JCOM 3 (1), March 2004

A short psychoanalisis of science

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At the beginning of the new millennium, science is not only a neutral system or an objective methodology of knowledge, but also the implicit basis of the totality of our culture. Though science and its derivates are omnipresent in daily life, its basic ideologies and functional mechanisms are in most cases not fully visible to the subject. In using the most evolved systematical-critical model of psychoanalysis provided by the French thinker Jacques Lacan (1901-1981), an enlightening analysis of western science can be made, which contributes not only to a better understanding of its own psychology, but also of the hidden ties between science and its current socio-cultural background

1. Science and the Logic of Desire

1.1 Knowledge and science

Since the beginning of modernity, the notion of knowledge has become dependent on the notion of science. Reduced to the very essentials, the modern concept of science holds

- first, that knowledge can be collected, ordered, and classified through formal abstraction;
- second, that knowledge can be made accessible to

everyone to a basically equal extent, if certain representational and methodological rules are respected;

- third, that the goal of the process of scientific investigation is to get nearer to reality in a systematical way, following a basic strategy of "objectivation" of knowledge through intellect and logic.

The current institution of university represents this concept of science. It produces and elaborates knowledge in such a way that it conforms with the accepted notion of science. It guarantees both, the integrity of the rules of conventions linked to the prevalent idea of science and the proper way of handling them. Thus the institution of university ensures the "functioning" of the concept of science, the maintenance of affirmation of its status, and the possibility to unfold its effects. Through the institution of university, the notions of knowledge and science are mutually identified one with the other and thus kept in a unity, which is located at the centre of the evolutionary idea of modernity and which dominates the self-image of the current technology-oriented society.

1.2 What makes knowledge a science?

However, even though knowledge today is widely identified with science, it must not be forgotten that the concept of knowledge as science is not the only one possible. Historically and systematically, there are other ways to understand knowledge – as wisdom, as philosophy or as social ability, to mention only a few examples. Seen from an overlooking point of view, all these models of knowledge are as useful and functional as the concept of science. So, the crucial questions are: *Why has the concept of science become the most important concept of knowledge? What is special about the concept of knowledge as science? And what makes knowledge as science so successful?*

If these basic questions have to be answered, it is appropriate to investigate first how science operates. What is essential of its implicit mechanisms, specific about its proceedings and particular about the way of its cognitive methodology?

It soon becomes clear that the specific way science operates can only be revealed adequately not so much if its contents are examined, but much more if the *way of formal treatment* of these contents, that is, the *way of the speaking of science, the characteristics of its "discourse,"* are being worked out and analysed. Knowledge is made into science by a transformative mechanism, which consists in a process of establishing a body of intersubjectively valid rules and a series of narrative and linguistic conventions. It is, substantially, a matter of articulation – a matter of language.

1.3 The linguistic approach of psychoanalysis

Since their philosophical discovery at the beginning of our century, language and speaking have appertained to the basic themes of nearly all predominant theories of science.[1] Over the years, it has become a widespread conviction that speaking as a creative act co-generates that of which it speaks

- first, in its basic relation to the object and
- second, in the way of its articulation.

The way I speak of a matter very much influences the appearance of this matter and its "truth." To a certain extent, the matter is even dependent on my way of speaking. If I advertently or inadvertently change the strategy of my speaking, the matter often reveals sides that were hidden before.[2]

Since its foundation by Sigmund Freud, psychoanalysis has placed this creative moment of language into the centre of its approach. Through psychoanalysis, it has been proved that not only does the matter depend on the act of speaking, but that also the act of speaking itself depends on the collective structures of language.[3] Language prefabricates the truth of the matter. According to psychoanalysis, the construct we perceive as "reality" is a system fundamentally made of language, i.e. of heterogeneous acts of utterances stemming from specific interests and their social, cultural and political

[1] Whorf, *Op.cit (15)*

[2] Arrive, *Op.cit (1)*; Bracher, *Op.cit (5)*; Fink, *Op.cit (6)*

[3] Benvenuto, *Op.cit (2)*; Lemaire, *Op.cit (11)*

connotations.[4]

Although there can be no doubt that the ways of speaking, which are currently assembled under the generic term "science," inhere differences, deviations and variants, and are developed in a permanent process, a rough typology still seems to be possible on the basis of such an approach. In the analysis of its discourse the characteristic feature of contemporary science can show itself. The starting thesis of this essay may therefore be that "science" – its methods and assumptions – can be examined as if it were the de facto "cognitive personality" of modern humanity. Science represents the concept-imagery of humanity's daily life, so to speak, and just as the personal symbolic world of an individual is accessible via the analysis of subjective language by psychoanalysis, so such an analysis of the language of science might lead to insights that can help humanity amend and improve itself.

According to these considerations, the question that has to be asked at the outset of a psychoanalytical examination of science does not run, "What is science?" but rather, "How can the speaking of science be characterised?" To answer this question it is first necessary to reflect the considerations of recent psychoanalysis on language and speaking, which converge in the model of "discourse" developed by the French psychoanalyst Jacques Lacan. His model is adequate to illustrate the complexity of the "speech" of science as well as the reasons for its success.

1.4 What is a discourse?

According to Jacques Lacan, a discourse is

- *first*, an essential strategy of argumentation, and
- *second*, a formal system of articulation.

A discourse (from the Latin "*discurrere*" = *to jump back and forth, to run around*) "runs around" because it looks for something it lacks. It defines itself in its relation to what it lacks and in its attitude towards the symbolic system of language by which it is transmitted.

Analysing the functioning of a discourse, it is essential to discover that any

[4] Sarup, *Op.cit (12)*

discourse – including the discourse of science – is defined and created by three interlocking constituents, which Lacan calls *the Real, the Imaginary* and *the Symbolic*.

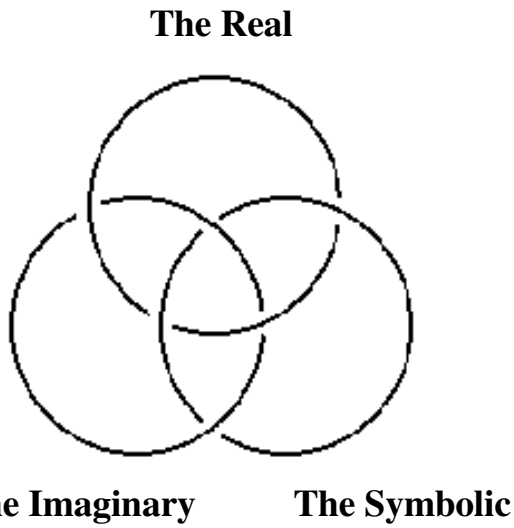

Figure 1: *The "three registers" of a discourse: the Real, the Imaginary, and the Symbolic*

These three "registers" (as Lacan denominated them) are to be regarded not only as systemic constants of human nature, but also as the basic, constructive elements of every linguistic formalisation of knowledge and experience. They are – similar to the Freudian Id, Ego and Superego – the basic anthropological elements of every act of cognition. The interactive play among them brings forth everything that becomes formative for reality as individual consciousness and awareness. In their essence, all three registers are an expression of "desire," that one hidden primary power which is inseparably tied to the existence of an individual and which triggers every worldmaking act of utterance.[5]

[5] Bracher, *Op.cit (5)*

Let us look a little bit closer at these registers, at what they are about and how they interact to shape knowledge and subjectivity – in order to then further outline more accurately their correlation with the figure of science. What does Lacan mean with *the Real, the Imaginary* and *the Symbolic*?

1.5 The Real

The Real is probably the most fascinating concept within Lacan's newly coined terminology which should overcome the limits of Freud's psychoanalysis conditioned by its epoch. What Lacan in a subtle language game calls *the Real* – as opposed to the conventional meaning of "reality" – first and foremost has to do with the – experience that something always remains open when something is concluded. This remaining "something" evades steadfastly the access of the human right of disposal. This is – according to Lacan – an experience which each subject has to undergo not only in relation to the objects of his perception, but also in relation to himself. It is part of the human condition that a subject is not able to comprehend himself entirely, that every subject groups around something like a void, around something that remains unoccupied by his consciousness. Each one of us always seems to be and to remain incomplete, although we desperately aspire full consciousness and a sort of subjective completeness or perfection throughout our lives.[6]

In other words, the space which the subject has at his disposal as "I" is enclosed by the Real, which represents the "I"'s complementarity. The Real is the unknown, or, in Lacan's words, the "non-identical." It indicates the ultimately inaccessible space beyond the subject's "I". All human desire finally wants to gain consciousness of and power over this space to overcome the existential limitations of subjectivity, to find completeness, fulfilled satisfaction, and to gain an "ultimate solution," which, nevertheless, the subject can never reach fully, and especially never for a long-term satisfaction. So the subject is forced to keep on moving. From this point of view, the Real can be seen as the productive void inside human nature. It constantly reminds the subject of his fundamental incompleteness which shows itself in the irrevocable non-

[6] Lacan, *Op.cit (8)*

disposal of his imaginary wholeness and his never-ending non-achievement of finality. Because of this, the Real contributes to constitute the subject as a processual being, that can never be concluded and that has to redefine himself permanently through the objects of his doing and the achievements of his knowing.[7]

1.6 The Symbolic and the Imaginary

Trying to think the Real means to be confronted with the enigma of existence itself. The Real threatens the subject, because it is unfathomable, something which the subject cannot control. To strip it off its sinister nature, the Real first has to be framed in images and pictures, and thus "familiarized," and then to be made concrete in objects which have the power to integrate it, and thus "objectified." The subject has a chance to gain control over the Real only if he

- first, transforms the experience of the Real into *meaning* through the invigorating power of the Imaginary, and
- second, if he projects it into *symbolic objects* (i.e. in everything that can in the widest sense be seen as an element of "language" in which human creativity expresses its longing for "the better" in a concrete, material form – for instance, the car as a status object which not only has a functional, but also a psychological "sense").

To sum up, the basic life activity of the subject consists in consciously or unconsciously *filling objects of the material reality "imaginarily" with the secret, unknown "sense" of the Real*. Thus, on the one hand the Real is the subject's wound. But on the other hand it is also the absent guarantor for the subject's positive earthly life in the half-shadow of history. The Real keeps alive the mechanisms which hold together the subject – giving him something to do. But at the same time the Real as the ultimate non-graspable also keeps open the human existence by permanently counteracting the imaginary function of the "I" which – as a fundamentally narcissistic automatism – is persistently carried towards totalising and concluding tendencies.

[7] Laing, *Op.cit (10)*

1.7 The balance between the three registers

One fact is now decisive in this intriguing play among the Real, the Imaginary and the Symbolic. *The whole system only works in the appropriate way, if all three registers participate equally*. The psychic economy of the subject only operates in a "normal," wholesome way if all three orders balance one another. If one of the three registers is too strongly emphasised, it outweighs and overpowers the two others. And if one of the three registers weakens, the two others will proliferate without balance. Then the subject is ruthlessly exposed to their demanding power. In both cases dangerous one-sided tendencies or "neuroses" emerge.[8]

1.8 Transferring the psychic truth to the theory of science

According to Lacan, the economy of scientific systems follows the same law as the psychic economy of the subject. The productive conflict among the three registers – the Real, the Imaginary and the Symbolic – does not only shape the psyche of the subject, but also the structural constitution of science. Therefore, what is true for the subject is also true for science.[9] The efforts of science are caused and pushed forward by the Real. The Imaginary forms objects of interest and defines possible goals. The Symbolic provides the instruments to work and communicate – the media and organisational systems in which cognition can be materialised and shared.

Where all three registers are equally present, everything is in balance. But where one register is overemphasised, the system becomes unstable. If, for instance, the scientific engagement concentrates on nothing more than theory production, there is the risk of the formation of illusions and of the Imaginary "taking off." If, however, on the other hand the symbolic element is too strongly emphasised, there is the danger of science becoming a mere technology, correlated with the subject's alienation and a general de-humanisation of science.[10]

[8] Fink, *Op.cit (6)*

[9] Bowie, *Op.cit (3)*

[10] Felman, *Op.cit (7)*

But there is also a second diagnosis of psychoanalysis which has a crucial importance for the examination of science. The fundamental experience of the subject at the centre of the three registers' play teaches that *there is no "objective," neutral knowledge which can exist independently of the subjective process*. *Knowledge which has a validity or truth claim is inseparably tied to the existence of the subject*, since the experience of "truth" is dependent on the conscious or unconscious relation of a subject to the three registers. If, for example, a subject prefers the Imaginary to the Real and the Symbolic, its truth will not be the same as for a subject which prefers the Symbolic and rejects the Imaginary and the Real. And a subject that fully concentrates on his mystic experience of the Real will consider other aspects as truthful than a subject completely oriented towards the material security of the Symbolic.

According to Lacan, this indicates that truth without subjectivity is inconceivable; it always has, so to speak, to "pass through" subjectivity.[11] This is also the reason why a subject cannot simply adopt another subject's knowledge on the symbolic plane, if he wants truth. *On the symbolic plane, there is only mediation, but no truth*. Therefore, all knowledge drafts have to be interpreted continuously and, thus, subjectively renewed.

Lacan points out that, as within all other discourses, also within the discourse of science *all three* registers operate in a complex way, even though not always on a fully conscious level. In the end, science is a branch of human world experience like others. *In the system called science there can hence be no production and no position of knowledge independent of the single subject that realises science, and of his unconscious. Rather, the sum of innumerable acts of subjective cognition in search of the "truth" of the Real, which interrelate inside the frame of a historical-collective field, constitute the figure of "science."*

1.9 Knowledge as science means: trying to privilege one register, the Symbolic

At this point, we arrive at the very centre of Lacan's analysis of science. Lacan observes that the contemporary discourse of science seems to continue to ignore

[11] Lacan, *Op.cit (8)*

persistently the basic discoveries of psychoanalysis about the constructive interrelation between the three registers and between cognition, truth and subjectivity. And it is precisely therefore that, according to Lacan, the current discourse of science is characterised by two specific forms of neurosis.

By implementing Lacan's tools to investigate the discourse of science, *first* it becomes obvious that this discourse *overemphasises the register of the Symbolic through its focus on formal abstraction, objectivity and performativity of knowledge*. Shifting the balance among the three registers in favour of the Symbolic occurs at the expense of the Imaginary and the Real. In the logical frame of reference of modern science, these two registers remain excluded from the scope of "cognition" and "knowledge." From the viewpoint of modernity, science can be "consistently" science only if cognition is granted without subjective, unconscious or imaginative residues. Despite the many attempts to modify this claim in our century, this dominant prejudice is still widely unbroken.

From the psychoanalytical view, regarding the factual predominance of the Symbolic and of the objectivity postulate it has to be concluded that *the subject of science cannot reach the dimension of the experience of truth*. And in fact, in the system of modern science, truth's place is taken by rightness, which orients itself towards the technical disposal over the concrete. The first neurosis of science consists in its one-sided longing for a definitive mastery over nature and man, which – under the conditions of exclusion of the Real and the Imaginary – has assumed pathological characteristics.[12]

1.10 Knowledge as science means: trying to override the subject

Secondly, the concept of science since the nineteenth century has programmatically *tried to override the moment of the subjective as an integral part of knowledge*. It has justified this claim by pointing out the social necessity of contingent, intersubjective, and normative knowledge for the pragmatic ability to act. This continuous ideological effort of science against the subjective in knowledge and

[12] Lacan, *Op.cit (8);* Schneiderman, *Op.cit (14)*

cognition over the years has produced its effects. Today, in the use of scientific arguments against subjectivity there seems to be almost no difference between the left- and the rightwing political mass-movements.

The slogan of the 68 generation "L'imagination au pouvoir!" that paradoxically originated from the universities wanted the Imaginary to assume power (whereby the slogan admittedly implied establishing "intersubjective " ideological projects). Since the mid-80s the pendulum has been swinging in the opposite direction. The omnipresent battle cry of the aesthetic media society goes: "The Symbolic to power!" The technically oriented, public logic expands the (already widely internalised) belief in the "objective" sciences and their ideal of mechanical control over nature, time and man. Feasibility becomes the central criterion of modernity. On the one hand an expansion of the concept of science is aspired at the universities, which should foremost serve to meet the social demands of the emerging processual society. On the other hand, in reality, a far-reaching narrowing of the dimension and bandwidth of the concept of science is de facto taking place, in accordance with a constantly progressing ideologically-based "objective" reductionism, which is becoming the unquestioned social creed.

The decisive fact here is *that at the beginning of the new millennium the scientific postulate of "technical" objectivity which has been purified from any subjective "interference" imperceptibly acquires almost transcendental status. Accordingly, the moment of personal ethico-political "truth" constantly withdraws to the background in favour of the rise of a "neutral", functional availability.* In this situation, instead of politics and ethics, aesthetics increasingly has to assume the function of sense, purpose and meaning for the subject. *There is a tendency of polarisation between a technically defined objectivity, which governs the public space, and an aesthetically defined subjectivity, which retires to the private sphere*. This polarisation is beginning to correspond conspicuously to the "classical" working model of the natural sciences (priority of function instead of truth, contingency, de-personalisation, value freedom, ethics as a private concern). Under the influence of the self-concept of modern science, the subject and his experience of truth are becoming something that can be neglected, something of secondary importance.[13]

[13] Lacan, *Op.cit (8)*

2. Perspectives of applying Lacanian psychoanalysis to the theory of science

2.1 The central mechanisms of the discourse of science

Now, what does all this mean for the psychoanalytic answer to our central question: *What makes knowledge as science so successful?* How can we answer this question, if we keep in mind the interplay of the three registers and the two neuroses which characterise the discourse of science?

1. According to Lacan, to reach the objectivity and contingency of knowledge without any subjective interference, science in its fundamental structure paradoxically always has to refer to the authority of an absent, "dead" master or sage who – literally speaking – represents the "body of knowledge." The existence of objective science is paradoxically always based on the existence of a subjective authority. It is not primarily a question of a person but a function of causation. Lacan calls this function the "master signifier." This notion designates the primary instance which is necessary for the initiation and organisation of a discoursive field. This primary instance always lays the foundations through a forcible decision. The master draws his authority from the assumption of a seemingly special connection to the Real. Although science formulates theories about reality and verifies or falsifies them by means of experiments within a frame of rules, unconsciously at the root of its authority there is always the figure of the knower. He is – often against his will – unconsciously regarded as that superior person who

seems to have unified within him the possibility of a total integrity or "conclusion" of knowledge. He seems to have reached the "space of the Real," and yet existed in flesh and blood. The assumed personal contingency of the master contributes to the belief in the possibility to pursue and defend the noblest goal of science – the project of reaching a total contingency and objectivity of knowledge which would mean the representation of the Real itself. According to Lacan, the systematical hope for a complete contingency of knowledge, as suggested by the ideal figure of the master, has to be called "science".[14]

2. It is clear that the contingency of knowledge, if it should be total and without any contradictions, must be located not only in the master-knower, but also at the "centre" of the object of cognition. It is ultimately the object which has to be postulated to form a complete unity in itself which can be "read" exactly, objectively and without losses by science. But in concrete life – and also in the scientific practice – every object's truth remains incomplete and partial to the subject. Therefore – by means of a system of symbolic reductions – the discourse of science latently tries to propose the object's partial truth as complete. In other words, the discourse of science tries to subsume the non-identical (the Real) under a postulated total identity, which it locates at the centre of the object. How? By reducing the object to its symbolical level, which is done through the methods of "objective"

[14] Lacan, *Op.cit (8)*

representation and formal reconstruction.

3. To succeed in this decisive operation of a total and at the same time "objective" reduction and representation of the object, the discourse of science asserts that there can be a superordinated pattern or meta-discourse, which is supposed not to be subordinated to the subjective logic of a "normal" discourse. This meta-discourse – the language of science itself – aims to be structured in a way to be able to make the "complete truth" of an object representative and shareable with all other subjects. It is obvious that the discourse of science thereby recognises the important role of the Imaginary in its function as fantasy and creativity – but only as the "pre-scientific" state of the cognitive process. The consensual place of the scientific truth is exclusively situated within the register of the Symbolic.

2.2 The discourse of science from a Lacanian viewpoint

To answer the question, why knowledge as science is so successful, I would now like to highlight two final arguments of Jacques Lacan.

1. Historically seen, in western societies the discourse of science first alternated the discourse of power and violence, and then took its place. Since modern science is not tied to the social rank of the subject, it has in a natural way a democracy promoting aspect. In other words, the discourse of science facilitates the social-political undermining of obedience and, at the same time, of value structures. That is why psychoanalysis, regarding

the scientifically developed societies or "knowledge societies," speaks of "fatherless societies." Where there is science in the western sense, the function of the father, the unquestioned guideline and validity principle, has become vacant. The omniscient father as the tradition-tied "natural" incorporation of the power-principle has been replaced by the master knower, who rises to his position exclusively by his abilities and is selected as the best in a competition among many contenders. Prometheus, the son (democratic science) has won against the father (hierarchical knowledge).

2. On the other hand, the discourse of science is the exact counterpart of the discourse of individuality, which today is increasingly manifesting itself in various forms throughout all social and political fields. While science tries to establish consent and solidarity through objectivity and thus regards the subject only as a residue or a remnant in the process of cognition, the individual discourse exactly focuses on the opposite, that is, on the subject's personal consciousness of a truth, which is inescapably set on the subject himself. Since the beginning of the 90s, political and intellectual movements have increasingly revealed tendencies towards establishing an individual-oriented counter-culture against the "fatherless," "objective," scientific society and its technocratically nourished utopia. In the civil society, this is happening widely due to an increasing personal sense of responsibility, which (in accordance with the basic constitution of the psyche) cannot be

experienced otherwise than subjectively. The new sense of responsibility counts on the evidence of a personal truth experience and realises it politically. The discourse of science with its method of formal abstraction and purification of subjective influences serves here as an important counter-image and consequently promotes indirectly the evolution of the social field.

But, to be exact, similar notions are true also for the right-wing movements, which in the last years have notably gained supporters under "postmodern" conditions. These movements are "individually" attempting to restore the lost principle of the father in an authoritative manner (and are paradoxically trying to employ "scientific" – mostly historical and biologistic – legitimisation for this purpose).[15]

2.3 Lacans goal: further development of the discourse of science into an "analytic" discourse

We have seen, that the self-conception of science does not take into consideration the fundamental logic of the three registers – of the Real, the Imaginary and the Symbolic. Therefore, science is characterised by two neuroses: the repression of the Imaginary and the Real, and the repression of the subject. These repressions evoke "individual-oriented" – and often enough egoistic – counter-movements.

In this situation, Jacques Lacan calls for an expansion of the self-design of science. Science has to reintegrate the Imaginary and the Real in its discourse and to reflect the worth of subjectivity in the act of cognition in order to even out its increasingly dangerous one-sidedness and to counteract an increasing societal uneasiness. To put it more precisely: science has to reflect more accurately the unconscious effects of the Imaginary and the Real on its practical doing. Lacan

[15] Bracher, *Op.cit (4)*; Felman, *Op.cit (7)*; Schneiderman, *Op.cit (14)*

envisaged the aim of a pertinent development of science, as comprehensively transforming itself to an instrument of self-enlightenment, which should in the widest sense have a "linguistic" approach and hold processual potential. This means that science should not only reflect the interplay of the three registers (the Real, the Imaginary and the Symbolic) regarding its cognitive object, but should also "work them through" (Freud): integrate the obtained knowledge of their influence into its own actions, and correspondingly become a "discourse of analysis" in its basic approach to knowledge and in its methodology.[16] What does this mean?

"Analysis" here means above all the *renunciation of the hidden claim for a concept of absolute truth* (which primarily originates in the "objective" compensation of the western loss of metaphysics). In Lacan's view, every – conscious or unconscious – concept of absolute truth bears imaginary traits. Lacan proposes a renunciation of absolute truth in favour of a more phenomenological or pragmatic method of procedure, which more strongly stresses the processual aspects of development, as well as the constitutive value of the condition of incompletion. And at the same time, Lacan proposes a *stronger focus on the subjective constituents of truth and cognition*, which are – from a psychoanalytical point of view – indispensable for the very business of science itself, because science is a process which in itself is not "objective," but always carried out by subjects with their different relations to the Real, the Imaginary and the Symbolic.

In this sense, Lacan suggests to *principally value positively the fact that truth evades the exact scientific appropriation*. For, this unbreakable resistance of truth to science is a chance for the reinforcement and extension of the scientific self-projection. The acknowledgement of a fundamental "barrier" of science to "truth" does in no way mean a value-free science or the dissolution of its particular cognitive claim, which in terms of civilisation has brought so many positive effects. This recognition much more *means an open, pluralistic differentiation and questioning of science's hidden values and secret ideologies*, which due to the objectivity postulate have been neclected only to become stronger in their unconscious effects, and which in the neighborhood of the "barrier" are always in danger to turn to a prejudice which can hide the truth.

[16] Lacan, *Op.cit (8)*

2.4 Psychoanalysis of science

The analysis which promotes the self-enlightening of science resembles the procedure which is performed on a patient undergoing psychoanalytical treatment. Behind an apparently transparent, rational self-disposition an unconscious structure is hidden, which sounds through. If the patient listens carefully to the way it speaks in his own words, he can hear it. Lacan believes that this unconscious is structured like a language; it follows "grammatical" rules, which are as such scientifically tangible.

The psychoanalytical language cure is appropriate for the self-knowledge of science, because, as mentioned earlier, since the nineteenth century science has primarily consisted in symbolic conventions at least in its identificatory centre (claim for objectivity and its presupposition, formal abstraction). Science is basically founded on the coherence of language systems and conventionally given patterns of argumentation – in which the subject's imagination, being pushed in the direction of the Real, is inscribed. Since language as a symbolic form offers the possibility of mistakes and contradictions, it can reveal the dialectic outline of identifications, which frequently remain unconscious. Due to this, the formal language systems which science uses are at the same time – when examined as a system of speech in which a longing for the Real is expressed – the primary indicators of its unconscious. As a result, *the aspired permanent self-analysis of science basically relies on the investigation and comparison of formal language systems and their different forms of expression, as well as of reference systems and reference conditions*. The self-analysis of science thus relies on the structural conditions in which the speaking of science is carried out.

It is thereby particularly interesting to see how one and the same finding can develop in entirely different ways when expressed in different scientific language systems. Accordingly, conclusions can be drawn regarding the single formal language system, and either its underlying "values" (synchronic aspect) or its characteristic historical background (diachronic aspect). Thus this analysis affects paradigmatic ("solid") as well as pre-paradigmatic ("fluid") conditions of scientific modelling.[17]

2.5 Conclusion: ethics of science

[17] Lacan, *Op.cit (8)*

The institutionalisation of such a self-analysis is conceivable in various forms. What science has to say after this self-analysis, is expressed from a certain distance and with the enlightenment of the analyst, who does not judge from an objective, complete standpoint but who, so to speak, always knows to be involved in the game himself – and to be at risk in this game.

There the foundations for a new, specifically contemporary ethics of science are laid, which more consciously integrates the extra-scientific conditions in its apparatus.[18] With his model of the psychic economy of the subject, Jacques Lacan prepared the ground for an ethics of science, which has become increasingly necessary in the age of ecological damage, and social and cultural instability. Under the conditions of the genesis of such an ethics, it could probably be initiated to give content and explanation to a Lacanian sentence, which goes, "Science is an ideology which wants to abolish the subject – without any chance to succeed".[19]

[18] Lacan, *Op.cit (9)*

[19] Lacan, *Op.cit (8)*

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