# Standards and Borderline Values: Basic Criteria and Limitations in the Appraisal of Functional Parameters from the Medical Point of View

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Conflicts are familiar in medicine. It is not easy to resolve them and hence tendencies to sweep them under the carpet are understandable. In spite of extensive specialisation in the human sciences, such as sociology, psychology, ergonomics and anthropology etc., where the limits are reached or where the subject touches on legal aspects, the doctor assumes the role of the expert, the scientist or the judge. To an increasing extent, the doctor is required to function as a biologist far into the field of behavioural research.

The doctor's primary task is to give men and women under physical, emotional and psychosomatic stress the best possible help and advice in the circumstances (14). This ethic is modified, if not actually perverted, when scientific aspects of evaluating "functionality" are given priority.

There are areas of life which are also taboo for the doctor, areas whose limits are merely set by the laws of moral ethics or by political and social principles. Nevertheless, the doctor's outlook is still determined by the scientific view, i.e. operationalization and measurement, and this has been the case at least since medicine came to regard itself as being rooted in the natural sciences.

As Lolas wrote for a memorial symposium for Prince Auersperg in 1989, the basic metaphor in science, at least since Descartes, "...is that of the machine and clockwork. Thus nature is no longer regarded as a partner but as an object and hence not as a total entity. The basic operations in science, such as occur paradigmatically in anatomy, are dissecting, taking apart and putting together" (9). This applies to both deductive and inductive methods, i.e. generally binding principles determine from the outset which phenomena exist and should exist in science and which should not exist, a fact drawn attention to by Kuhn in 1973 (7).

The power of new paradigms to take the place of current ideas may result from the convergence of a whole series of problems affecting different areas of life and/or science in the sense of similarities on the level of deficiencies in the models. The decisive force here is a kind of suction.

The need of thinking people to introduce the holistic concept of totality in our various disciplines, encouraged in the postwar years by Viktor von Weizsäcker, who succeeded in reintroducing the subject and subjectiveness in medicine, is an attempt to counter the scientific metaphor of the machine and clockwork (15).

The limits to what can be planned in this kind of human biology based on the division of science also becomes apparent in the field of the somewhat synthetic planning of the environment, say, in the field of space travel. What is easier to understand is the problem of the world of work, where since Taylor and Mayo human areas of work are broken down and optimized in detail in order to be put together again synthetically afterwards. The idea at the back of the employer's head is to gain and retain control of the production process.

With increasing rationalization this breaking down of the reality of working life was bound to lead to a loss of productivity. The idea of the limited nature of human effort was indissoluably linked with the question of human justice (5).

Who is to judge what is reasonable? And if this is a doctor, are we aware of the danger of becoming tools of vested interests that are opposed to the doctor's ethical obligations?

We would like to give an example from an area of ophthalmology concerned with the eye and road traffic. This is a case where the above-mentioned covert conflict of interests can be demonstrated. De Jong justifiably warns of the danger of making additional demands on the visual capacities of drivers, however legitimate they might be (2).

We must first remember that cyclists, for instance, need no driver's licence, and that car drivers, who do need a licence, are allowed to continue driving - at least in Germany - in spite of impaired visual functions, as long as they do not cause any accidents or until they decide of their own free will to give up driving.

There are no statistics so far on the number of persons suffering from visual impairment who nevertheless drive a car safely and without noticeably poorer performance.

The difficulty in defining "normal visual capacity" lies in the fact that the subjective and objective problems involved in the performance of visual tasks result from the dynamic cooperation of the two eyes and the mental processing of what is seen during our actions and reactions as influenced by arousal, other mental preoccupations, fatigue and emotions. Seeing does not function automatically, rather it triggers perception which, modified by the personal mood, result in psycho-physical behaviour (4, 5, 11). The findings are generally not taken into account by the experts.

In the field of preventive medicine and occupational medicine, it is difficult to draw the dividing line between situations and performance involving risk and those without risk. Examples can be found in the fields of stress research and human ecology, etc. (10).

Let us take human ecology. In respect to our subject it is the attempt to include matters of public interest, empirical methods and theories and hence all sources of knowledge in largely converging and more or less idealistic models, thus providing both a political and scientific framework of action. It is characterized by dynamism and this means that in view of its complexity, it is only with difficulty accessible to scientific methods.

Where human ecology uses empirical methods, it imperceptibly becomes subject to the limits of systems theory with an inherent risk of a lack of definition.

Nevertheless, human ecology at least as a result of the rediscovery of time in a nonscientific sense, truly provides elements of an emerging change of paradigms in medicine. This provides the doctor with the need to assess dynamisms and functions usually far outside medical aggregations and even to bear responsibility to be responsively involved in optimizing their integrations. Here the doctor very quickly reaches the limits of his or her, as it were, classical way of thinking, since it is not a question of methods in a narrow sense of the term, and since standards are incredibly complex in these areas if it is possible for them to coexist at all. We need only think of new insights in the field of social biology, which regards groups of people as cybernetic entities and attributes individual characteristics to them, whose regulatory conditions require understanding when it is a question of apprehending individual characteristics and persuing differential research.

The classical marginal values and standards in human sciences are taken from static models, although at least the statistical moments were taken into account, albeit generally only in a rudimentary fashion. Another difficulty is the different aspects from which functionality can be interpreted, both at the semantic level and at the level of the risks involved (6).

Even if these things could be made scientifically accessible, there is still the problem of managability. Classical medical doctor-patient situations (and also teacher-student situations) do not permit this (12). New modes of thinking are therefore necessary and the prerequisites for them is that in their relationship with the patient (student), doctors (medical teachers) also display "compliance" both at the level of communication and competence.

Let us take the example of stress research: ever since it was discovered that stress can be explained not only on the baisis of Cannon's emergency reaction (1) or Selye's General Adaptation Syndrome (13), and ever since insights and theories from the field of the psychology of coping (8) as well as social psychology (3) have explained what justifies the global term "stress", a large part of what is known as stress research has consisted of the refutation of other approaches.

In medical stress research the approach base on the physiology of activation for a long time guaranteed a certain degree of success. But with the introduction of more exact insights in psychoendocrinology and psychoimmunology if not before, research has proven more difficult than expected. The days when, for example, work experiments were judged on how mean values of heart frequency or adrenalin excretion, e.g., differed within particular periods of time

or from one group to another, are past, at least at the recognized scientific level. The individual, normal range of fluctuation of even a single parameter in so-called standard situations is too large. In addition, we have had to learn that in situations where the demands of work reach a critical limit, one individual reacts with a change of circulatory functions, another for example, with immunosuppressive mechanisms, where another person displays a loss of motivation or depressive symptoms.

Very often stress research turns out to be a discouraging example of how helpless the medical scientist is in this gray area between health and disease.

It is not surprising either that stress research in the past has frequently been accused of being inexact by "reductionists", especially since the development of acceptable models taken from the everyday world in most cases are a turning-away from the classical experiment, particularly the animal experiment.

Those who are interested in this veritably indissoluble heterogenity of stress research and its implications on the level of standards in the field between health and disease are recommended to read the book by Lolas and Mayer (10).

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