need? Whoever reasons like this does so from a human model (= analogy) and expands his already given (GG) knowledge of God (as capable of helping and helpful in his sublime way) - on the basis of similarity with human behavior - to the conclusion that reads: "Would God also help in human need?" However, as long as the person who reasons like this has not actually and testably established that God helps, the reasoning remains a hypothesis.

Speaking about God. Harris sees three types of theological speaking. Whoever speaks about God in too human terms speaks 'anthropomorphically' and reduces Him to something creaturely. Whoever remains silent about Him in 'a holy silence' because He is too exalted to speak about (which would reduce Him to something beneath Him), disregards responsible human speaking. Whoever speaks about God in an analogical way acknowledges a minimal and essential similarity (and coherence) with God (which always

comes across as anthropomorphic speaking) but also acknowledges the difference (and the gap) that separates us from God (which always has something of the holy silence about Him).

***This chapter summarized.***

*In order for knowledge of to be possible, the image, the name and the definition must be present. Then our mind grasps the general concept. For Plato, in and above the concept, there also exists the idea. That is the Platonically understood induction.*

*The dialogical induction aims to educate people to think independently through different opinions and Socratic argumentation.*

*Induction is essentially sampling in an all-encompassing theme. It naturally contains generalizations, but it is first and foremost generalization, i.e., the situating of a component within the system of the total society. Each speaker exposes as a sample one aspect of the complex. In this way, one arrives at a summary of disparate data: many material objects lead to one formal object.*

*Biological induction attempts to summarize biological facts into forms and types, which is in line with physiology, ecology, and psychology. This form of induction observes and generalizes.*

*'Verstehen' as a method to interpret history, begins with the intuitive 'understanding' of a phenomenon. And that brings us to human induction. A scientifically valid interpretation, however, uses an 'ideal type', a construction such that cultural phenomena are 'understood' not on the basis of the experiences of individuals but on the basis of a summary overview of a cultural whole.*

*Hermeneutics is a method for understanding human soul life. Fellow human beings express their experiences through signs. Such signs can transcend individual experiences in art, religion, science. Dilthey discovers specific types of worldview in people: naturalism, freedom idealism and objective idealism. With "life" as the basic concept, Dilthey's hermeneutic view distinguishes itself from any naturally oriented human science.*

*In simple terms, Peirce attempted to clarify 'probability' in a number of deductive and reductive syllogisms.*

*Induction is essentially sampling; deducing a general rule from established phenomena. It can be universal or statistical. Valid sampling requires a sufficiently large conceptual scope and a correctly defined conceptual content.*

*Hume sees reality 'atomically', as isolated facts and asks the question how we can predict future events based on observations from the past. That is Hume's concept of induction. Given the many similarities and connections in reality, atomic facts are more of a fiction. Which entails the predictive value and immediately the probability that facts can repeat themselves in the future. 'Probability' as a philosophical concept was already known to the ancient Greeks.*

*Analogical speaking is only possible when both terms in which the analogy is expressed are known. Such analogical reasoning is a knowledge-expanding reduction.*

*One reasons from given similarity to possible greater similarity. As long as this is not actually tested, it remains a hypothesis.*

*So far some forms of and considerations about induction.*

### **3. 4 Systems of Authority**

#### **3. 4. 1 The argument from authority**

Bibl. Sample : W. Salmon, *Logic* , Englewood Cliffs (New Jersey), 1963,63/67 ( *Argument From authority* ). The author assumes the factual authority that persons (e.g. pop stars), groups (e.g. the research community of scientists), institutions (e.g. churches), texts (e.g. the scientific journal Nature) etc. enjoy. Questioner: "On what grounds is authority based?" .

**1.** "X asserts p. Therefore p is true." This is how the one who accepts authority reasons.

**2.** "The majority (possibly the great, indeed the overwhelming majority) of X's assertions have been established as true. Now, X asserts p. So p is (probably, very likely, indeed, most likely) true."

***From summative to amplifying induction*** . The one who accepts authority reasons from asserted statements to assertable, untested statements. The claim to infallibility stands or falls on this twofold basis, one of which is true, the other probable and likely to be true.

Authority is thus based on someone else's understanding. Let us take a physicist. This person, insofar as he is really a physicist, possesses in his mind a concept with a content and a scope. In this case it concerns a concept of 'nature' (i.e. in a current view "matter" insofar as accessible to exact (experimental - mathematical) approximation). This has been the case since the days of Galileo et al. at the beginning of modern times: natural phenomena - physical facts - only reveal themselves insofar as they display an experimentally and mathematically formulatable being. The physical concept immediately includes a number of facts, laws, axioms, theories, whether or not determined by a physicist himself. For example, the axiom "All matter is determined" is one partial concept in the mind of the physicist. For example, there are (in the physical sense of "experimentally - mathematically testable") 'particles' (e.g. electrons). For example, the law of gravitation applies. All this tested as much as possible, i.e. found true concerning nature and its parts. This tested concept is the reason for the authority of the physicist. That tested concept is in his mind.

Limited scope. Let us note that as soon as the physicist, even if he were an Einstein or a Planck, exceeds the scope of his tested concept of nature as the modern physicist defines it as its object, his conceptual content immediately no longer applies to the corresponding conceptual scope. He can immediately sink into incomprehension!

Strictly speaking, the argument from authority is a matter of conceptual logic that assigns a well-defined conceptual scope to every conceptual content - to the extent that it has been tested, of course.

### **3. 4. 2 Faith**

An awful lot has been written about faith. When one tries to sort it out, one doesn't get very far: definitions and propositions on the subject diverge and converge so much! We will limit ourselves to what follows.

**Our paradigm** . "Maaike believes that there is a breeze outside". Philosophers of language since B. Russell (1872/1970) see a "propositional attitude" at work in such a statement, i.e. an attitude towards a 'proposition' (a sentence or statement). Symbolic abbreviation: "X (Maaike) believes that P (there is a breeze outside)". The truth conditions of this are then sought. A discussion has been going on about this since 1950. We will limit ourselves to what follows.

**Evidence types** . J. de Vries, Gewissheit, in: W. Brugger, Hrsg., *Philosophisches Wörter-buch*, Freiburg, 1961-1, 121f, distinguishes certainties

on the basis of evidence types. Three types of belief (conviction) can be distinguished immediately.

- **1.1 Objective certainty.** There is immediate (direct) presence of the fact that shows itself (phenomenon): Maaïke herself was outside for a moment and experienced the breeze herself. Here we are dealing with tested reality as a reason (condition of truth) for belief. There is also no middle term between Maaïke and the breeze.

- **1.2 Objective certainty .** There is indirect presence of the given that shows itself via an intermediary term: Maaïke sees the leaves of the lime tree leaning in an eastward direction but gently. Maaïke herself experiences the leaning leaves herself. From this she concludes by reasoning - "that there is a breeze outside". A transitive relation is noticeable: from Maaïke via the leaning leaves to the breeze.

**Note :** Here coherence and similarity play a decisive role: the leaning leaves are related to the breeze, and today's breeze is similar to previously experienced breezes.

- **2. Subjective certainty .** The given is neither directly nor indirectly evident. Maaïke "just thinks it because she likes soft breezes". That is why she "believes" "that there is a breeze outside". In fact, it reads: "Maaïke wishes there was a breeze outside".

**Another arrangement .** Lahr, Cours, 682/683, sees it as follows.

- **1.** Colloquial meaning. "I take the train because such transport is still the cheapest. I believe that". Lahr reduces something like that to 'opinion'.

- **2.** Philosophical meanings. Here he distinguishes two types.

- **2.1 .** The broad meaning. Many philosophers - including J. Stuart Mill - call every conviction 'faith'. Lahr attaches less importance to this.

- **2.2.** The narrow meaning. Strictly speaking, Lahr's narrow meaning comes down to what was said above about the objective but mediate form of evidence and especially the subjective form of 'evidentie': "Maaïke herself does not experience the given directly but 'believes' it on the basis of (= reason) an indirect contact or a purely subjective motive".

**Authority and testimony.** The middle term can be authority. For example: "Scientists published in Science that reproductive cloning in rhesus macaques is simply impossible. At least that is the experience at the University of Pittsburgh (USA)". Authority, i.e. the correct concept regarding one or



another domain (scope of concept), is here the middle term between the one who believes what scientists say, and what they claim, i.e. “that reproductive cloning in rhesus macaques is simply impossible (...)”. The same applies to testimony in the ordinary sense: the credibility of the one who testifies is the middle term between the one who believes, and what the witness says. So in court and constantly in everyday life: one 'believes'!

'It is as St. Augustine once said: “There is so much that we 'believe' day in, day out because we have not directly encountered and experienced the given.” This is so true that it also applies to scientists: they 'believe' most of what they claim, on the basis of other scientists who have tested the given themselves.

### **3. 4. 3 Consensus gentium**

Bible st.: G. Bolland, Hrsg., *Hegel's kleine Logik*, Leiden, 1899, 107/109. As valid proof of God, Cicero (-106/-43) cites the unanimous conviction of the peoples (“consensus gentium”) on this matter. Anyone who reasons in this way develops an argument from authority. Let us consider how Hegel - in 1830 ( *ECLyklopedie der philosophischen Wissenschaften* ) - responds to this.

- **1.** The step from the proposition that a cognitive content - e.g. "God exists" - is in everyone's consciousness, to the proposition that this content necessarily lies in the nature of consciousness itself, is obvious. Hegel's criticism. Only if the nature of consciousness itself is not tested for the particular and the contingent in it, can the unanimity of all concerning a cognitive content push through a prejudice - namely, that this prejudice belongs to the nature of consciousness itself - as something authoritative. That which shows itself as universally present, immediately shows itself as necessarily universal, is meanwhile not sufficiently proven by the consensus gentium.

- **2.1.** For even if such a thing were a satisfactory proof, it has been abandoned as proof in favor of faith in God, on the ground that there are individuals and peoples in whom faith in God is not present.

- **2.2.** If common belief were a criterion of truth (Note: a means of judging the character of truth), then every generally accepted superstition and every generally accepted idolatry would count as truth. For the Indian the cow, the monkey or the Brahmin, the lama, is a god, not on the basis of reasonings and syllogisms but he believes it.

- **2.3.** Finally, the average belief that God exists is limited to the fact that he is there, without insight into what he is. Precisely this last would be a real insight and would presuppose reasoning. With the position “that he is there”, God as an object of religion explicitly shrinks to “God without more”, understand: “the vague supersensible”, and the content of religion has shrunk to its minimum.

If it were really necessary to be content with something like the preservation of the existence of a god or even the establishment of faith in that diminished form, then one would have to be astonished at “die Armut der Zeit” (the poverty of our age) which regards even the most questionable aspects of religious insight as a gain and has gone so far as to fall back in its church on that altar which once stood in Athens and was dedicated “to the unknown god.”

**Note :** One sees that Hegel does not value a common unanimity about any cognitive content. What is, 'vernünftig' (rational, as Hegel understands it) seen, a common consciousness actually worth? It may be a common superficiality!

His criticism also shows that the concept of 'God' in Hegel's interpretation is a very important concept: he is astonished by "die Armut der Zeit", his time, in terms of the concept of God. Although it is a fact that Hegel rethinks the traditional concept of God (mainly from the Bible) in a very 'vernünftige' (rational) way (it sometimes seems somewhat pantheistic) and thus distances himself from traditional Christianity in this respect, he nevertheless retains a sublime concept of 'God'.

What interests us in this text of Hegel is primarily the form of argument from authority that is the consensus gentium.

### **3. 4. 4 *Mentality is group axiomatics***

We take two “faits divers”, random samples, among thousands.

Bibl. Sample : SA, Meurtre ( *L'honneur n'excuse pas tout* ), in: *Journal de Genève / Gazette de Lausanne* 23.08.1996. On 10.01.93 an Albanian living in Switzerland murders his wife's lover, without being able to kill her, whereupon three months later the young woman's own father kills his grandson and injures his daughter and granddaughter.

It becomes a court case. The grandfather justifies himself: "I only applied the code of honor of my community. In fact, I did not just kill. However, I did

- as he explained in court - act passionately given the intense state of mind resulting from the duty of revenge."

Bibl. Sample : T. van Dijk , *Turkse mores* , in: HP De Tijd 20.02.96. The rule of conduct is as follows. The family member for whom the prison sentence is the least unfavourable is ordered to take revenge, i.e. "to right the wrong". For example: if the father is dead and the eldest son is married, then the youngest son takes revenge on "the madman" who has it in for the mother.

The author. "Especially when it concerns acts that are punishable in Turkey but that are committed to restore the honor of the wife, family, sister, the perpetrator himself and for which admiration is gained in one's own circle". Note: Such 'mentality' is a form of heroic morality and therefore the avenger considers himself a 'hero' in the eyes of the group.

***Axiomatically-deductively seen*** . A mentality is - logically speaking - an axiomatics, i.e. presuppositions of a system that is unconditionally accepted as a "code of conduct and honor". From this the group members deduce their behavior.

Axiom. "A person whose honor has been violated can only regain respect within the Turkish community if that honor has been restored." That restoration of honor takes the following forms.

***Deductions*** .

1. "That means killing your sister's rapist."
2. "That means that a son will kill his mother if she gets involved with other men"

***Decision*** . Given the moral axiomatics - mentality - within a group as an argument of authority, after a misdeed that involves dishonor for those involved, legal redress - 'revenge' - is predictable!

Outside the 'milieu' of e.g. Albanians or Turks this comes across - given the other, e.g. Christian or modern or postmodern axioms - as irresponsible or even 'irrational'. Within the 'milieu' however this comes across as 'responsible' and "morally good". The use of language is partly determined by particular axioms.

As *La Logique de Port-Royal* said: people - usually - reason correctly, but starting from possibly questionable axioms or axioms subject to critical examination, and people are usually not aware of the finiteness of their environment and its presuppositions.

### 3. 4. 5 *White mentality*

Bibl. sample : L. Debraine, *Pour soulager sa conscience la France restitue la "Vénus hottentote"*, in: *Le Temps* (Genève) 25.02.2002, 28. Sawtsje was born in 1789 on the banks of the Gamtoos (South Africa). Together with her brothers and sisters she ended up in slave service on farms.

In 1807, near Cape Town, she ended up with a Boer, where she became addicted to tobacco and gin.

'Hottentot Venus'. According to JC. Tamišier, *Dictionnaire des peuples*, 1998, 55/56 (Bochimán), the Bushmen are the original population of South Africa. Two thousand years ago they were driven by the Khoisan and the Bantus to the Kalahari desert (Namibia, Botswana, South Africa). But the Khoisan (Khan) also form a language group spread over a number of tribes. The Boers called those who spoke like that, 'Hottentots' ('stammerers'). That is why Sawtsje was called "the Hottentot Venus".

**Steatopygia**. With her tribe mates, Sawtsje displayed very striking thighs and elongated labia ('steatopygia'). This is reminiscent of the prehistoric Venuses. In 1810, a British surgeon persuaded them to travel to London to exhibit her body for payment. She thought that in this way she would be "appreciated as a White person".

Exhibited. From now on she is called "Saartjie Baartman". For four years she is dragged around England - despite the protests of the abolitionists (who fought for the abolition of all kinds of inequalities). Incidentally: in 1811 she was even baptized as "Sarah Baartman"! But the laughing and mocking success of the exhibitions ebbed away.

In enlightened France. She is sold in Paris to a man who exhibited bears and monkeys. Her intelligence was tested: it turned out that Sarah had an excellent memory and spoke fluent South African and English and was learning French. On the night of 29.12. 1815 Sarah dies of a severe fever that was made worse by a large dose of alcohol.

The French Lumières. G. Cuvier (1769/1832) and his fellow thinker G. Saint-Hilaire (1772/1844) found that Sarah approached the apes. Whereupon L. Debraine remarks "that this confirmed both their racist theories". Cuvier, the founder of paleontology, makes a cast of Sarah's body but removes the brain, genitals and skeleton. He records his autopsy in sixteen pages, nine of which are devoted to the precise 'description' of Sarah's sex, breasts and thighs.

Rehabilitation. The abolitionists were very late in achieving this. In 2002, France returned Sawtsje's body to South Africa - "to settle his conscience" (according to Debraine)! More than seven thousand people solemnly said goodbye to Sawtsje that year with songs and dances, with poems and rites that underlined the human dignity and identity of this 'wild' woman. In the valley of the Gamtoos where she saw the light of day, she now rests "far from the European barbarians".

### **3. 4. 6 Method of Orthodoxy (Ch. Peirce)**

Ch. Peirce distinguishes in the method of authority (see 1.2.) 'orthodoxy': (1) there is a class of people "who know" and (2) there is another class who accept what those who know assert as true and are therefore 'orthodox', i.e. live in agreement and obedience with the authorities. One should not confuse 'orthodox' with 'sincere' (which is a mental state such that one honestly admits what one thinks inwardly). We illustrate with what follows.

Bibl. sample : I Margolis, *Ces savants excommuniés* , in: *Courrier International* 195 (28.07.1994, 34. The French text is a translation of a text from The Sunday Times.)

**1. Facts** . "Before their theory was accepted, L. Pasteur (1822/1895; founder of microbiology) and A. Einstein (1879/1955; founder of the theory of relativity) were dismissed as "dangerous aberrations". Th. Edison (1847/1931; known for his Edison effect) was accused of deception when he showed his electric lamp. The brothers Wilbur Wright (1857/1912) and Orville Wright (1871/1948) were not believed for two years after their revolutionary flight, because "science had proven that a machine, if it weighed more than the air, could not possibly fly". When Alfr. Wegener (1880/1930; geologist) presented the theory of continental drift, he was ridiculed. ( ... )".

**2. Heretic.** BBC 2, in a TV series 'Heretic', asked the question: "How should respected institutions respond when renowned scientists proclaim revolutionary theories?" The series showed six 'heretics' who accidentally discovered a new truth 'against established opinion' and were therefore expelled from the scientific community.

**Reactions from established scientists** . We cite two.

**1.** L. Wolpert (professor of medical biology): "The BBC series is an absurd series. The way in which the broadcasts were presented makes me delirious with anger. ( ... ). I categorically opposed it ( ... )".

2. J. Maddox (physicist; editor-in-chief at the time of Nature, the authoritative journal):

“R. Sheldrake, who in his *A New Science of Life* proposed morphogenetic fields as a hypothesis, replaces science with magic. Such a thing may be condemned in the same terms as those of the popes who condemned Galileo. And for the same reason: it is heresy.”

It is more than surprising to hear such language! But it betrays a mentality among “those who know” in scientific circles. It is as if a Maddox has not advanced any further since Galileo's condemnation. Note: Maddox himself clearly states that Sheldrake presents his concept of “morphogenetic field” as a hypothesis, this is as a truth not yet established. The concept of “morphogenetic field” implies what follows. Once somewhere on earth a biological being was able to cross a boundary and introduce something new, it is established that elsewhere around the globe beings of the same species show the same transgression without direct physical contact with the groundbreaking being. The fact that it was still only a hypothesis should have prompted Maddox to be cautious.

***This chapter summarized*** . *Whoever accepts authority reasons from established and true assertions to ascertainable, untested assertions. One goes from summative to amplifying induction. Thus the physicist possesses the concept of 'nature' that has a content and a scope and has been tested as much as possible.*

*There are a variety of definitions and propositions regarding belief. Philosophers of language speak of a “propositional attitude”, where one seeks the truth conditions. Three types of belief can be distinguished. There is objective and directly experienced certainty, indirectly experienced certainty and subjective certainty. Other classifications speak of 'opinions' and 'belief' defined more broadly or narrowly. Credibility of the witness is the middle term between the one who believes and what the witness says. There is much that we 'believe' every day.*

*Unanimous conviction is sometimes used as an argument from authority. Untested, however, it can be a prejudice.*

*A unanimous conviction is also found, for example, in a group axiomatics: i.e., presuppositions of a system that is unconditionally accepted as a “code of conduct and honor”. From this, the group members deduce their behavior.*

*Outside the group, such axioms may appear irresponsible or 'irrational', but within the group they appear 'responsible' and 'morally good'. Although one usually reasons validly, one is not always aware of the finiteness of one's own axioms. This also applies to a 'white mentality' that could only posthumously recognize the dignity of a 'wild' woman. This also applies to a specific 'scientific' mentality that, to use Peirce's term, rejects new hypotheses and propositions too orthodoxly.*