Assessment aspects of health related research

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Assessment aspects of health related research

A. Brouwers

Distribution:
Eindhoven University of Technology
Center for biomedical and health care technology
Postbox 513
5600 MB Eindhoven
The Netherlands
Fax: + 31 40 443335
Tel: + 31 40 472008
Introduction
The participants in this workshop, being researchers in a variety of disciplines, are confronted with some questions concerning research, health, health related research, health aspects of buildings. This paper invites to contribute to the process of finding answers to these questions.

An overall question is how to develop and maintain research projects in a multidisciplinary context, especially within the culture and structure of a university being very mono-disciplinary in orientation and organisation.
Related to this arises the question how to realize effective communication processes in multidisciplinary settings. It may be followed by the question how the essentials and dynamics of a certain discipline can be presented for a broad forum.

Why should we bother about these questions?
Because we are confronted with an increasing amount of complex problems in our society; problems which hardly ever do fit completely within the scope of a single discipline; because we do need the strengths of several disciplines in mutual cooperation to shape our courses for the future in the rapid changing complex environment (in the USA referred to as raplex).
For such raplex-fields we have to learn together to define the most relevant objects for research. We also have to find ways along which results of research can diffuse to relevant parties in our society, and finally how the behaviour of human beings can be affected to cope with our main societal problem areas.

Dealing with research on biomedical and health care technology we have, to start with, a question on the meaning of the concept health. As will be illustrated the conceptualization of health may have a considerable influence on the development of research and its effects on the society in general.

Focus question I: How can one describe the concept of health?

Before discussing this question this paper on health related research is focused on research aspects in general, leading to a description of the concept research assessment.

Research
Research is a human activity directed to acquire more understanding on a certain area of reality.
A simple description, however, for many philosophers this kind of human activity is complicated enough to spend much effort on exploring what really can be meant by it and what cannot. In doing so many different approaches come up on related questions as: What is knowledge? What is a scientific theory? What is an acceptable research method, and what is not? What is the relation
between science and society?

Nowadays the viewpoints on these questions are mainly based on the work of Popper, K. R. (Logik der Forschung, 1934; The Logic of Scientific Discovery, 1959), Kuhn, T. S. (The structure of Scientific Revolution, 1970; The essential Tension, 1977), Lakatos, I. (The Methodology of Scientific Research Programmes, 1978), Latour, B. (Science in action, 1987). From this work a few concepts are briefly mentioned.

Paradigma, later also called disciplinary matrix, originated from Kuhn: Agreement within a certain community of researchers on selecting research objects or problems and on how to deal with them; mostly based on decisive publication(s) in the past; controlling the culture in such a community, for the greater part by implicit rules. Kuhn refers to such a paradigmatic situation as normal science, in distinction of a scientific revolution in which an old situation is being changed towards a new paradigm.

Lakatos does not restrict himself to an isolated theory but concentrates on chains of theories produced by a research programme. According to Lakatos two sets of rules are important in such a generating process for understanding a research community. Firstly rules stating what should be avoided or not done, called the negative heuristics; secondly rules stating how one should approach research activities, called the positive heuristics. Lakatos calls a research programme rational as long as it is able to generate new facts or insights. To continue a programme that lost this ability, or generates results already found by others, must be considered as irrational.

From Latour one can learn that analysing science must not be limited to the content of research, but should take also into consideration the research context, being equally important. He also points out that scientists consider their knowledge as facts and knowledge of other pole as beliefs.

Focus question II: Considering your research project(s), what can be said about the concepts of paradigm, positive and negative heuristics, research programme, research method, - content, - context?

Research Assessment: Characterizing a research project with the aspects given in this diagram, within the research group (context I), within the relevant (inter)national societies of researchers (context II), within the society in general, or more often special part(s) of the society, e.g. a certain branch of industries in case of a technological research object (context III). (Brouwers A. TUE-BMGT 1992)
Mental Health
To demonstrate what the influence of a certain interpretation of a word like health can have, the development of research on mental health can be illustrative. In this fields one can find remarkable changes in models / paradigms / heuristics / contextual frame works. Three main changes (all three still having a certain influence in the present time) will be mentioned. The following models may be understandable by everybody.

The psycho-dynamic or psycho-analytical model.
In this model the attention is focussed on early phases of human development. Disturbances in this development can cause dysfunctions. If this is to disturbing for "normal" behaviour one speaks of a mental illness. The therapeutical research is directed to give insight in the unconscious conflicts originating in a certain early phase of life. The method followed is the proces of introspection. In this scientific approach mental health is considered to be a quality of the human psyche. This notion generates the proces of searching information in the unconcious part of the human being.

The behavioristic model.
In this model mental health is considered to be a quality of behaviour. This approach states that mental illness has been caused by wrong behaviour. From this notion diagnostic information about mental illness has to be looked for by observations of behaviour. Therapeutic treatment than has to be found in the understanding that a different behaviour is possible and an ill making behaviour can be exchanged for a more healthy one.

This approach has been extended by regarding mental health as a quality of a relation between human beings, with the accessory methods of diagnose and therapy (Carl Rogers, 1942, 1951). This enlarged the context of the concept of health. The development of this concept also found a way outside the medical setting, i.e. in groups-dynamics training courses within organisations. A next growth of this context took place when mental health was introduced as a quality of an organisation (Doeglas, J.D.A., Mental Health Care and the Industrial Organisation, Philips Occupational Health 1928-1987, Uitg. Philips Medische Dienst).
The biological or medical model.

In this model the mental health is considered to be a quality of the human physiology. The increasing knowledge of biochemistry and the development of pharmaceutical remedies for influencing biochemical processes brought the feeling that mental illnesses can and must be treated in the same way as physical illnesses. In this approach one finds neurological diagnoses and therapies by medication.

In clinical practice a certain integration of these distinct models often will occur.

A system engineering point of view leaves the application of these models the question what can be ment by the standards for regaining mental health. In the first model this needs a useful notion of what can be meant by a healthy psyche. The second model requires works towards a standard for healthy behaviour, or healthy relationship(s). The third model desires a fundamental insight in what than may be called healthy physiology. Integrating these models in an overall approach must be governed by an idea of when one can be considered to be a mentally healthy person.

As stated in the beginning the developments discussed here illustrate that changes in research activities (paradigma / heuristics / context / methods) can occur purely by changes in the notion of one concept, in this case the meaning of mental health.

Health

The concept health can be considered as difficult to define in terms of objective, measurable criteria. An usual approach is to consider health as the absence of diseases. The concept of health and the one of disease do exist in mutual exclusion.

The Constitution of the World Health Organisation (WHO) defines health as a state of complete physical, mental and social well being and not merely the absence of disease or infirmity.

By this definition not many human beings can be considered as really healthy. It is a difficult definition to operationalize. Many more definitions appeared in the literature. We are still in search to such definitions, especially if they showed to be influential on research activities.

In 1980 we adapted the following functional definition: Health of a living human (psycho, somatic, social) entity manifests itself in such a progress of its various processes (physiological, psychical, social) within itself, in relations with others and with the environment, that disturbances of these processes can be corrected in acceptable time, without intervention from outside. (Verzellenberg TUE, 1980)

Nowadays we define health as the capability of a living system, within a given context, to maintain a state that enables it to subsist in accordance with its constitution. (a.o. Koelen, M.A., Brouwers, A. Knowledge Systems and Health Promotion. European Seminar on Knowledge Management and Information Technology, 1989, Wageningen, The Netherlands).

By --maintain a state--. in this definition, is meant that health is not static but a quality enabling to keep one's balance within a certain domain, also when exposed to disturbances of the equilibrium. When a living system is not able to do so within a given context and within a reasonable period of time, when one needs help from outside its context to restore the balance again, then in this approach it is considered to be not healthy, i.e. to be ill.

The domain in this context is the space in measurable variables in a living system, within which bounds it is considered to be healthy, and beyond these bounds it is considered to be not healthy.
Capability in this definition mentions the power to maintain the state; if necessary, which will be required of course only when certain disturbances are active. The disturbances can imply effects on physical, mental or social processes. When they do occur a healthy person has the capability to restore the equilibrium again.

Within his context includes everything in a common situation within the environment of a living system. In this approach also disabled persons can be called healthy, in a practical interpretation of this word, within their special situation, with special technical aids and adapted environment. In accordance with their special constitution disabled persons can have the capability to subsist in a practical healthy way, within their special context, able to maintain their state within their domain of health.

This definition of health is considered to be applicable for every living system, human beings in the first place, but also including animals, plants, an organisation, a society.

The capability to act and react as discussed can be maintained in a proper way, it can be trained, strengthened, enlarged, but it can also be neglected and weakened. For human beings the general life style will stipulate the determining conditions in this respect. For an organisation the internal culture and the management style are important aspects enabling to subsist in a healthy way or unable to do so.

In conclusion
This paper elaborates on a better understanding of research in general and of the concept of health in connection with health related research.

Some essentials of research have been discussed. While working in multidisciplinary settings we have to learn to communicate with one another. Picturing research projects on these essentials may be helpful in mutual understanding and cooperation.

A contribution has been given to enlarge the understanding of the concept of health. For those being active in health related research a good notion of the concept of health is important for the positioning, development and management of their projects and for the general appreciation and utilization of such research in a broad societal context.

The research projects presented in this workshop are related to the build environment, especially to certain effects of biological agents to people working or living in buildings.

Final focus question: Can you speak of a healthy building and/or what can be a fruitful conceptual framework to guide research activities in the direction of the build environment thus contributing to the health of human beings working or living in it?

Partly your workshop is directed to this question. Healthy buildings do constitute one of those important societal problem areas as discussed in the introduction to this paper. To shape our courses for the future in this complex area it must be considered of great importance:

- to find a good answer to this final focus question,
- to realize a survey of research results contributing to this topic,
- to promote a fast and effective diffusion of useful fundamental understanding on this subject to the proper organisations within our society, especially to the designers of buildings and to the designers of technical systems controlling the inside conditions of the buildings,
- to identify missing knowledge in this context and to develop relevant research projects on it,
- to find organisational solutions for the fact that such research does not fit in one scientific discipline but needs an effective multidisciplinary setting.