

Quality Criteria as Instruments for Political Control of Sciences

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Abstract: The following text disputes the relationship between scientific research approaches, their achievements and comparative evaluations made between them. Some measures of achievement (e.g. economic usability, number of publications, citation index) are created in a way that they systematically benefit or penalize certain research approaches. This is simply due to the structural characteristics these approaches exhibit.

For psychology this means, for instance, that biopsychological research approaches are clearly at an advantage compared to cultural psychology approaches if common evaluation measures turn into obligatory standards. Instead of examining the qualities of knowledge, the modes of gaining it are evaluated with foreseeable a priori results. Comparative evaluations resemble pseudo empirical investigations.

If this kind of evaluation practice conquers and its outcomes begin regulating decisions in science politics, psychology's vast field of knowledge will drastically narrow. This would result in a massive loss of competence and significant consequences for career politics.

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1. Introduction

German universities are suffering from "evaluationitis." At the University of Oldenburg, psychology is currently awaiting its third evaluation in two years. The matter of interest is sometimes education, other times it is research. If it is not the "Nordverbund" (an association of universities), it is the state of Lower Saxony coming to evaluate. A suggestion has finally been made to use a professional evaluation institution. Other universities are going through the same. Besides a lot of time and money, personnel also adds to the expenditures. All of these efforts must be made for something worthwhile and important. As we know, cognitive dissonance otherwise arises and causes indisposition. [1]

Supposedly, evaluations render quality assurance possible. If we primarily consider research (versus education), universities should be institutions for top research. The rays projected by their "lighthouses" should make them visible everywhere, attracting the crème de la crème among students. As to which institutions are attractive or not, this is to be decided by a noble competition among universities. This is where evaluators come into play. They act as referees by watching, judging, evaluating and distributing seals of approval. The resulting university profiles are published in national magazines to make comparisons visible from afar. The state can also do its part. It will support good universities and extinguish bad ones (at worst by drying out financial and personnel resources). [2]

In this way, the logic behind evolution (deemed successful by human discretion), composed of the survival of the efficient and the downfall of the inefficient, is taken from the realm of biology into the social arena. We have to artificially create something already present in nature in order to make this transfer work: the pressure of natural selection. Without it, there is no extinguishing of the inefficient and complementary flourishing of the efficient. Where the biological environment has natural selection criteria, the social arena in research business has, for example, criteria used by evaluation committees. These criteria created to ignite selection pressure already have a name: They are achievement indicators. The words are quite carefully chosen. They "indicate" where research is taking place and where not. They indicate what to support and what to dump. Yet factually, in many places they already act as if they were valid quality criteria. [3]

Due to the significant meaning they have within the framework of evaluation business, it is worth taking a closer look at these achievement indicators. The task they must fulfill is clear. They are to act as measures of comparison and thus enable a ranking. What kind of measures of comparison are they and what can they do? I would like to investigate this question in a critical manner. Before an answer is given, the following must be understood. There is nothing on earth, which cannot be compared to any other thing regarding any particular aspect. The assertion that two things cannot be compared can usually be disproved with some reflection. When taking a critical stance, incomparabilities should never be searched for. Instead, questioning whether comparisons using this or that measure is of any value is essential. Do the comparisons at question unearth

knowledge? Usually, comparisons are substantial sources of knowledge, but often they result in inanities and sometimes they even lead to false conclusions. It is really worth contemplating measures of comparison regarding their concrete application and the type of knowledge they yield. [4]

Before I systematically turn to these notions, I would like to exemplify an instance, which occurred at my university. It describes how an evaluation practice strikes an observer, thus inspiring deliberation. A faculty needed to fill a professorship. The position was advertised and an appointing commission was chosen. The latter dealt with applicants, read and disputed their works, gathered external expert opinions, listened to several applicants and finally came to a recommendation. The faculty justified, discussed and the majority approved its recommendation and it was passed to the university senate. Naturally, the majority of the senate is filled with scientists having no background in psychology. Some of them want to make their own judgment instead of accepting the faculty council's advice and recommendation. Since they lack knowledge of and competence in psychology, they opt for formal indicators of achievement. Mainly, those are the total number of publications, number of publications in international (English language) journals, weighted with an impact factor for those journals, and the citation index determined by the Institute for Scientific Information (ISI). They claimed to come to a different applicant recommendation list when using the above criteria. The objection that the psychology experts worked hard to make their recommendation, deriving and justifying their recommendation after disputing scientific works, is discarded with the comment: The scientific community determines the quality of scientific works and that is indicated by their publication in high impact journals and the citation index. The senate disapproved the recommendation. [5]

In my opinion, this case of quality evaluation is really worth contemplating. Not so much because of the conclusion or discipline-related hybris (that surely would irritate some), but rather due to the measures and methods of comparison used for judgments of quality. They clearly reveal an increase in *rationalization and bureaucracy of scientific judgment, evaluation and decision processes*. That means the following. Judgments and decisions are characterized by:

- *Disregarding the content*. Even non-experts can render a judgment and a decision accordingly even if they do not have any knowledge of the subject matter to be judged and evaluated.
- *Standardization*. The indicators as well as their implementation and weighting are fixed.
- *Automation of evaluation processes*. There is a program to calculate a summarizing total score out of individual values. [6]

One advantage of this bureaucracy is obvious. Clear evaluations of quality are obtained without much time and mental effort. Appointing committees, external expert opinions, faculty counseling and so forth can be saved. One clerk is simply required to take a look at submitted documents, and determine and calculate

standardized achievement scores. Perhaps there should be a second clerk to recheck calculations. Yet one disadvantage is also clear. Special particularities and differences of subject contents go unnoticed or are obliterated. Originalities possibly worth special attention are smothered. Mainstream produces mainstream as individuality fades away. [7]

Is it really worth discussing this case in Oldenburg so dramatically? Perhaps it is just a provincial curiosity? I do not think so. If you have ever witnessed the grinding mills of evaluation I described above, you know that formal indicators of achievement like the ones previously mentioned are not only vehemently disputed, but have already reached implementation. Commercial institutes already exist (e.g. Centrum für Hochschulentwicklung—a center for evaluating and planning the development of universities in Germany) which dedicate themselves to the measurement and comparison of scientific achievement (no professional competence required) and offer this as a purchasable service. This results in a phenomenon in which applicants for professorships place ads for themselves that include calculations reflecting their "impact value." This formal method of judgment has apparently become a routine for some. The University of Oldenburg and its senate may be provincial, but they are leading the way. [8]

While fearing that something unavoidable is being concocted, whoever attempts to participate in discussions on achievement indicators and quality criteria needs merely to do so briefly in order to recognize that the matter is only comprehensible if you assume it is (at least in part) about power and control. It is all about the distribution of scarce resources and about how much you or the group you represent gets. This becomes clear in fights over individual criteria. Natural scientists fight over a certain criterion which makes them look more appealing while cultural scientists fight over another which increases their worthiness (or at least helps them survive longer on the battlefield). This war reveals something quite noteworthy, taking the evolutionary analogy from biology to its limits. Those who feel the pressure of selection determine its nature themselves in order to be at an advantage in the noble competition of the efficient. The way in which they do this makes them appear even more efficient. [9]

If one says that politics deals with social power, its distribution and exertion, then we find ourselves in the midst of a political battle over criteria. Quality criteria are turning into scientific control instruments. For me as a social psychologist, it is very exciting to watch and mingle. I would like to do just that by writing this contribution. [10]

I will narrow my point of focus to an area I can reasonably oversee in the following discussions. I do not intend to contemplate transdisciplinary criteria politics like in the example above, but rather innerdisciplinary politics. I will limit myself to psychology, since its volume is ample enough. Ever since its academic beginning with Wilhelm WUNDT, psychology extends from physiological psychology to culture psychology (called "Völkerpsychologie" in those days). In my view, this thematic vastness is something worth preserving. Psychology is quasi an interdisciplinary arena in itself. That is why battles over criteria politics

rampage more fiercely in psychology than in other disciplines. I therefore hope that by limiting myself to psychology, the matter I aim to contemplate will not result in a too narrow of a focus. [11]

I would like to close the introduction by conveying to the reader what can be expected from the following text. Under the wide roof of psychology, very diverse perspectives of the human being exist. I like to call these "*modes of thinking in psychology*." Every mode of thinking has its own practice. That is, how people deal with each other when they perceive and explain others using this or that mode of thinking. I call this "*social practices in psychology*." I intend to begin by briefly sketching various modes of thinking and social practices (cf. LAUCKEN, 2003). Firstly, these portrayals are designated to point out clear and prominent differences. Furthermore, they should illustrate how devastating it would be if one of the modes of thinking and social practices extruded the others. If the latter were true, psychological disciplines would be lost, along with a substantial amount of competence painstakingly developed. This would not occur without having considerable consequences for career politics. [12]

Unfortunately, such strives for hegemony exist. One weapon their advocates implement is the promotion and enforcement of those quality criteria, which only benefit themselves. The last part of this contribution consists of demonstrating exactly that. I hope it becomes obvious that certain achievement indicators and quality criteria currently negotiated in disputes on criteria politics are structurally unilateral. They benefit particular modes of thinking and social practices not because their discoveries are so enlightening and their practices so successful, but rather only because they dispose of certain structural characteristics. While benefiting only unilaterally, if such indicators and criteria are enforced in a struggle for obligatory evaluation measures, the quality of discoveries and practices will not be enhanced. Instead, the richness of abundant intellect and action is thinned out. I intend to distinctly point out the consequences. [13]

2. Modes of Thinking and Corresponding Social Practices

Various modes of thinking have developed underneath the wide roof of psychology. They differ in the way they objectively conceptualize the human being. First, I would like to make that plausible with an introductory example and afterwards I will offer a more systematic explanation. [14]

2.1 Introductory example

Imagine a client seeks the help of a psychologist because he or she suffers from anxiety. This anxiety is considered something quite specific depending on how the applied mode of thinking perceives and explains the client's behavior.

- If the psychologist has a *neuropsychological* approach, then the client is viewed as a complex context of physical, physiological, electrochemical and similar variables occurring and influencing each other in an anatomically palpable framework. Occurrences in the brain are especially important. For a

psychologist with this approach, the reported feeling of anxiety is regarded as a (subjectively lived) concomitant phenomenon to electrochemical processes at synapses, perhaps due to the reaction threshold of postsynaptic gamma-aminobutyric acid (GABA) receptors being too high.

- If the psychologist has a *cognitive psychology approach*, then the client is viewed as a complex context of cognitive, mental, informational and similar variables. Hence, judgments, values, comparisons, emotions, decisions and so forth exist. They are related to each other by informational processes, for example. Thus, a person is not a physiological, but rather a semantic processing unit. For a psychologist with this approach, the reported feeling of anxiety hints at a significant part of semantic coherence.
- If the psychologist has a *phenomenological approach*, then the client is viewed as a complex context of currently lived experiences and events. We know this kind of conceptualization all too well, since we use it to mutually understand and explain ourselves in everyday life. For a psychologist with this approach, the reported feeling of anxiety hints at an experience which makes sense when it is embedded in a narrative context. [15]

In the first case, a person is placed in a physical context, in the second a semantic and in the third a phenomenal context. The anxiety reported hints at conceptually different variables. *Modes of thinking differ in their object-conceptions*. Of course, diverse theories can exist in the same mode of thinking, but they all have a common conceptual mode. [16]

Depending on the mode of thinking within which a client's behavior is perceived and explained, very different diagnostic as well as therapeutic treatment practices evolve. In the first case, a psychologist may choose to intervene medically (e.g. with Prozac, which influences GABA receptors) as part of therapy. In the second, cognitive-behavioral measures may be taken while in the third case existential measures could be chosen. [17]

In a more thorough and systematic manner, I intend to illustrate what I have briefly pointed out above. I would also like to express the reason(s) for it. If it so happens that certain achievement indicators and quality criteria benefit particular modes of thinking and their social practices while penalizing others, it should at the same time become evident that very fundamental decisions on the direction or trend of research are taking place. The latter has far-reaching implications, even for the ways in which we deal with one another on a daily basis. That is why I would like to distinctly carve out the fundamental character of this matter. [18]

2.2 Modes of thinking

A characteristic object-conception lies within the core of each mode of thinking. No one can begin researching without fundamentally clarifying what kind of object-conception the research presupposes. In the introductory example, the psychologists answered the latter in very different ways. They situated their

clients in different kinds of worlds. These kinds of worlds are sketched briefly and abstractly in the following:

- *Physical World*: Physical reality exists. There is material, mass, energy and units for them. They are distributed in physical space. Alterations of distributions happen in time (it does not matter which space and time model is assumed). Alterations are causally affected by *conditions*.
- *Semantic World*: Semantic reality exists. There are semantic units (units of meaning). There are (semantic or content-based) reference connections between these units. Alterations in such reference connections process in time. Alterations are causally affected by *references*.
- *Phenomenal World*: Phenomenal reality exists. It consists of people's lived experience of "being-in-the-world" and of its units. The phenomenal world is divided and organized usually in a narrative manner. Such orders alter with time. Alterations are causally affected by (subjectively lived) *sense-connections*. [19]

Each of these conceptions of world has its own perception of coherence and time. Hence, physical time is different from semantic time, semantic time different from phenomenal time (cf. e.g. BURGER, 1986). Even the conceptions of causality vary. They only have a common direction ("if, then"). For all conceptions of world, the idea that they are causally detached from everything outside the world applies. Therefore, energy can only produce energy, while information only produces information, otherwise the energy conservation law would be nullified. Information (non-physical) can never produce energy, otherwise the energy conservation law would be nullified. This leads to the conclusion that no conception of world can be situated in or abolished by another. Moreover, no conception of world can emerge from another. This conclusion can be devastating for someone who wants to situate every single thing in the same conception and explain it all within this realm. Whoever intends to conduct research must accept this notion. The theoretical physicist SCHRÖDINGER (1989) makes this painfully clear. Hence, a physicist (just as a chemist, a biologist or a neuroscientist) must recognize that he or she works with a conception of world, which cannot accommodate personal research and discoveries. It does not make any sense, for instance, to ponder the chemical and physical properties of a mathematical model. Models are something semantic. Its structurally referential contents vanish when it is placed in a physical conception of world, e.g. as a neural firing pattern in a physicist's brain. SCHRÖDINGER calls accepting this fact a sacrifice natural scientists have to make for the clarity of their conception of world. By the way, a physicist cannot even accommodate observation data, i.e. the basis of his research, in his or her physical concept of the world. [20]

The introductory example reveals that the reported feeling of anxiety is considered a cue to objective variables in the various modes of thinking, each belonging to very different causally enclosed conceptions of world: Neural firing patterns in the physical world (cf. e.g. BOUCSEIN, 1999), an emotional state dependent on judgment and appraisal in the semantic world (cf. e.g. LAZARUS,

AVERILL & OPTON, 1973), an experienced and narrative-like moment of existence in the phenomenal world (cf. e.g. VALLELONGA, 1998). By the way, despite closed causal circuits it is still possible to ponder meaningful relationships between conceptions of world, for example those of "transversal-complementary" nature. It is not necessary to elucidate this here; more information about the various modes of thinking is available in other texts (e.g. LAUCKEN 1998, 2003). [21]

2.3 Social practices

A social practice is a thematically related coherence of social actions. "Thematically related" implies that one can determine, for instance, if a certain action fits in the coherence or not. In particular, a social practice usually consists of the following components:

- There are *people* who are related to each other by their *actions*, e.g. neuroscientists working on the same research project.
- The relationships between social actions occur in a very particular *thematic framework*. It is signified by certain contents, words, terms, theories, metaphors, paradigms, scenes, stories and so on, e.g. concerning the biological constitution of man.
- A social practice *manifests* itself in certain *texts*, e.g. in books and journals.
- The *existence of a certain reality*, e.g. that of neurotransmitters, is situated in a social practice.
- A social practice is *institutionally and organizationally objectified* in a multiple way, that is socially anchored, for instance, in research institutions at universities.
- Social practices require and use resources, e.g. money and technical devices.
- The *habitual dispositions* of those persons involved in a social practice must be appropriate for the practice. They consist of knowledge and skills, but also of preferences, values, tastes, ideologies, motives, feelings and more, e.g. the strive for knowledge, scientific prestige, money, belief in the value of scientific discoveries.
- Social practices are often *objectified by buildings and instruments*, e.g. by a laboratory and equipment.
- Social practices often include stabilized *social rituals*, e.g. the exchange of honors, holding conferences.
- Social practices are *politically structured*. There are differences in power, ways to exercise power, methods to control it and so on, e.g. the management structure of a research institute.
- Social practices try to *preserve themselves* by attracting and habitualizing essential young talent and by rounding up necessary financial resources for processing the practice, e.g. establishing a graduate school and raising external funding.
- Social practices produce texts on different kinds of *fundamental values, convictions, or realizations* insiders can refer to and use to legitimize their do's

and don'ts, e.g. philosophical essays on the intrinsic value of neuroscientific discoveries. Often, social practices have their own "philosophers" and like to use them for forewords or epilogues.

- As soon as they have reached a certain age, social practices are *sheltered socio-semantically* by historical and socio-cultural texts, e.g. works on the history portraying the neuroscientific explanation of human beings. [22]

This enumeration is not complete. My aim is to give an impression of how rich the social practices are and how extensively they are established. This list is meant to show what can belong to a social practice and often must belong to it. Only then can you comprehend what it means when a certain mode of thinking bears and nurtures particular social practices. [23]

Modes of thinking are the conceptual and thematic cores of social practices. If you annul a mode's validity, a social practice becomes unstable and crumbles at some point (that is how the alchemist practice collapsed as certain alchemist ideas on the transformation of materials were abandoned). A current example: For many neuropsychologists the principle of "biological reductionism" belongs to their neuroscientific research practice (SCHANDRY, 1996, p.66). This is the assumption that semantic as well as phenomenal conceptions of world along with their theories can be traced back to the physical conception of world. Meaning, semantics and phenomena would not have their own status of existence anymore, because even semantic or phenomenal variables could be traced to and eventually be replaced by physical variables. How then, for example, do "biological reductionists" expect to calculate the number 7 in an algebra equation if they replace the calculus with a neurochemical process? I do not know. Yet reductionism postulates this (at least future) possibility. If it were not for this reductive postulate, the biopsychologist SCHANDRY admits the "foundation of his work" (ibid.) would be in danger. If you took "biological reductionism" away from neuroscientists, then you surely would not be taking the foundation of their existence from them. But you would be stealing much of their verve as they would significantly lose their ken. While bearing in mind what belongs to a neuroscientific social practice and its virulent functioning, its self-preservation requires that insiders are continuously habituated to their thinking and behaving in an appropriate way. Cultivating them to be convinced of reductionism is beneficial. [24]

I intend to simplify the following explanations of social practices which flourish in the presence of modes of thinking and are continuously renewed by them. I will no longer make a difference between semantic and phenomenal modes of thinking. In other areas, for instance when considering the "mystery of consciousness" (BIERI, 1995), this difference is of great significance. Yet when contemplating social practices, the differences are not significant enough to require separate consideration. In the following, therefore, I will only deal with the physical and semantic modes of thinking and their corresponding practices. [25]

I will not characterize the social practices as extensively as in the above description of the term social practice. I will select details of the issues mentioned above. Furthermore, I will divide the whole social practice of a mode of thinking into parts. Therefore, a difference will be made between treatment practice and research practice. Towards the end I will address social practices concerning everyday interaction. [26]

2.4 Treatment practices

Psychological treatments consist of diagnosis and therapy. How do both diagnosis and therapy occur regarding the mode of thinking with which a human is perceived and explained? The introductory example already offered a foretaste. Now considerations will become more thorough. I will assume another fictive case and refer to an issue widely discussed in the media since the destruction of the World Trade Center in New York on 9/11/2001: Anti-Americanism as expressed by some young Arabic men, as well as their hatred and disposition to aggressive and violent actions. [27]

Physical mode of thinking and corresponding treatment practice

I will choose a neuropsychological example to specify this mode of thinking. As 22 prominent bioscientists publicly informed us in a resolution in 1998, "the world of feelings is nothing but a concomitant phenomenon of electro-chemical processes" (cit. LEISENBERG, 1999, p.180). This obviously must also apply to hate. If you want to diagnose it, you must objectify it as an electro-chemical process. From a structural diagnostic perspective: Investigations of violent offenders indicate that their frontal lobe show less metabolic activity than those of peaceful persons. This was relayed by PET (Positron Emission Tomography) images. These machines make the distribution of metabolic activity in the brain visible as an image (that is why PET belongs to the category of "imaging techniques"). From a functional diagnostic perspective: There are studies indicating that a low serotonin level (serotonin is a neurotransmitter) corresponds to impulsive and aggressive behavior. You could derive a diagnostic strategy from both stocks of knowledge. First we can deduce the hypothesis stating that some young Arabian men react electrochemically in a different way to particular stimuli (e.g. a picture of the American flag) than people feeling no hatred for Americans do. This can be tested. It is even of diagnostic use that certain central activities go along with peripheral ones (e.g. electrodermal activity, cf. BOUCSEIN, 1999) and so on. An encyclopedic compilation of texts, even on the neurochemistry of feelings, is presented by ADELMAN (1987). [28]

In the case the diagnostic hypotheses are confirmed to be valid and reliable enough, we can move on to therapy. Naturally, our therapy should be etiological and not symptomatic. That is why it must affect the electrophysiological chemism occurring at the synapses of certain neural tissues. Prescribing antidepressants (e.g. Prozac, Sertralin or Fluvoxamin) is one form of short-term therapy. These medicines inhibit the reuptake of serotonin. This blocking intensifies serotonin's stimulation of postsynaptic neurons. This even holds for neurons which are

responsible for moods and feelings (i.e. for anger and hate). This medical interference with a serotonin concentration suffices at least as short-term therapy. Of course, there is one pleasant side effect: A general mood improvement is experienced. Yet there are also unpleasant effects: Men can experience a reduction of libido and sleep disorders may arise. A systematic desensitization therapy is recommendable for long-term application. This therapy is a technique aimed at dismantling existing neural paths and creating new ones linked with states of relaxation antagonistic to anger. In this manner, the young men can learn to see the American flag without experiencing arousal. The learning model at large here is classical conditioning, its initial form was developed by the physiologist Iwan PAWLOW. [29]

Semantic mode of thinking and corresponding treatment practice

A discussion with experts took place on 9/21/2001 on Deutschlandfunk (DLF, a German radio station). It was about what encourages young Arabian men to perform terrorist acts like the one at New York's World Trade Center. A psychologist, a sociologist, a communication scientist and an author took part in the discussion. Everything debated in this round processed the semantic mode of thinking. Not one word was mentioned about neurons or neurotransmitters, not even a word about genes. [30]

The violent actions were believed to have significant meaning. This viewpoint can come about in two ways, either individual-semantically or socio-semantically. In considering individual-semantic meaning, the subjective or individual meaning the action has for the offender is diagnosed. Feelings (e.g. the feeling of humiliation and hatred for those humiliating) and motives (e.g. the strive for retribution and revenge) are deliberated. Other motives and feelings may also accompany the latter (e.g. the strive for eternal fame and a feeling of pride about soon becoming a hero or martyr). All of this requires a context of knowledge and values in which the matter is embedded in and derived from (e.g. historical knowledge, ideologies, religious interpretations). The semantic web of references can be spun further in this way (e.g. in a biographical direction). Within this context, violent action appears conclusive due to causal references. [31]

From a socio-semantic perspective, the violent action is pondered in a different way. It emphasizes social meaning. It results from embedding the individual action at question in a network of previous, accompanying and possibly following actions of other people. Actions can also leave traces others pick up. If you consider a (terrorist) group and its interactive encounters, if you place it within a global network of different, interrelated groups and if you then ask what kind of linking function a certain violent action plays in this interactive coherence, then you are performing a socio-semantic diagnosis. It is possible that the individual-semantic and socio-semantic meaning of a violent action extremely diverge. Despite their possible dissimilarity, they require each other to maintain themselves (cf. "transfunktional-komplementäre Erhaltungsbeziehung"; LAUCKEN, 2000). [32]

In the semantic mode of thinking, action becomes a semantic unit; its meaning is accessible, assessable, explicable and therefore diagnosable only if you describe and structure the semantic reference connections encompassing it. The results of the diagnosis depend on the theories used for description and structuring. [33]

The therapeutic practices corresponding to this mode of thinking are apparent. It is about rebuilding the reference connections and embedding the problematic actions in a way that destroys the causal references. The therapeutic measures chosen depend on whether one operates with an individual-semantic or a socio-semantic orientation. [34]

In individual therapy, an attempt is made to change a person's framework of meaning, which ultimately releases hate and violent actions. There are diverse therapies available and I do not intend to illuminate all of them here. Some operate with rewards (e.g. cognitive behavior therapy). Actions, thoughts, feelings and efforts with no causal reference to the violent action are rewarded. Other therapies attempt to argumentatively modify individual components of this framework of meaning, so that its internal conclusiveness and therefore its action-triggering energy is lost (e.g. rational-emotive therapy). Yet other therapies assume people are capable of reflection. That is, people can reflect what they have done and make conclusions, which initiate a change in their actions. Such therapies try to train clients to take on a reflective stance opposing their own in certain situations. Of course, reflection training only results in a change of actions if the client is successfully conveyed values, rules and norms which condemn hateful and violent action (e.g. the psychoanalytic therapy goal: "Id" turns into "Ego" in order to allow "Superego" to gain influence). [35]

Social constructivism theorists would consider this kind of individual therapy unavailing; at least it would not have long-term success if the social context (family, group, milieu) the client lives in is also not changed. If the client only makes individual changes, he would turn into a person whose actions do not fit into usual interaction patterns. His in-group, for instance, would exclude him, perhaps even ridicule, humiliate or punish him. On an individual-semantic level, he would have to accept his status as a misfit or he would have a relapse. It is therefore absolutely essential that semantic therapy work involves a socio-semantic treatment practice for hate and violent actions expressed by young Arabic men. It deals with the social conditions these young men live in and by altering them. This was addressed in various ways in the DLF discussion mentioned in the beginning. [36]

A socio-semantic approach is also found behind a catchword currently heard everywhere: Cultural dialog. It was already picked up by the former president of the university rector conference, Klaus LANDFRIED, in a lecture in Oldenburg on 10/15/2001. He enhanced it by stating it must be a "dialog at the same eye level." [37]

By comparing the physical and semantic modes of thinking and their social practices, I hope distinguishing different patterns evolving from diverse

conceptions of world/reality is not only an academic mind game, but more so a necessary and consequential clarification. The consequences are so grave that it is worth contemplating whether decisions for particular achievement indicators and quality criteria automatically lead to the hegemonic status of certain modes of thinking—at least within psychology. In order to assess the latter, it is informative to observe the various research practices, since achievement indicators and quality criteria are supposed to display their selective influence within them. [38]

2.5 Research practices

A research practice contains all prerequisites necessary to carry out research, for example people, actions, habits, facilities, devices, user rules, resources and so on (see the list of components for a social practice). If you compare the research practices evolving from physical and semantic modes of thinking as well as their objective accentuation you will notice striking and consequential differences. [39]

Physical mode of thinking and its research practices

Certainly, very diverse practices can be found within natural sciences, from ethological field observations to experiments with colossal accelerators. In particular, I am implying psychology and its natural science subdisciplines. Currently, psychology is virulently developing biological, physiological and neuroscientific subdisciplines, abbreviated biophysioneuropsychology. [40]

I have already used the "e.g."—specifications mentioned in the introduction on social practice to exemplify what belongs to a biophysioneuropsychological research practice. In short, I would like to extract something especially loaded with structuring: Biophysioneuropsychology's dependency on devices (or machines or apparatus). Neuropsychology is a good example of this. [41]

Neuropsychology belongs to the "device-sciences" as opposed to the culture sciences. Device-sciences would not exist without the presence of certain devices. Within neuropsychology, those are the deflecting, screening, imaging devices. Currently, imaging devices like PET (Positron Emission Tomography) or MRI (Magnetic Resonance Imaging) are especially popular. These devices create the data which form neuropsychology's empirical basis. They are high-tech and require personnel, operation and maintenance. They take up a lot of space and are costly in terms of acquisition and usage. Their utilization requires long training phases, training facilities and training personnel as well as other collaborating partners. [42]

Device-sciences belong to the "high-consensus, rapid discovery" sciences (COLLINS, 1994). High consensus is achieved by the fact that many researchers gather around locations where, for example, a PET operates for the sake of solving neuroscientific inquiries. The device triggers a compilation of posed hypotheses, and creates high comparability of data, which in turn enhances mutual scientific relevance of data output. PET images, for instance, do not only fill scientific, but also mass media books and journals nowadays. A device, its

area of application as well as its data thus create a fusing and uniting effect. There are entire congresses blossoming around particular devices. There not only do researchers and operation technicians meet, but also constructors and salespersons from companies which produce the devices. [43]

Certain devices therefore unite entire flocks of people who conduct research with them, use them diagnostically, operate them, maintain and repair them, build them, produce them, sell them, buy them and much more. All of these people are highly capable of discourse. Their knowledge, skills, results, suggestions for improvement and so forth, all of this is interesting to them. Not only that, all of it is significant and comprehensible. They discuss, compare notes, argue, discover new things, new opportunities for application are debated, competition arises and much more. They are all united in their belief in the scientific relevance of one device and in the quality of data produced by it. This creates a "high-consensus" quota. [44]

"Rapid discovery" has something to do with it. Using expensive devices incorporates the tendency to continually refine and upgrade areas of application. Let us take for example PET. There are almost no issues psychologists are interested in which cannot additionally be pondered in terms of which parts of the brain or neural tissues are especially metabolically active. There are always new discoveries since the device's spectrum of application is so inexhaustible. Long-term, a high "rapid discovery" rate is therefore ensured. Yet this rate will increase exponentially since device-science results have, as Collins puts it, a short half-life due to their dependency on the devices themselves. Technical devices are constantly being improved: They are becoming faster, more precise, more in-depth, less prone to interference and do not forget smaller, more transportable, easier to operate and much more. This leads to the inferiority of data generated by older generation devices compared with data generated by devices from the "current" generation. Soon, older data will only have historical relevance, but no significance for current research. Research texts in sciences with a high dependency on devices therefore have short citation spans, on average the oldest texts cited go two years back. This creates a "high discovery" quota. [45]

Semantic mode of thinking and its scientific practice

In this branch, a similar dependency on devices does not exist. In order to research the semantic cosmos of a xenophobic and violent skinhead or to additionally investigate which socio-semantic interaction conditions he lives in, you need various instruments to collect data (e.g. observation inventories, questionnaires, content analysis category systems) and diverse instruments to analyze it (e.g. statistical methods), but none of this depends on any high-tech device and its technical state of development. Often, the instruments used to collect data must be individually created for a specific research case. There are rules for adequately creating them and general standards of quality, but they must be individually specified for a concrete case. Consequentially, the results have a specific potential for application. [46]

I admit, there are also semantic diagnostic instruments (e.g. particular tests or questionnaires) researchers gather to contemplate possibilities of scientific application. Yet this cannot be compared to the flocking effects the high-tech machines mentioned above have. This has its reasons. Firstly, the realm of application is more limited (you can only measure intelligence with an intelligence test and nothing else). Furthermore, the dynamics of technical elaboration which accompany physical or material apparatus are missing. And besides that, semantic diagnostic instruments lack all that which physical diagnostic devices require and are established for processing—buildings, rooms, operation and maintenance personnel, production companies and so on. [47]

Within the semantic mode of thinking, there are no scientific, technical, economic or industrial complexes which develop around particular devices and are held together by them. The scientific practice belonging to the semantic mode of thinking is thematically more decentralized, methodologically more diverse, personally more individualized and socially less interwoven. This all has to do with the fact that there are no objectively and methodologically unified devices. [48]

3. Quality Criteria and Structural Benefits

As mentioned in the beginning, I will discuss particular quality criteria and their indicators. I would like to demonstrate that some of these criteria or indicators structurally benefit certain branches of science. A research branch is structurally benefited if it does better than another branch only because its individual nature is different. That is because it belongs to a different mode of thinking which produces a different social practice than others. This benefit is independent of concrete research discoveries and their qualities. [49]

There are many criteria which can be used for judging quality (for psychology, cf. e.g. ISELER & PERREZ, 1976). I will discuss those, which currently play a significant role in university politics discussions and raging evaluations. [50]

3.1 The extent of economic usability

On January 2nd 2001 Lower Saxony's minister of science, Thomas OPPERMANN, faced up to a university discussion. It was about his visions of science politics which were to be included in the university law (Hochschulgesetz). During the course of this discussion, he named a core quality criterion which significantly guides his actions regarding science politics. The quality of science manifests itself "in the speed with which it produces marketable discoveries." The president of Oldenburg University, Sigfried GRUBITZSCH, let participants attending the opening ceremony of the academic year 2001/2002 (10/15/2001) know that universities should serve the economic boom by creating "scientific innovations and contemporary transformations" (eligible for contexts of economic usability). Relieving university research from the pressure of rapid usability of discoveries, a practice once highly credited, is increasingly losing its significance. Universities are supposed to be places of research which simultaneously stimulate the economy. One example is Oldenburg University's

affiliation, the Hearing Center (Hörzentrum), which closely collaborates with the hearing aid industry. In this sense, the university is supposed to become an economic factor for its region. The national minister for education, Edelgard BULMAHN, considers universities' new role a "driving" one. "Politics concerning research and technology" (Nordwest-Zeitung, NWZ, 4/9/2001) are inseparable in her opinion. "Venture Capital Meets Science" is the name of one course of lectures at Oldenburg University. According to Siegfried GRUBITZSCH, it is supposed to be a "signal for the university and the region to bring research and capital together more closely" (NWZ, 5/10/2001). Ministers, presidents and researchers discover excessive support for such demands in the mass media. Here just one of many examples: In the newspaper "Die Zeit," Martin SPIEWAK expresses the following (11/30/2000): "The public is increasingly demanding ... the fruits of research financed by the government." Of course, the fruits here mean an economic gain. Scientific discoveries are economically useful if they have some relation to technology—be it they implement technical resources, support further developments, stimulate innovations or serve the distribution of new techniques and hence support sales. Only sciences accomplishing the latter are capable of proclaiming a new period of rapid industrial expansion (NWZ, 5/10/2001). And that is what is meant by establishing businesses. [51]

If you consider economic usability a quality criterion for scientific research then you have to agree with SPIEWAK when he says, "that is exactly what will cause distress to human sciences" (Die Zeit, 11/30/2000). This is, for one thing, due to the fact that human and social sciences are semantic research enterprises. They lack the device-based structuring and the relation to technology. Within psychology the quality criterion "economic usability" leads to a massive structural benefiting of biophysioneuroscientific branches. Their scientific practice, as I have demonstrated, depends to a great degree on devices. Inevitably, it has a close tie to technology. Strives for neuropsychological discoveries demand the continuous refinement of certain devices and their results aid the continual expansion of their application. Hence, current diagnostic and therapeutic fields of application are continuously expanding and therewith the sales potential for certain devices. This connection is easy to see if you visit neuroscientific congresses and check out how companies use the foyers to display their offers. If you compare this with a social science congress, you shall realize there is no difference more palpable. [52]

The semantic research branch of psychology does not have any comparable relations to technology which high-tech companies would be interested in or which could initiate the establishment of new businesses. As substantial and informative the discoveries on the individual or social semantics of xenophobia and resulting violence may be, they are not enough to play the "driving" role for a business boom. [53]

In summary: The quality characteristic "economic usability" benefits biophysioneuropsychological research in psychology. The benefiting does not occur due to any extraordinary research quality achieved by this branch within psychological research. Its superiority results only because of the structural characteristics this type of research features and because of the economic

applicability its products yield. Whoever uses the criterion "economic usability" for comparisons and empirically determines that natural sciences are superior to human, cultural or social sciences has made an empirically worthless discovery. It is empirically worthless since it was determined right from the beginning. [54]

Similarly, structural benefiting becomes quite obvious when taking a glance at a particular achievement indicator: The external funds quota. The quality of research thus depends on how much extra-university resources are raised for that particular research—be it at research facilities, state or national agencies or on the economy. If you use this measuring rod to compare research evolving from the physical mode of thinking and its research practice with semantically-oriented research and its practice, you need no lengthy consideration to realize that a practice enforced with devices requires more personnel and materials than for instance a cultural science-oriented practice does. From a structural perspective, massive imbalances result. Since this is generally acknowledged, weighting factors for specific disciplines are being discussed in universities and are already partly implemented when the allocation of funds is determined with indicators (e.g. 1 EUR from third-party funds in sociology count as much as 3 EUR in chemistry). Even now, psychology is still considered one united discipline in this weighting game and no difference is made between its subdisciplines. The neutrality of treatment from external judging creates inner-disciplinary selection pressure for those areas of psychology which do not intensively utilize devices and personnel. They are continuously pressured to justify themselves, since most research evaluations have started using the external funds quota as an achievement indicator for the entire discipline, without differentiating between them. As a consequence, evaluation results are determined from the very start. Psychologists working scientifically in a laboratory equipped with devices produce qualitatively more high-grade research than the others, since it is funded more intensely by external financial resources. This is, by the way, completely right if economic usability is used as a quality criterion. If you used "applicability for analyzing and solving social problems" as a criterion for judging research, the results would probably reverse. Currently, however, this measure does not play a significant role in any evaluation. [55]

3.2 The breadth of scientific impact

Scientific findings are significant if they are taken up, discussed and pursued by other scientists. This measure of quality is termed scientific impact. There are two achievement indicators which supposedly assess such a quality: The number of published scientific papers and the number of citations by other scientists in their own papers. [56]

I do not intend to dispute the validity of these measures. A number of scientific and historical contributions do exist which warn of using such indicators as cues for quality. One cautioning example for psychology is expressed by Fritz HEIDER (1958; see also LAUCKEN, 1999). His fundamental thoughts concerning attribution theories rested almost 10 years in limbo until Harold H. KELLY (1973) recognized the fruitfulness of HEIDER's notions. Then, a citation boom truly

began. In those ten years of "incubation" (HECKHAUSEN, 1980, p.455), Fritz HEIDER's research approaches on attribution theory were "evaluated away" (if the breadth of scientific impact would have been used as an evaluation measure). I do not wish to debate questions of validity here. Instead, I am addressing the structural benefiting of certain modes of thinking and social practices with certain measures of quality and achievement indicators, whether they are valid or not. With regards to structural differences, again I am placing emphasis on the abundance of devices some types of research feature. [57]

As mentioned above, device-sciences unite flocks of people. For instance, there are many researchers worldwide who work with PET or other imaging techniques. All of their work is mutually significant to a high degree. As a scientist you must record and process as much as possible pertaining to PET research in order to maintain high standards of research and current knowledge on applications. A mark of distinction for research publications in device-sciences is the birth of a multitude of relatively short (2-5 pages) contributions. Exactly this briefness is comprehensible and relevant to the exchange network socially processing information (e.g. on PET), maintaining the further circulation of their contributions. Even minute technical improvements, be it for hardware or software, are worthy of publication. The range of authors is quite vast since authors contributing to a paper's success often show expertise in very different areas relevant for the device. Usually, the facility manager owning the costly device is also mentioned as an author. The sarcastic term "overstaffed publications" has been established (cf. e.g. URRY et al., 2004). Of course, citation indices are increasing to an extreme. [58]

In comparing this research practice with a social or cultural research practice, the absence of centering and gathering effects caused by devices instantly strikes our attention. Allow me to give an example: A worldwide network of researchers interested in the astonishingly common form of xenophobia witnessed in former East Germany does not exist. Yet those who are interested often implement different theories in their research, which in turn leads to the development of various data assessment instruments. Of course, these researchers mutually know about one another, but the density of exchanged information is lower since the centralized pertinence initiated by comparable equipment is lacking. This is also the reason why mutual citations are much less seldom. In addition, the contributions must be longer. Since the unquestioned foundation of common implications is missing, individual contributions must be much more in-depth and, literally speaking, more thorough. Often, entire books are necessary to present and elucidate the theoretical background of research, diverse data assessment instruments and empirical findings (cf. e.g. SCHULZE, 1993). [59]

The various forms and styles of publications become quite distinguishable when they directly impinge upon each other. I participated in a board working towards a fair weighting of achievement indicators for specific disciplines. How many impact points a book publication should have compared to a journal publication was debated. Natural scientists were very skeptical towards book publications. Books, they insisted, are only good for educational purposes. Science, on the other

hand, takes place in journals. One colleague representing religious sciences taught them a different view. Nevertheless, their interjections seemed to still reveal doubt. If worse comes to worse, they would surely retract their compromise. Then it would all be about the distribution of points. Results: A book is as good as three (at least two-page) journal article. For someone like me, who composes books as well as journal articles, this is an absurd discrimination of scientific achievements in book form. [60]

In sum: Natural sciences which belong to the device-sciences have a structural advantage compared to semantically-oriented research if rate of publication and citation quota are used as achievement indicators. The structural benefiting applies to branches of psychology with brief publications, device integration and abundant co-authors. A typical example is biophysioneuropsychology. Scientists researching in culture psychology automatically fall behind when such achievement indicators are used. [61]

3.3 Beneficial environment

The indicators of scientific research quality mentioned so far do not result from critical reflections on discoveries, but rather they are the ones primarily used in current evaluative measurements of achievement: Amount of external funding, number of publications, frequency of citation. One reason for selecting these criteria is simply obvious when bearing data technology in mind. As stated in the beginning, they facilitate rationalizing and bureaucratic methods for evaluations. The evaluators do not need to have expertise in the material. This advantage makes it hard for those structurally penalized to assert themselves, since they cannot name any criteria similarly easy to assess and calculate. This generous condition surely eases the propagation of achievement measurements which structurally discriminate semantic sciences. Within psychology, biophysioneuropsychology is benefited. Yet I do not only wish to discuss this kind of benefiting, but rather introduce two other kinds. [62]

Mass-media eligibility

Let us take neuropsychological discoveries as an example. They display higher effectiveness in the mass-media. This has to do with several things: Simple presentability as well as amazement and novelty effects. PET images for example appear to be evident and to speak for themselves. A person experiences, thinks or does something because something just happened in the brain. It cannot be any shorter or more simple. "Der Spiegel" reports (2/12/2001) for instance that neuroscientists have found out what religious feelings are. Both neuroscientists Andrew NEWBERG and Eugene d'AQUILI from the University of Pennsylvania have, as reported, "made religious feelings visible" (p.184). "Neurotheologists," as they both call themselves, have given us this insight. To make sure we all understand this, we are offered two PET pictures for comparison, one with and one without feeling. About 1/3 of a printed page in "Der Spiegel" is used to display this information. That is something! Simple, illustrative and spectacular. That is how discoveries are supposed to be if they are eligible

for the mass-media (compare LEIF, 2001). They are spectacular, because they sensationally contradict everything we once thought about ourselves. Religious feelings are not a certain kind of perceived transcendental connectedness, like for example the religious scientist Rudolf OTTO (1979) very minutely reconstructed in semantic architecture, which allows religious feelings of emotion to arise. Nonsense, it is much simpler than that! There is just an increase in metabolic activity at a certain place in the brain. There is nothing spectacular about something happening somewhere in our brain (at least we assume it is so) when we think, feel or want something. The "it is nothing but" allegation is spectacular. Let us recall the resolution by 22 bioscientists mentioned earlier which states that feelings are nothing but concomitant effects of electrochemical processes. That is spectacular, who would have guessed. It is unraveling and satisfies our lust for sensation, and by the way, it is a fantastic excuse. Who can, for instance, avoid electrochemical processes triggering the concomitant effect of hate-filled xenophobia? [63]

On the contrary, semantic analyses are differential, monotonous and lack illustration. To explain the semantic architecture describing a feeling of religious emotion, OTTO requires the space of an entire, small book. As a reader, you really have to be mentally alert. You are requested to pretend to be in different situations. These situations are quite uncommon to people who usually do not have religious thoughts. Therefore, OTTO describes situations everyone is familiar with and the reader is asked to think in a certain direction from this situational starting point. How can you present something like this in a magazine like "Der Spiegel"? Who would read it? More importantly, who wants to combine product advertisements with it? The mass-media eligibility of discoveries is increasingly becoming a significant quality of research. [64]

Economic zeitgeist

We are living in an era in which it is increasingly becoming natural to calculate the economic value and costs of every little thing. This especially applies to the sciences. Let me give a current example which so happens to thematically fit into the domain of science: In a public lecture (see NWZ, 9/20/2001) on the future of biosciences, Hubert MARKL, the president of the Max Planck Society, elaborates with a sense of euphoria which currently engulfs the biophysioneurosciences. All realms of human action are affected by bioscientific discoveries (cf. CACIOPPO & BERNSTON, 2004; EASTON & EMERY, 2004). New kinds of insight and solutions to problems are coming forth in a revolutionizing way. Interpersonal problematic actions will not require symptomatic therapy in the future. Since more and more knowledge on causal cellular activities is being discovered, chances for more targeted medication are expected to expand enormously. Additionally, novel medications and their possibilities of application have great economic potential. Such economic devotion to discoveries is something common nowadays. The implications ensure without protest the acceptance of the extent of economic usability as a significant quality criterion for scientific discoveries. Only arrogant and innocent people can express any doubt. [65]

Biophysioneuropsychology is therefore economically significant in at least three ways: Firstly, due to tight relations to technology and the economy, as mentioned earlier. Secondly, due to potential neuropharmacological applications facilitated by their discoveries. "Can Prozac replace Freud?," inquires VEGGERBERG (1997, p.13). Let us take tablets instead of lengthy, costly psychotherapy based on pragmatic semantics. The neuroscientist RESTAK (1994) targets the third issue, namely another economic advantage. If psychological or social problems arise, we no longer need to change external living conditions, which is often a costly endeavor. We can improve human coping by prescribing the appropriate psychoactive substances. [66]

Biophysioneuropsychology's threefold economic eligibility constitutes a beneficial environment with advantages not to be underestimated, especially if you consider the type of people that make up university councils (compare, for instance, a documentation in *Forschung & Lehre*, 8/2000, pp. 422ff; it shows the occupations which the members of advisory boards of many universities have). The president of the university rector conference, Klaus LANDFRIED, remarked in a lecture at the University of Oldenburg (10/15/2001) that the amount of government financing for universities compared to economic financing has steadily decreased in the past years. Naturally, financial backers from the economy want to have a say in what happens with their money. Consequently, their influence on universities will continuously increase. [67]

3.4 The consequences of structural benefiting

What are the consequences when the physical mode of thinking and its social practice are systematically benefited in human sciences by using quality criteria and achievement indicators as evaluative measures, causing the semantic mode of thinking and its social practice to appear worse due to its structural nature? I would like to consider a more precise question: What happens in regards to psychology and the current advancement of biophysioneuropsychology? I will address two consequences in the following: Consequences for everyday interaction beyond the realms of science and consequences for practical social skills concerning how to overcome social problems. [68]

Everyday interaction

Scientific discoveries are gradually integrated into our common knowledge, especially if they are spectacular and frequently appear in the mass media. This can go as far as to trigger a paradigmatic change of interpretation. I would like to give an illustrative example: Recently in a course for new students I conducted a small, didactically justified experiment. I presented a concrete case of xenophobic behavior and offered two explanations for it. It was explained either with biological/ethological theories or with sociological/identity theories. Afterwards I asked the students to tell me which explanation they consider more convincing. Results: Almost two-thirds voted for the biological/ethological explanation. Thirty years ago when I was an assistant at the University of Tübingen, I asked new

students a similar question. In those days there were very few students who considered the biological/ethological explanation more convincing. [69]

This is nothing but a didactic game, but it is appropriate enough to demonstrate what I mean by a paradigmatic change of interpretation, regardless of whether the concrete result is true or not. I can only refer to possibilities here. Imagine the possibilities of perceiving and interpreting human life and co-existence when (thanks to priority in financial backing and mass-media propagation) the biophysioneuro conception of human being settles in our common knowledge and begins to proliferate there? Our everyday co-existence would change fundamentally. I do not need to awaken my imagination to picture in which direction changes would occur. Instead, I can refer to what the bioscientists are already talking about. Wolf SINGER, director of the Max Planck Institute for Brain Research explains in "Die Zeit" (12/7/2000) that our co-existence must be changed by the latest biophysioneuro findings which indicate that our mental life is nothing but a concomitant phenomenon of electrochemical processes. "This knowledge must affect our judicial system, the way we raise our children and interact with other people" (ibid. p.44). "If, for instance, the assumption that we are completely responsible for what we do since we could have done it differently is no longer valid from a neurobiological perspective" (ibid.), then I conclude we should not waste our thoughts on contemplating what went through the heads of the Arabian terrorists when they steered their airplanes through the World Trade Center. We should instead wonder about causal synaptic processes. As SINGER says, then there would be no question of responsibility from a legal perspective. The call for justice which necessitates a semantically articulated cosmos would be a call for objective emptiness. Anyone mourning the loss of loved ones after this drama and all attempts made to speak to them, to abate their worries, to be there for them and to listen to them time after time in order to support them in overcoming their sorrow, fear and worries, would completely deny that these burdening feelings are nothing but symptoms of causal electrochemical processes. Whoever wants to help someone from a causal perspective should accompany the person to a doctor to get the right prescription of psychoactive medicine. [70]

Anyone can imagine additional examples of how personal interaction would change if you assume all thoughts, desires and feelings are nothing but causally irrelevant side effects of physical and biological processes. Even people's behavior would not be meaningful actions (e.g. aggressive), but measurable movements of the body instead. What I previously described about the physical mode of thinking and its social practice would just be a sample for general everyday interaction practice. Many things would change for our co-existence if we took away semantic meaning from our lives. By the way, in another contribution I have explained how frail the bioscientist's way of thinking actually is (cf. LAUCKEN, 2001). [71]

Practical social coping skills

Ponder the following mind exercise: If the police and military investigators trying to track down the World Trade Center assassins could only rely on biophysioneuro knowledge, they would be severely paralyzed from a socio-practical perspective. Semantic chains of conclusion like the following cannot be derived from biophysioneuro knowledge: From the notes of one assassin we know that he probably had the following motives. His motives were most likely socially generated and require continuous social reinforcement. The assassin must have lived with people who ... and so on and so forth. All of this is individual-semantic and socio-semantic elaboration. None of it would result from a biophysioneuro perspective of the assassin and his do's and don'ts. Practical social coping skills are not apparent. There are no search hypotheses and hints, for instance. [72]

At the same time, it is not clear how to conceive the currently demanded cultural dialog using biophysioneuro knowledge in order to unravel the socio-semantic context fostering the existence and preservation of a suicide-willing, mass murder-avid habit. Here again, biophysioneuro knowledge is socio-practically mute. Or can we perform neurotechnical culture work? Should we perhaps influence thoughts, feelings, desires and actions of those who represent and live out fundamentalist beliefs with psychoactive medication in order to keep their aggressive temper down? Perhaps we can achieve that with tap water and so forth. I would like to stop posing such polemic and rhetorical questions. I hope what I mean by inadequate or totally missing socio-practical coping skills in regards to biophysioneuro discoveries has become sufficiently clear. [73]

If within psychology the biophysioneuro discipline continues to develop unilaterally due to the structural influence of certain evaluation criteria, psychology must count on other disciplines taking over this area of competence, especially since socio-practical competence is at demand and will increasingly be so. Social sciences have been working on overtaking psychology for some time now. Socio-practical, applicable scientific findings, for instance on xenophobia and violence, are increasingly being made by sociologists and pedagogues rather than by psychologists. Anyone who transforms psychotherapy to a neurotechnical practice needs not wonder when psychotherapy is soon dominated by sociologists and pedagogues. Consequentially, a new journal titled "Psychotherapy and Social Sciences" was recently founded. The psychotherapist law (a specific law in Germany) should subsequently be revised. If psychology intends to continue distinguishing itself with an entire discipline range from physiological psychology to cultural psychology, allowing all areas to mutually acknowledge one another, nuzzling and fertilizing each other with their notions, then there must be an end to the current structural benefits biophysioneuro psychology receives, which ultimately discriminate semantic research. Everywhere you go, you hear about the necessity of transdisciplinary research. Yet in psychology, where it was happening all the time, it is being destroyed. One program of destruction is the rededication of available positions to biophysioneuro faculties. The University of Oldenburg and its president are

leading the way even though this bias is no longer a prominent assessment for a university's "profile." Biophysioneuro lighthouses are blinking in Germany from all directions nowadays. Currently, psychology is being pressed into a biophysioneuro form. Psychological research on cultures would be something really special for present-day Germany. [74]

4. Concluding Remarks

Currently, a fight over quality criteria and achievement indicators supposedly capable of evaluating the scientific quality of research is taking place. It appears that criteria and indicators which enable rationalizing and bureaucratic methods are wanted. Ideally, evaluators would not need any substantial knowledge in the scientific areas to be evaluated. [75]

The assumption that currently implemented quality criteria and achievement indicators support unbiased quality assurance is false. [76]

Certain measures of quality or achievement are constructed in a manner which structurally benefits or penalizes particular areas of science from the very start. Implementing them in evaluations creates pseudo-empirical results. [77]

Some of the evaluation measures currently implemented (e.g. economic applicability, rate of publication, citation quota) lead to the structural penalization of semantic research versus biophysioneuro research within psychology. [78]

Biophysioneuro psychology is massively establishing itself by drawing in objects, be it on a building, laboratory, device or organizational level. Thus, it stabilizes itself for years to come. A short or mid-term change of research direction is therefore hardly possible. Such establishments are appearing all over present-day Germany. [79]

If the biophysioneuro perspective expands itself at the expense of the individual-semantic and socio-semantic research perspective, which is currently happening, then psychology will lose a significant area of socio-practical competence. This will also have consequences for career politics. [80]

If the biophysioneuro concept of human beings expands itself paradigmatically within the realm of science and seizes a hegemonic position, it will enhance neurotechnical productibility thought or even psycho-cosmetic fantasies. [81]

If this pattern of thought nestles in our common knowledge and begins to proliferate there, our everyday interaction will become more technical and frigid. Paradoxically, we will still define and understand ourselves semantically, because the biophysioneuro perspective is mute on a semantic level. Yet this perspective offers particles of interpretation, allowing us to view and treat a person as a physiological apparatus when suitable. [82]

When success stories regarding the interaction with physical objects become the key for interacting with people, then problems of alienation arise. Just like physicists do not comprehend themselves and their conducting of physics if they physicalize it, people cannot comprehend their lives and co-existence with others if they biophysioneurologize it. Our life and co-existence is semantically expressed and structured. [83]

(translated by Cara Kahl)

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