

## 4. 6 Science problems

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### 4. 6. 1 The standard concept of 'science'

Bibl. st.: J.P. Van Bendegem, *Until finitude (On science, New Age and religion)*,

Antwerp/Baarn, 1997, 29/46. Steller outlines the "standard image" of science as follows.

1. Basic data come from observations, experimental or not, numerical or not, performed "in the world" or in special rooms or not.

2. Generalizations, patterns, laws are sought on that basis.

3. Theory is formulated o.g. what comes before, in the framework of a reasoning system (mathematics in quantitative sciences, argumentation in qualitative sciences).

4. Derivation of new assertions from theory, however, in such a way that they are testable by means of experiments or observation control. The latter decide whether to confirm or disprove the theory.

**Value judgment.** "The standard image is not so much an ideal representation as an illusion, if not a falsification." (O.c., 43). Steller then paints what he calls "a realistic picture" of science.

1. Science is problem solving. That is what it is "essentially."

2. Science predicts. Once it has reached at least a degree of "maturity," prediction is important. But it is not "the ideal to be pursued."

3. Science declares. "Patterns, regularities, laws, theories also allow understanding of the structure (. . .) of things. This allows us to answer why questions." (o.c., 44).

4. Science includes ambiguity. In almost all sciences, multiple theories exist at some point. For example, physics and understanding explanatory theories.

5. Science is moving forward. Not linear but like a tree diagram in many directions. Now follow two features that situate science in a broader framework.

6. Science demands a metaphysics. The latter is already present from the simplest of determinations: "What entities exist? Are there electrons, atoms? ( ... ) Are there mental states? Often this metaphysics is implicitly given (u.)." (o.c., 45).

7. Science is a socially embedded process. As part of a culture. Completeness - the answer to all questions inside and outside of science - is not deducible from the previous seven points. Science, in other words, is finite!

Note: It seems that the proposer writes off the standard view as a fictitious ideal and wants to emphasize science as a process. This recalls Aristotle's distinction between analytic (fixed ideal) and dialectic (science in the making). Or to the scholastic distinction between "ordo intentionis" (the order in intention) and "ordo executionis" (the order in carrying out intention). Every human ideal seems simple; its execution shows what that simplicity holds concerning complications. Science is one application of this.

#### **4. 6. 2 *The finiteness of science***

Bibl. st.: A. Chalmers, *What is called science? (On the nature and status of science and its methods)*, Meppel, 1981. The work talks about the four epistemologists, Karl Popper (1902/1994), Imre Lakatos (1922/1974), Thomas Kuhn (1922/1996), Paul Feyerabend (1924/1994). The four have explained the boundedness of science but we pause to consider Feyerabend. We summarize.

**1.1** "Anything goes." In his *Against Method (Outline of an Anarchist Theory of Knowledge)*, London, 1975, Feyerabend observes that the progress of science - including physics - is unpredictable. Although methodical rules of conduct are a necessity, they do not contain a sufficient reason to explain the actual history of science - especially the scientific revolutions therein. In other words, there is no linear and thus deducible progress in scientific knowledge from what goes before. From the narrow perspective of scientifically acquired knowledge only, one may expect seizures.

**1.2.** Mutual "untranslatability" of scientific theories. Even all observation worthy of the scientific name - occurs in the light of some theory. Now, in some cases the axioms of more

than one theory concerning the same thing to be explained differ so much that they cannot be translated into each other's terms, so contrary are they! If a scientist then makes a choice, he falls into sometimes strongly subjective preferences.

**2.1. Soundness of science.** Scientific "knowledge" is not necessarily more truthful than non-scientific knowledge. In other words, Feyerabend swears it is

'scientism' which holds that scientific knowledge is ipso facto valid: an outdated-seeming Aristotelian theory or a Marxist-colored interpretation may contain an element of scientific soundness.

**2.2. Validity of 'alternative' methods.** We mention first of all that George Sarton, the historian of science, when checking Galilei's biography, notes that the great pioneer of modern science refused to even investigate the influence of the moon on the tides for fear that it would confirm the astrology he rejected. To which Sarton replies, "Such a thing is no better than superstition. Such behavior by scientists appears to exist today: Feyerabend denounces the fact that scientists who swear by "science" lightly reject other - alternative - forms of knowledge without sufficiently investigating those other forms of knowledge. Yes, the most superficial examination as well as the unsophisticated arguments are taken as a sufficient reason not to seriously consider alternatives. In his view, "magic" e.g., in the form of astrology or voodoo can just as easily contain scientific validity.

#### ***4. 6. 3 Boulder mentality/boulder science***

Bibl. st.: A. Crisinel, *Mendeleev (De l'ordre dans les atomes (1869)*, in: *Le Temps* (Geneva) 13.10.1999, 56.

**1. Of a rock-hard mentality.** First part XIXth century: chemistry in full development. And in full confusion: no coherent classification ordered the then known elements.

1869. D. I. Mendeleev (1834/1907), the youngest son of a family of seventeen children in Tobolsk (Siberia), studied mathematics and science in Petrograd and in France and

Germany chemistry. He sets to work organizing the chemical elements: on a cardboard he writes - vertically (now it is horizontal) - the name of the 63 then known elements, each with its atomic mass and its main properties. Discovery. By arranging them according to increasing atomic mass, he sees that the properties evolve with them and in such a way that a limited sequence repeats itself after an interval (what is now called "periodic table").

**Open spots.** Wherever Mendeleev - logically reasoning - suspects a hitherto unknown element, he leaves a place open. In other words: he discovers the basic configuration of chemical elements measuring the places that are yet to be filled in. He even dares to correct some atomic masses because they seem to him - considering the whole system - incorrect.

Icy reception. The publication of his first "table" - actually "configuration" - was received very coolly by chemists.

## **2. Toward rock-solid science. However, the tide will turn.**

**1875.** Frenchman Lecocq de Boisbaudran discovers gallium. 'Gallium' named after the Latin 'gallus' (rooster). (Lecocq in French is 'The rooster'), which made the discoverer want to make himself famous. Mendeleev had provided it as 'ekaluminum'.

**1879.** Independently of each other, L.F. Nilson and P.T. Cleve discover the scandium (after "Scandia," the Latin name for Scandinavia) that Mendeleev envisioned as an ekabor.

**1886.** Cl. Winkler discovered germanium (after the Latin name "Germania" for Germania) that Mendeleev had predicted as ekasilicon.

Mendeleev died moments before N. Bohr and E. Rutherford designed an atomic model that explained the periodicity of Mendeleev's "table."

**1955.** Americans discover by synthesis the element 101 which they - to honor Mendeleev - christen "mendelevium."

## **4. 6. 4 Statistical research on paranormal phenomena**

R. Haynes, *The Bidden Springs (An Enquiry into Extra-sensory Perception)*, London, 1961, 234ff, talks about the excellent scientific scope of the statistical or probability method concerning what she calls "psi phenomena."

1874. Ch. Richet, *La suggestion mentale et le calcul des probabilités*, in: *Revue philosophique*, suggests that perhaps probability calculus can be employed in connection with trials of playing cards to prove the existence of clairvoyance.

1912 and 1927. It was not until 1912 that it was tried on a small scale at Stanford University (USA), and in 1927 the method was thoroughly applied at Duke University (North Carolina, USA)

led by J. B. Rhine and his wife, two young biologists. In 1934, Rhine's Extra - Sensory Perception, the first ever report on scientific research on "extrasensory perception" (E.S.P.), was published.

The triple importance. Haynes argues that Rhine's performance is critical.

1. In today's climate of thought, a majority of "people" (meant mostly scientists) argue that the language of the exact (mean: experimental - mathematical) sciences is the only language to represent tested facts. Well, Rhine has proven within such language the existence of psi - faculties. Before that, the vocabulary to talk about psi - phenomena was that of the human sciences which are more life-like but less precise. In other words, Rhine translated the knowledge of a vital fact of a given (human science) language use into another (an exact) language use ...

2. The fact of the existence of psi implies that the conceptions of the essence of human personality that have been in place since the era of J. Locke (1632/1704), the founder of English Enlightenment (enlightenment, modern rationalism), are inadequate, among other things, because it has been proved that among the aspects of human personality there is something that does not depend entirely on time and space and the direct data of the senses.

3. The main result of Rhine's work is that over time it can serve as a basic language such that a synthesis between modern rationalism and what exceeds that kind of rationalism is possible, a synthesis that has not existed since the XIII century.

**Note:** The fact that statistically significant results were obtained from psi - gifted people proves something about the frequency of psi results but does not really say anything about the nature of psi.

Writer admits. Some of Rhine's conclusions are in need of criticism. Thus, of course, the thesis that because psi phenomena are called "spiritual" (incorporeal), they are at once necessarily good in all their manifestations. His attempt to conclude from the existence of psi to the existence of God shows a lack of knowledge of formal logic, philosophical thought and any theology where it speaks of guilt and forgiveness.

Yet - according to ever writer - such reasoning is articulated within the language of those who recognize no other language. This may lead these to interpret the term "God" not simply as an occasion for "subjective" feelings but as a given for thought. "Such a thing is of the greatest possible scope for the present and for the future" (o.c., 236).

**Note:** Even the latter is open to criticism. For the question arises whether within the language of the exact sciences there is room for something like 'incorporeal' or 'God'. That psi exists has been scientifically proven via the detour of probability - which demonstrates its frequency but not its very being - and that is somewhat amenable to universal acceptance by the international research community - but the

facts prove it: always skeptics find some 'explanation' so that they do some justice to the fact but without being compelled to do such phenomena justice."

#### **4. 6. 5 A dose of glare.**

Bibl. St.: D. Servain-Schreiber; *Guérir, le stress, l'anxiété et la dépression sans médicaments ni psychanalyse*, 2003, Paris, 110 ss.: When great advances have taken place, before any theory can explain them, they have systematically met fierce resistance on the part of established science. One of the clearest examples of this is the history of Doctor Philippe Semmelweis. He was the Hungarian doctor who demonstrated the importance of controlling infection in childbirth, twenty years before Pasteur's work. In the maternity ward where the young Semmelweis was an assistant at the time, more than one woman in three died of fever a few days after delivery.

Semmelweis had the extraordinary intuition to propose the following experiment: all hospital doctors, who often performed dissections with their bare hands before going into labor, should wash their hands with warm water before touching the genitals of the expectant mother. He had the greatest difficulty in getting this idea accepted (...). The results of his experiment were exceptional: in one month, the mortality rate dropped from one patient in three to one in twenty. The main consequence of this experiment of Semmelweis was ... his discarding. His colleagues, who found this hand washing with hot water annoying, organized a mutiny and obtained his resignation. Finding no good reason at the time for such results, Semmelweis was ridiculed, and this notwithstanding his brilliant experiment. He died, almost insane, only a few years prior to Pasteur's discoveries.

Bibl. st.: Torey Hayden, *L'enfant qui ne parlait pas*, Paris, 1992 (or.: *Ghost Girl* (1991)). T.Hayden is a world-renowned psychologist specializing in problem children. In 1987, in Pecking, near Falls River (Canada), she enters a class of four children. In addition to three boys, there is the girl Jade Ekdahl, "the child who did not speak."

Jade. The first day in class, the three boys kicked up a fuss. But Jade behaved as if she were in normal classroom settings: without being ordered to do so, she pulled out her math and reading notebooks. She completed class tasks and submitted them for correction. Whereupon she practiced spelling. Sometimes she would glance briefly in the direction of the teacher but mostly Hayden's presence left her completely indifferent (o.c., 15). Yet after many attempts toward mutual confidentiality, a period of growing contact began.

**Shocking details.** (a) Jade explained that one could obtain "milk" by sucking on a penis. "Little imagination is needed to think of sperm when thinking of 'milk.' A child of eight years cannot find such a notion on his own." (O.c., 108). (b) In a conversation after class, Jade said, "Ellie took a knife. She plunged it into Tashee's throat. Blood splashed out. Ellie caught it in an underbag". (O.c., 124). "Was Jade supposed to be believed? Had one actually killed a child - Tashee - and drank its blood? How could Jade know the taste of blood?".

**Satanism.** Others than Hayden posited Satanism with pedophilia AND child sacrifice.

To which writer: "I believe in "evil" but not in "an entity" (Note: meant Satan is revered in Satanist circles). Oh! Finally, I know too little about that". (O.c., 149). Consequence: Hayden sticks to "what psychologists and psychiatrists on average believe." A certain openness of mind (o.c., 219) - so she puts it - is necessary to believe in Satanistic practices: "If Hugh (Note: an acquaintance who knew occultism) had not discovered that specialized bookstore, (...) I myself would never have thought of Satanism when Jade spoke to me about the cat (Note: the blood of a cat belongs to the rite of Satanists) and the blood.

This was partly due to my ignorance in the matter". (O.c., 219).

Police. The police took Jade's allegations very seriously, investigated thoroughly, did excavations in the Ekdal's garden, turned over the barn in search of Tashee's remains.

Hayden's statements. The plural indicates undecidability within her axioms. Thus o.c., 73/74, 123/124, 138/139, 147. 1.1. Split personality: "I cannot bring myself to believe such a thing". 1.2. Hallucinations (delusions): "I don't like this hypothesis at all". 1.3. Inventions:

"Why would Jade invent such a thing?". 2.1. Abuses at home: "Does not seem to me to be out of the question". 2.2. Sexual abuse: "Some of Jade's reactions show a sexual tinge". This is how writer summarizes the possible hypotheses. They remain within the world of established rationalism.

In time, Jade leaves school. Writer tries to take stock.

1. During all those weeks of police investigations, meetings of social assistants and health experts, the purely psychological explanation was widely accepted. (o.c., 216). By "psychological" we mean "what the established research community assumes concerning psychological phenomena. Note: Reference should be made here to Th. Kuhn (1922/ 1996), in his *The Structure of Scientific Revolutions* (1962), in which he hails the concept of "scientific paradigm" as the axioms, the language, the methods, the problems that the research community assumes as sensible ("scientifically justifiable"). Hayden stays within the established "paradigm.

2. What goes beyond the paradigm. Hayden is not comfortable with this: some minor facts remained unexplained within the paradigm (o.c., 217). Thus, e.g., the fact that Jade did not want to be photographed, the fact that she skillfully handled magnetoscope and comescope when such equipment was unknown or little known. Likewise the symbol "a cross within a circle." Also torture by the group.

She has the courage to expand her information: in recent years (1981/1991), she learns, a considerable number of children have told scenes that are surprisingly similar (o.c., 218). More than that: often corpses of children are discovered (o.c., 221).

**Justification.** She does not overcome the contradiction between her paradigm and the "little facts."

1. "There was with me a dose of blindness": I was accustomed to interpreting all behavior in terms of psychology or psychiatry excluding any other interpretation (o.c., 219).

2. "Furthermore, there was in me without doubt a certain refusal: I did not want to see." Flying saucers, the snowman, the Loch Ness monster, occultisms are for her paradigm "modern folklore." (O.c., 219).

3. "Since I was still young and saw my career threatened, I underwent the pressure of professionalism." (O.c., 220). Note: One can see that what Kuhn calls "paradigm" is more than mere attention to all the facts and is more than freedom of inquiry (which does not mean to exclude another paradigm). The method of counter-models does not come into its own because



some of the facts are simply neglected! 'Counter models' here are "facts that do not fit into the paradigm."

**Note:** Satanism. J.K. Huysmans (1848/1907) a.o. in his *Là-bas* (1891) talks about a Satanism (which some say dates back to Gilles de Rais or le marquis de Sade) centered on a black mass with orgies. Satanism is also well known in the USA.

#### **4. 6. 6 Scientific interpretation of religion**

Bibl. st.: J.-Cl. Ruano-Borbalan, *La religion recomposée*, in: *Sciences Humaines* (Auxerre), Hors-série 41 (juin / juillet / août 2003), 4/7. The thesis that the proposer defends, he himself summarizes as follows.

1. People - understand: human scientists - in the 1960s and 1970s postulated that the decline of religion was irreversible.

2. Subsequently, the human sciences developed a theory of "secularization" (secularization, yes, secularization) that links economic modernization and scientific rationality with the decline of the churches. The current return - sic - of the religious gives such interpretations a hangover without, however, proving them unreal.

1980. At the end of the 1970s - when secularization in Europe, at least, seemed an inevitable phenomenon - a "return of the religious" manifesting great diversity occurred.

**Geopolitical.** In Lebanon (since 1975). In India: the conflict between the government and the Sikhs (same time). In Iran: in 1979 the Islamic revolution. In Poland: the role of Catholics in the fall of communism. In South Slavia: the conflict of religions (Catholics / Orthodox / Islamists). In East Germany: the role of the Reformed churches.

**Integrist.** Within Islam, Judaism ("Back to the Torah"), Protestantism ("Back to the Bible"), Catholicism (integristism). Neosacralisms. Steller counts the following movements to integrism: the Catholic charismatic movement, parachurch religions and sects such as Moon, Scientology, Jehovah - witnesses, a variety of mystical and / or esoteric movements. Steller labels as "integristich" everything that is hostile to scientific rationality, technological modernity and materialism and, at the same time, hostile to reducing religion to an individual-private choice. This only applies to some of the listed religious phenomena, but for the mystical and esoteric currents, for example, this seems highly questionable. Even more: instead of defining "integristism" negatively - the actual integrism seems first of all to be the intact ("integer"

in Latin) preservation and elaboration of what is given - handed down e.g. - because it is considered of high value.

**'Brain composition'** . Steller cites Y. Lambert, *Le devenir de la religion en Occident (Réflexion sociologique sur les croyances et les pratiques)*, in: *Futuribles* 260 (janvier 2001): "Confronted with the current religious changes in Western countries, the human sciences respond either with secularization theories or with brain composition theories.

**Humanities.** History, geography, sociology, anthropology, etc. are put forward by the author as the forms of knowledge capable of knowing what religion and religions are. But for all those who have a religious experience (they are called "homo religiosus"), that is precisely what is required! The observation and interpretation on such an observational basis of "practices", "beliefs" and the like may be amenable to propositions and theories that are somewhat universally acceptable by "the research community around the globe" but such observation and interpretation has yet to prove that one has thereby grasped the religious phenomenon, the whole religious phenomenon and only the whole religious phenomenon.

The fact that the main figure of the American secularization theory, the sociologist Peter Berger ("The Canopy of Heaven"), confesses, for those who want to hear it, that he was mistaken in his assertion that religions are in incurable decline, shows that he as well as his fellow thinkers are - to put it in his Hegelian way - 'unreal', not in real contact with religions and its course. Human sciences do show some reality but whether they grasp the whole phenomenon (its course: included), after such 'mistake' is very much in question. Especially this: most religious scientists do not have any serious sacred experience themselves or, if they do have them, they suppress them for 'scientific' reasons. So what would the international research community say if 'objective' research betrays lack of detachment?

#### **4. 6. 7 Serendipity (similarity and coherence).**

Bibl. st.: B. Kiefer, *Sérendipité*, in: *Le Temps* (Geneva) 05.06.01, 3. Kiefer is a physician and editor-in-chief of *Médecine et Hygiène*. He translates the English term "serendipity" into "sérendipité.

**Serendipity.** That is (1) searching for something and (2) finding something else that is also valuable. Starting from a task (GG/GV), seeking the solution (SOL) and following that, finding the solution of another task.

**Examples.** One looks for a key and falls upon a book one thought lost. Someone is looking for a marriage partner for reasons of supposed good qualities and discovers someone who has others so that he settles for life. One can read informatively and find only what one is looking for but one can browse absent-mindedly in a daily newspaper and fall upon a text that involves a turnaround in thinking, which one was not looking for.

**Examples.** For example, Sir Alexander Fleming (1881/1955) came up with the first antibiotic, penicillin. The discoverers of Viagra thought of everything but erectile dysfunction because initially Viagra was tested for its significance for heart patients but the latter complained of known side effects. Columbus sought the Indies and found the Americas.

**Scientific serendipity.** The "normal" course of scientific research is: observation (loose data), hypothesis formation (if not already there beforehand), deduction from that hypothesis of tests, execution of tests, results (affirmative / negative). That is the experimental method. To which Kiefer. A curious part of scientific discoveries, however, shows a surprising structure o.a. concerning fundamental research which, without that chance factor, would remain a poor affair. "It is as if, in order to break our habits of searching and thinking, we need serendipity."

**Medicine.** In recent years, researchers believed they would find new medicines based on "applied research," i.e. thanks to computers crammed with artificial intelligence. But they are coming back from it! The best thinking still comes from serendipity! As in Fleming's days.

**Personality.** Kiefer is of the opinion that in order to experience serendipity - a form of "being lucky" - one must not imagine that one has mastered the "heuristic process" (mean: the course that culminates in effective finding of solutions) and that one must be "possessed of the lust to find 'something', even if it were something insignificant." If one wants "heuristic or finding-lust" .

**Coincidence.** Serendipity has a peculiar coincidence structure. To begin with, there is a normal course of investigation (as outlined above). But at a given moment this first course is crossed by a second one that cannot be deduced from the first and is thus immediately unpredictable and comes across as a "coincidence" as long as one locks oneself into the first course but which is no longer a mere coincidence when one reckons that the first course has to do with a second course at a given moment that is an unforeseen, unforeseeable and thus

surprising moment. The peculiarity of the serendipity coincidence is that it brings with it valuable discoveries. In ordinary life, in scientific life. Thus, unposed problems are provided with their solution.

#### **4. 6. 8. This chapter summarizes:**

*Van Bendegem outlines the "standard picture" of science, calling it an illusion. He then outlines in seven points what he calls a "realistic picture" and sees science as an advancing process. Science does not answer all questions: it is finite.*

*Four well-known epistemologists, including Feyerabend, also agree. Feyerabend argues that progress is unpredictable, that scientific theories are difficult to translate into each other's terms, and that scientific "knowledge" is not necessarily more real than non-scientific knowledge. He denounces the fact that scientists dismiss other forms of knowledge lightly.*

*The history of Medelejev and the periodic table of elements shows the persistence of this scientist, the initial icy reception by the scientists, its verification and general agreement thereafter.*

*Statistical research on paranormal phenomena employs probability calculus to prove the existence of clairvoyance. Rhine's Extra-sensory Perception, the first ever report on scientific research on "extrasensory perception" (E.S.P.), was published in 1934.*

*Haynes argues that Rhine's achievement in the language of the exact sciences proved the existence of psi powers. Then, however, enlightened conceptions of the nature of human personality are not fully sufficient and a synthesis must be sought between modern rationalism and what that rationalism transcends. That via probability theory the existence of "psi" was proven says something about its frequency, but not about the essence of psi itself.*

*That scientists can be blinded in their scientific work shows us the story of Semmelweis and the confession of Torey Haden.*

*A lot of secularization notwithstanding, religion and various forms of neosacralisms continue to live a persistent life. Lambert puts forward a number of sciences that believe they*

*know what religion is. Yet, on the religious side, the question arises as to whether one has religious experience to make a serious judgment about it.*

*"Serendipity" stands for seeking something valuable and finding something else that is also valuable. A number of scientific discoveries are due to a form of "getting lucky."*