

Reflections on Practice-Oriented Research

By Håkan Törnebohm^{*)}

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This essay presents a general view on fields of research oriented to professional work outside the sciences.

To these disciplines belong various fields oriented to the world of business.

How do such fields of research affect developments in areas of practice?

This is one of the main queries discussed in the essay.

It is suggested that sciences, in which complexes capable of development are submitted to empirical, theoretical and critical studies, may be very useful as basic fields.

Introduction

The aim of this essay is to work out an intellectual frame of reference suitable to raising queries by researchers engaged in work oriented to the needs of professionals in the business-world. Many of these queries are general. They concern researchers in all practice-oriented fields of research.

Practice-oriented fields of research may be described as channels linking the universal field of research (= all disciplines taken together) to other complexes capable of development such as business, education, politics, agriculture, social work and so on. These fields of research induce developments in the fields of practice towards which they are oriented.

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My first task is to present an assembly of theses about the universal field of research which may be applied with small modifications to all complexes capable of development.

They contribute to the formation of the intellectual frame of reference which I referred to at the beginning.

The universal field of research UF

We may adopt different perspectives in viewing this complex.

In one perspective UF is a sociocultural complex.

In another it is composed of a private and a public compartment.

In a third one it is a complex of practices, in which researchers are involved.

The first perspective suggests these questions:

What is the culture of UF like?

How are the cultural and social sides linked together?

In the second perspective a main question will be:

How are the private and public sides of UF linked together?

The third perspective prompts us to work out a general concept of practice and to elaborate this concept in various ways so as to build concepts of practices that are included in UF.

These three perspectives are obviously not exclusive of each other.

The social side of UF

consists of all persons who have carried out research, who do so now and who will do so in the future.

They constitute the research community, which thus consists of dead, living and unborn researchers.

All members of the research community have professions, those of mathematicians, those of historians, those of economists etc.

The professions in the research community undergo changes and developments like any other profession. When new fields of research emerge, new professions are born in UF.

There are several institutions in the social side of UF, such as academies, universities, university departments, institutes of research outside the academia, ministries of research etc.

The cultural side of UF

is composed of all published results or research activities. As these activities are realizations of values, all these results have values. They have also imports or significances. The meaning contents of a research report is its significance. What makes it worth reading is its value, which is thus relative to the interests of its readers.

Imports or significances and values of cultural goods, the outcome of research activities, are cultural attributes. Cultural goods have also physical attributes like natural things.

The culture of UF does not only contain results of research but also of various items that are employed by but not created by the research community.

I refer i.a. to buildings in which research is carried out, technical artefacts produced in industries and used in experimental work. These cultural goods have also imports or significances and values, but not of the same kind as texts. The significance of an instrument of measurement for instance is its function. It has a value to the extent that it functions well when properly used.

Cultural goods in UF have spheres of influence which are combined in extremely complicated manners.

They exert effects on the minds of people who make use of them and they may affect research projects and their outcomes.

So far I have mentioned permanent cultural goods. Lectures, seminars, discussions and other forms of oral communications have physical attributes and also cultural attributes and ought therefore to be regarded as ingredients of the culture of UF.

I will refer to these items as cultural events.

How are the cultural and private sides of UF linked together?

There are two connections between them:

One goes from the culture to the minds of individual persons, such as graduate students involved in Ph D programs.

Another link consists of research projects in which new cultural goods are produced contributing to the development of the culture of UF.

Cultural metabolisms

What happens when graduate students are educated to become researchers? They interpret the meanings of the literature in their curricula – an hermeneutic activity – and they assess the value of the texts – a critical activity.

They assimilate cultural elements by means of selective hermeneutical-critical acts. These elements are combined into two kinds of syntheses: One of them gives rise to a view of that part of the world that is being investigated within the field of research, into which they are being introduced. Such a view includes general items, which constitute a world-picture of the territory of the field.

The other synthesis is a view of the field, which includes among other components an ideal of science.

There are analogies between what is going on when graduate students study the course literature on the one hand and what happens when a cow grazes on a meadow on the other. The cow transforms grass into meat and milk. Those processes are called “biological metabolisms”.

A graduate student “grazes on a cultural meadow” and structures are built in his or her mind as a result. By analogy I will call such processes “cultural metabolisms”.

The cultural metabolisms in graduate studies give rise to two other effects apart from world-pictures and views on a science.

The competence is improved to take in cultural goods. I will refer to such a skill as a cultural competence. Cultural competences go together with competences to communicate with teachers and fellow students.

These two kinds of competences are combined into what may be referred to as socio-cultural competences.

A fourth and last effect is that the interests of a graduate student are affected by cultural metabolisms and cultural events in which he or she is engaged.

Paradigms

The four items that I have mentioned above, interests, competences, world-pictures and views on science, including ideals of science, are tied together by strong bonds.

Interests and competences strengthen each other. The ideal of science of a person is affected by his interest and his competence. The view on a science is tied to a world picture view of its territory.

The bonds between interests, competences and so on make it plausible to regard them as components of mental structures, which I will refer to as "paradigms".

Paradigms are necessary presuppositions and serve as regulatory mechanisms of research work.

Research practices

Cultural metabolisms alone do not suffice to produce fullfledged research paradigms. Experiences gained from practicing research must be added.

This is why it is important that future researchers produce dissertations.

Projects and research practices contribute to the development of the culture of UF.

A project can be described as a sequence of steps within a unit of practice.

A territory X to be investigated is selected.

A set H_o of initial assumptions about X is collected from various sources including the world-picture of the investigator.

A set of tasks/problems P_o is assembled. These tasks are connected with H_o .

Instruments I_o (tools of research) are assembled.

The items H_o , I_o and P_o may be exposed to a critical assessment Cr_o and may as a consequence be modified to some extent.

Then a plan Pl_o is made up how to launch the project.

I will refer to the pentad

$(H_o, I_o, P_o, Cr_o, Pl_o)$

which represents the outcome of the preparation of a project as a model of an initial research program.

When the plan Pl_o is implemented, some changes will take place in the initial program. The triple (H_o, I_o, P_o) (or rather what it represents) becomes transformed into a triple (H, I, P) where $H \neq H_o$, or $I \neq I_o$ or $P \neq P_o$.

(H, I, P) represents the result of this transformation. This result will be

submitted to a critical assessment Cr, followed up by a plan Pl what to do next.

When Pl is carried out a new transformation takes place.

The new result represented by a triad (H', I', P') is then again submitted to a critical assessment Cr' followed by a plan P'.

This conception of a project may be represented by a schema $\sim \langle H, J, P, Cr, Pl \rangle \sim$

which I will call a "running research program model of research". This model does not grasp everything in an authentic project. To get hold of more features I will make use of the concept of research practice.

A research practice consists of at least one actor, who carries a paradigm and his, her or their activities.

Various tools of research such as texts, hard-ware instruments and interim reports etc. are also included.

A research practice is inbedded in a surrounding which contains the territory of the project (that part of the world which is being investigated),

people with which the actor is negotiating as a researcher and other items as well such as institutional constraints.

Clusters of research practices are linked together by means of cultural metabolisms and maybe also by oral communications in which the actors in the practices participate.

The paradigms of actors in research practices are bound to change. Their socio-cultural competences will be supplemented by skills to carry out activities which belong to research practices.

Familiarity with research practices are bound to affect their views on science. Their world-pictures will be enriched by new items of knowledge and their interests are strongly affected by their improved competences.

Effects such as these will transform the paradigms of Ph D students into full-fledged research paradigms.

To produce such paradigms is the main function of graduate studies towards a Ph D degree.

Active dealings with paradigms

Paradigms are never completely transparent, nor are they free from defects.

These negative features are bound to show up in research work in the shape of unpleasant surprises, anomalies which, unless dealt with as they arise, will bring about crises, obstacles of research.

In order to be able to deal with crises, to diagnose them and to find cures for them, it is important that researchers acquire skills to articulate, criticize and modify their paradigms.

Activities of this kind are similar to what philosophers do, when they discuss queries about the nature of the world, about roads to knowledge, about the validity of knowledge claims and so on. It is therefore plausible to regard such work as a philosophical one.

The practices in a field of research consist thus not only of investigations but also of philosophical reflexions and discussions about paradigm issues.

It is desirable that future researchers acquire skills to deal actively with paradigms in their field. If they do so they become not only better equipped to deal intelligently with anomalies and crises. It will also be easier for them to carry out original work.

Other complexes capable of development

Much of what I have stated about the universal field of research applies with minor modifications to other complexes capable of development such as business.

They are sociocultural complexes, they have a private and a public side and they are networks of practices.

The social side of any complex capable of development consists of a community of actors, which are equipped with paradigms specific for professions of various kinds.

There are organizations of various kinds in which the professionals carry out their activities.

They have acquired their paradigms in educational institutions, which in many cases belong to the universal field of research such as faculties of technology, faculties of law and faculties or departments of business administration.

The paradigm of a professional consists of
his interest,

his competence,

how he looks at that part of the world with which he is concerned in

his professional work, for instance a business enterprise, its competitors and its market and finally a view on his profession, including ideals guiding the ways in which he carries out his activities.

The cultural side consists of permanent cultural goods with physical and cultural attributes which are employed in the professional practices and in the education of new professionals and also of cultural events, such as board meetings, consultations, negotiations with suppliers and customers etc.

I will focus special attention on the practice aspect of a complex capable of development.

Practices

Every practice consists of at least one actor, his, her or their performances and whatever is needed for them, such as tools, knowledge, know-how and paradigms. If the activities of the actors bring about cultural goods, they are also ingredients of their practices.

Practices are characterized by assigning functions to them.

To diagnose a disease and to devise a cure for it are typical functions of medical practices.

Actors have goals. Are the functions of practices the same as the goals of actors?

Several actors participating in a practice may have different goals, but this does not prevent the practice from having a single function. Hence goals are in general not the same thing as functions.

We may distinguish between main functions and supporting functions.

Compositions of practices

Practices of different kinds (with different functions) may merge into each other and give rise to combined practices, in which all actors join together and form a team in the new practice.

Such functions are very important in practice-oriented fields of research. Researchers find out what the practitioners need to know in combined practices in which researchers and practitioners participate. I will refer to such practices as prospecting for problems or tasks.

Many of the problems or tasks that the researchers in practice-

oriented research are working have their origin in practices of the prospecting kind.

Generalities about practice-oriented research

A field of this kind is a part of UF, in which at least some of the researchers aim at supplying practitioners in another complex capable of development with resources which hopefully will give rise to developmental effects in that complex.

It is useful to look at practice-oriented fields of research in two perspectives:

In one of them such a field produces cultural goods that are employed by the practitioners, be it knowledge, techniques or hardware equipment.

In the other perspective a practice-oriented field of research is a multitude of practices which will meet and affect another multitude of practices.

Cultural goods in a scientific culture can be used by actors in another complex capable of development, if and only if they have appropriate socio-cultural competences. If there are such actors in a field, then the field is receptive to the field of research concerned.

To produce such a receptiveness is a major task of the researchers and the teachers of the practitioners. Without such a receptiveness the field of research is of course unable to influence developments.

Receptiveness is a necessary but not a sufficient condition for the proper functioning of practice-oriented research. Another condition which must be satisfied is that the practitioners find the outcome of the research activities to be relevant and useful to them.

An example of practice-oriented research

Medical research is an extremely well functioning practice-oriented field of research.

It is divided into compartments devoted to clinical and basic research respectively.

Clinical researchers are qualified physicians. This makes it possible for them to find out the needs of medical practitioners of know-how and know-that knowledge and transform these needs into researchable

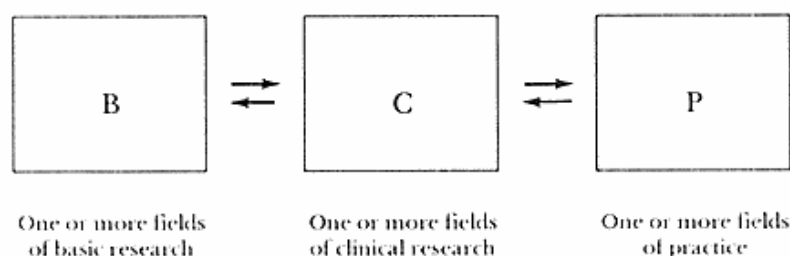
problems or tasks. Their double paradigms, as researchers and as practitioners, make them well qualified for prospecting activities in a field of practice.

Practising physicians are familiar with medical research to such an extent, that they can utilize recent results with good benefit to themselves and their patients. Their professions undergo rapid developments as a consequence of their being very receptive to research and as a consequence of the relevance to them of that research. The fact that clinical researchers and practitioners have similar paradigms is highly beneficial to both parties.

Clinical research is related to basic research by way of a second type of prospecting in which clinical researchers are engaged. They prospect for methods, theoretical knowledge and conceptual tools, which are needed to solve their practice-oriented problems. They are receptive to this kind of research as a result of their research training. Some of them are competent to carry out basic research, a fact which raises the prospecting power of the community of clinical researchers.

The compartments of basic research in fields of medical research are relevant to but not oriented to clinical practices. The researchers in those compartments are prompted by knowledge interests of the same kinds as scientists in purely academic fields.

A practice-oriented field of research in medicine may be represented by a simple schema



The arrow from C to B represents prospecting for instruments to be employed in solving problems of the clinical researchers.

The arrow from B to C represents flows of instruments produced in B and used in C.

The arrow from P to C represents a flow of problems

the arrow from C to P represents a flow of results that are employed in P.

I claim that this schema is applicable to all kinds of practice-oriented fields of research, thus also to business-oriented fields of research.

Queries about business-oriented fields of research

How may such a field induce developments in the business world B?

One possible way is that the research activities give rise to improvements of the paradigms of the actors in B and thereby also of the professions in that field. These improvements may be mediated by reforms in the educational programs of professionals made possible by new results of research. Another way is that practitioners in the business world are assisted in their work by consultants who are familiar with business-oriented fields of research.

The research activities may enlighten the business community and help its members to articulate, criticize and modify their paradigms.

The fields of research may also exert ideological effects on the business world.

All these possible effects of business-oriented fields of research contribute to developments in business.

What are the main functions of a business-oriented field of research?

I have partially answered this question above.

A main function is to help the actors in the business world to change the state of business so that it functions better and better.

This answer gives rise to a number of further queries:

What are these functions?

What roles do such and such professionals play?

In what senses do changes in the professions deserve to be regarded as changes for the better?

These queries pertain to the receiving parts of practice-oriented fields of research. I will next raise queries pertaining to the delivering parts.

Queries pertaining to prospecting for problems

Prospecting takes place in combined practices in which actors in the business world B participate. The main function of such practices is

that they enable the researchers to collect problems which are regarded as relevant by the other actors. Researchers and practitioners need not have the same interests and goals in problem prospecting practices. Thus the function of such practices are distinct from the goals of the participant actors.

Under what conditions do practices of this kind function well?

The paradigms of the researchers must be in resonance with those of the practitioners. This is the case,

if their interests are complementary, so that both parties feel that they benefit from the negotiations,

if they understand each other well, if they speak the same language,

if the researchers are well acquainted with the working situations of the professionals so that they share their know-how and know-that.

The world-pictures in the paradigms of the practitioners are then not very different from those in the paradigms of the prospecting researchers, and

if their aspirations are attuned to each other.

All these conditions for successful prospecting are fulfilled in examples of medical research. They are fulfilled in the case of other examples of practice-oriented fields of research to the extent, that the practitioners and the researchers share similar educational experiences and even more so if the researchers also share working experiences with the practitioners.

The conditions that I have stated entail that the paradigms of clinical researchers (in a wide sense) must have special characteristics which may be absent from the paradigms of actors in basic fields or research. In particular the competence component of clinical researchers must include skills of prospecting.

Queries pertaining to the connections between basic and clinical research

Clinical researchers need intellectual resources such as theories, conceptual tools and methods in order to cope with the problems that they assemble in prospecting ventures in the world of practitioners.

The links between clinical and basic compartments in practice-oriented

fields of research of all kinds serve to make the problems of the practitioners researchable.

Clinical researchers have to be receptive to basic fields of research of appropriate kinds. They have to possess socio-cultural competences with regard to such fields.

If in addition some of them are competent to do research in such fields, then the power of a clinical field of research to satisfy the needs of practitioners is higher than it would be otherwise.

Under what conditions can a practice-oriented field of research exert a strong influence on a field of practice?

It is favorable that clinical researchers can play the roles of practitioners and that the practitioners have good socio-cultural competences with respect to an appropriate field of clinical research.

These conditions are favorable in so far as they ensure that the clinical researchers deal with practice-relevant tasks and that the practitioners can make use of their results.

Some characteristics of basic research

The paradigms in such fields differ in essential respects from those of clinical fields.

The researchers are interested in knowledge in so far as it satisfies their curiosity and in so far as it is useful in producing new knowledge.

The criteria employed in assessing research activities and their outcome are based on ideals of science, according to which items of knowledge should have a high degree of truth and be well integrated into theoretical structures of wide scope.

Basic research is usually autonomous in the sense that the researchers generate their own problems without caring too much about the usefulness outside UF of the solutions of those problems.

Further queries pertaining to the relations between clinical and basic research

Basic fields of research are necessary as sources for intellectual tools to be used by clinical researchers when they deal with their practice-relevant problems.

How do clinical fields of research in return affect basic fields of research to which they are attached?

In so far as some clinical researchers work in a basic field of research, it is likely that their work may influence projects of some basic researchers. It is also likely that some basic researchers pay attention to clinical research when they set themselves tasks. It is not difficult to find examples of influences from clinical research upon the development of basic research in the natural sciences.

Clinical cancer research has undoubtedly affected cytology to a large extent.

Agricultural research plays an important role in the development of genetics.

How do business-oriented fields of research affect the basic social sciences to which they are linked?

I will not attempt to answer this question, because I am an outsider.

What should we think about the relative autonomy of basic research?

I think that this autonomy should be preserved because autonomy is highly conducive to the progress of these fields, to the benefit not only of the basic researchers themselves, but also of the clinical researchers, prospecting for intellectual resources and of the practitioners that are served by them.

Critical queries

Some practitioners may feel that their interests are not well served by existing business-oriented fields of research.

One cause of such an unsatisfactory state of affairs may be that the researchers are bad at prospecting. Another that they are unable to solve problems that are important for the practitioners, because they lack the competence to solve them or because they lack avenues to fields of research in which appropriate intellectual resources are produced.

In the last mentioned case the clinical researchers need to link their work to one or several fields of basic research in addition to those to which it already is linked.

I will end this essay by a few reflexions concerning a field of basic research which may be of considerable value for the development of business-oriented fields of research.

Ideas about encompassing fields of research

If several fields of research are oriented to the same complex capable of development, say A, we may ask how each one of them is related to A and how they are related to each other.

The first question may be answered along these general lines:

They are related to different functions in A, or they are related to different professions in A.

If A is a complex in which the actors are physicians, nurses, physio- or ergotherapists, then we may distinguish between fields of research oriented to these professions and to the main functions of the practices in A.

The oldest and most advanced of these fields is medical research. In our days new fields are emerging oriented to other professions and functions. I refer to nursing care research and rehabilitation research.

How are these fields related to each other?

In order to deal with this question at depth it would seem that a new field or research \hat{A} ought to be cultivated, in which the complex A at large is staked out for inquiries.

\hat{A} should encompass critical studies of ideologies within the sickward.

Research in \hat{A} ought to be able to improve the developments of paradigms within the various fields of research that are oriented to A.

Science of science $\hat{U}F$ is an example of an encompassing field of research about UF and its surroundings. This field is most likely to exert beneficial effects on various fields of research that are oriented to UF including my own field, theory of science.

I surmise that a field of research, say \hat{B} , in which the business world in its socio-cultural setting is staked out for empirical, theoretical *and* critical inquiries, could be of great value to actors in all fields of research that are oriented to B and also to the actors in the business world and their beneficiaries.

I surmise that studies of ideologies in the business world should be on the agenda of the field \hat{B} .

I envisage that a number of fields be created, each one about a particular complex capable of development, such as UF, such as education, such as business etc.

They might be referred to as fields of research about complexes capable of development.

These ideas have been elaborated further in those works in the list of references, that I have marked by asterisks.

References:

- *Andersson, Sven (ed): *Queries about development*. R.D.T.S.^o ser. 1, no. 146, 1985.
- Bärmark, Jan: *Forskning om forskning eller konsten att beskriva en elefant*. Natur och Kultur, Lund 1984.
- Elzinga, Aant: *The transition from vocational craft-based knowledge to scientific knowledge*. ISA/Parex meeting Deutchlandsberg, September 25-28 1980.
- Hettne, Björn: *Current issues in development theory*. Sarec report R 5:1978. Stockholm 1978.
- Johnsen, Erik: *Ledelseslærens elementer*. Nyt Nordisk forlag, Arnold Busch, København 1976.
- *Nordenstam, Tore & Törnebohm, Håkan: *Research, ethics and development*. Zeitschrift für allgemeine Wissenschaftstheorie.
- *Ibrahim, Ahmed Omer, Nordenstam, Tore (editor) & Törnebohm, Håkan: *Research and development in the Sudan*. Khartoum University Press, Khartoum 1985.
- *Törnebohm, Håkan: *Funderingar över utvecklingen av nya flervetenskapliga praxisorienterade forskningsfält*. R.D.T.S.^o ser. 2, no. 83, 1985.
- *Törnebohm, Håkan: *On complexes capable of development*. R.D.T.S.^o ser. 1, no. 141, 1984.
- Törnebohm, Håkan: *Studier av kunskapsutveckling*. Doxa, Bodafors 1983.
- Törnebohm, Håkan: *Studier av paradigmutveckling*. R.D.T.S.^o 1982-1983.
- *Törnebohm, Håkan: *Utvecklingsmöjligheter i det universella forskningsfältet*. R.D.T.S.^o 1984.
- *Törnebohm, Håkan: *Vad betyder vetenskapsteori?* R.D.T.S.^o ser. 1, no. 145, 1985.
- Wallén Göran (red): *Omvårdnad som vetenskap och ideologi*. R.D.T.S.^o ser. 1, no. 140.

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- Elzinga, Aant: *The transition from vocational craft-based knowledge to scientific knowledge*. ISA/Parex meeting Deutchlandsberg, September 25-28 1980.
- Hettne, Björn: *Current issues in development theory*. Sarec report R 5:1978. Stockholm 1978.
- Johnsen, Erik: *Ledelseslærens elementer*. Nyt Nordisk forlag, Arnold Busch, København 1976.
- *Nordenstam, Tore & Törnebohm, Håkan: *Research, ethics and development*. Zeitschrift für allgemeine Wissenschaftstheorie.
- *Ibrahim, Ahmed Omer, Nordenstam, Tore (editor) & Törnebohm, Håkan: *Research and development in the Sudan*. Khartoum University Press, Khartoum 1985.
- *Törnebohm, Håkan: *Funderingar över utvecklingen av nya flervetenskapliga praxisorienterade forskningsfält*. R.D.T.S.^o ser. 2, no. 83, 1985.
- *Törnebohm, Håkan: *On complexes capable of development*. R.D.T.S.^o ser. 1, no. 141, 1984.
- Törnebohm, Håkan: *Studier av kunskapsutveckling*. Doxa, Bodafors 1983.
- Törnebohm, Håkan: *Studier av paradigmutveckling*. R.D.T.S.^o 1982-1983.
- *Törnebohm, Håkan: *Utvecklingsmöjligheter i det universella forskningsfältet*. R.D.T.S.^o 1984.
- *Törnebohm, Håkan: *Vad betyder vetenskapsteori?* R.D.T.S.^o ser. 1, no. 145, 1985.
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