

MEMORANDUM

Sylter-Runde
(www.sylter-runde.de)

Scientific Entrepreneurship What scientists should deal with?

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Starting Position

Innovations are becoming more and more one of the major supporting pillars of social and economic development. They are significantly based on scientific principles and their applications. They are being generated, unfolded, perfected, communicated and transferred in different ways. The growing number of people involved, as well as the increasing financial resources, contributes to the growth of this sector in global dimensions. This does not only make the organizational forms and variations richer, but has also an impact on the social significance, involving both extensive opportunities and risks. New ideas can arise anywhere, projects can be formed, new institutions and whole organizations of individuals or small groups can emerge.

These individuals are mainly from the scientific world and have a special connection to it. However, their results have (or could have) an effect in a direct or indirect way in different social spheres (such as the economy, social institutes and public administration) – often without being considerate of national boundaries.

It is therefore justified to ask what tasks and objectives the individual scientist feels or should feel constrained to in his or her own role. It is hence obvious that the primacy of the scientific quest for awareness based on objectivity and for a structural and instrumental capability of relevant coherences counts. This should be backed by a living scientific ethos. The question of the desirable role in this scientific universe arises for everyone who is interested in science. An answer can mostly be found based on everyone’s own talents, attitudes and experiences, partly planned and often controlled by coincidence.

Two individual orientations can be distinguished as extrema of a certain continuum. On the one hand, there is the kind of researcher and developer who is independent, with a thirst for knowledge, who acts like an “obsessed” artist constantly following his own ideal of a scientific and technological advancement, and who has already accepted that his results will achieve full recognition and effect perhaps only after his own death. He is often a typical self-serving character who feels disturbed by all external influences and regulations. Basically, this kind of researcher and developer is a lone fighter in a scientific competition within a supportive environment. On the other hand, there is the kind of scientist who is involved in science and at the same time eager to build and further develop new premises and general conditions. He too is committed to the scientific goals and values, but sees his personal rights

to include the creation of new projects, raising of funds, creating of new organizational units, or even the establishment of new institutions. These entrepreneurial scientists often do not receive the right degree of attention and recognition.

But both types - and, of course, the many observable intermediate forms – are of invaluable importance for lively, flexible, adaptable sciences. In future studies, should the focus lie on the entrepreneurial scientist? This has recently proved useful and reasonable in multiple ways, such that now there are a few institutional and curricular experiments aiming to process and occupy the subject field "Scientific Entrepreneurship". Thus, in addition to "Social Entrepreneurship", another field of entrepreneurial activities emerges – and it, too, is not directly connected to the economic environment. (This approach should not be confused with a well known attempt of "Scientific Management" or "scientific farm management".)

The following should also be mentioned: The German *Framework Act for Higher Education* ("Hochschulrahmengesetz") added a third component to the former dual objective for universities, so that today "research, teaching, and transfer" apply as the binding and general goals of a university. While the structural, human, and financial conditions for the pursuit of the first two objectives are already well developed in all details, the focus of the entire university still lacks the right models and dimensions for the third objective. This also applies to the connection to the university environment – similar to the success in research through Associated Institutes and the collaborations with companies, non-university research facilities and departments, as well as with adjunct and honorary professors. In the context of various cooperations and associations with practice, universities already provide substantial transfers and important innovations. However, there is still a lack of overall mission and focus on lifting such promising developments to the proper status of a third component, besides the venerable dualism of teaching and research.

Requirements of a Scientific Entrepreneurship

The scientific discussion of the very important topic of "Entrepreneurship" has achieved a permanent position in research and teaching in Anglo-American regions, especially over the last two decades, and in Germany, particularly in the last ten years. A relatively new issue, however, is the result of the extension of the "business" perspective of Entrepreneurship to the social orientation of the founding orientation, notably through "Social Entrepreneurship" (please compare the memorandum of Sylt on this issue - see www.sylter-runde.de).

Now, what should a successful "Scientific Entrepreneur" aim at? First of all he should focus on his own scientific field of research. The Scientific Entrepreneur will accept innovative tasks that are based on creative development and successful implementation of new economic products and scientific research organizations in research, teaching and transfer. This requires not only "Entrepreneurial Spirit", but also motivation, ability, and endurance – all characteristics that stand for a businessman. Only in this way can new research areas (particularly of new multi-disciplinary components), new research institutes with own dynamics and real chances of survival in international competition, as well as scientific institutions reach the desired target groups in society, economy, and in globalized sciences itself.

These bridges must also be built as a potent provider of concepts and technologies from the scientific point of view. A mere waving of one's own publication is often not enough to reach the demanding side of sciences and technology. If co-operation, know-how transfer and transfer of persons do not lead to the targeted effect or cannot even lead to it, due to nonexistent major players on the demand side, then the Scientific Entrepreneur will have to selectively activate, support, or maybe even establish spin-offs, with direct assistance.

Therefore he is involved as an incubator and partially as an Entrepreneur also outside of his close scientific organization, but in the interest of their academic environment, from which ultimately the necessary resources for the realization of the ideal research and teaching strategies must come – channeled through taxes and government control as usual.

The effect of the Scientific Entrepreneur is not limited to purely market sectors, but may also have an effect on the social areas, which belong to his area of responsibility. In borderline cases, he leaves the scientific scene and mutates to a Business or Social Entrepreneur. More common, however, is the three-stage model: The university chair holder supplements his university institute or laboratory with an institute outside of but associated with the university, which is based on grants and contracts, and he initiates or supports spin-offs from his environment – with a more or less direct personal participation.

This memorandum on the topic "Scientific Entrepreneurship" presents an extension of the existing tandem of Business and Social Entrepreneurship to a triad. The attractiveness of this extended perspective results not only from the recursive approach, meaning a founder-scientific confrontation with scientific foundation activities, but also from the following memorable statements, which represent the outcome of the joint participants of the above-mentioned "Sylter-Runde".

Resolution of existing contradictions and a suggested definition

If the following two dimensions are chosen for the characterization of an entrepreneur, then the entrepreneur has the highest level of personal autonomy and potentially the broadest individual interest. Dimension (1), the extent of autonomy of action, and (2) the range of the existing mode of interest.

When applying both defining criteria to researchers in the scientific community, then the exact opposite can be found frequently: because of the increasing specialization of knowledge nowadays, scientists mostly do not possess a wide range of specialist knowledge, let alone do they have a strong interest in institutional foundations. They also lack sufficient possibilities in their own scientific world or the necessary know-how which is essential for the successful foundation, or sometimes even the necessary ambition.

Much more essential is that scientists are interested in scientific theories and theoretical framework, an institutional foundation - whether in business or in sciences, however, always has to work with everyday issues, and this contrast cannot be avoided.

Nevertheless, there is clear evidence that pioneering universities fostering "Scientific Entrepreneurship" are under construction – the leading vision of the Munich Technical University can serve as an example because it positions itself as "The Entrepreneurial University". They do not want to leave start-up companies related to and based on science to mere coincidence or to a revolutionary behaviour of scientists within bureaucratic administrative structures. Not to mention to not even try to revive it, comparable to the "Chancellor dynasties", where the low entrepreneurial potential meets a small room of action, so that a possibly intended science management, sort of, drowns in a purely bureaucratic administrative excellence. The fact that this is not meant to stay this way becomes clear through the increasing autonomy of the universities (freedom laws), as well as through the 1998 BMBF-initiated and since 2005 BMWi-supported program „business start-ups from universities " and "business start-ups from science" (EXIST).

There have of course always been "start-ups" of research groups, institutes at universities, new successful research facilities (DFKI may be pointed out here, which developed very successfully outside of major research organizations due to excellent scientific-entrepreneur achievements), and also successful enterprises that have found their way from research projects into the market (as in the case with IDS Scheer AG or SQS AG). In our view, there are far too few companies of this type in Germany and their emergence is obviously too ad-hoc. In the public interest it must be avoided that inventions get „lost“ in Germany, due to lack of activities of gifted Scientific Entrepreneurs, and a lack of knowledge and technology marketing in Germany. It must also be avoided that inventions are successfully brought to markets abroad, or that patents just dangle and innovations, such as OLED technology, are only directed to restricted areas of application prematurely and with the wrong emphasis as was the case, for example, with OLED displays targeting only in the automotive sector.

In summary, it is our view that, in the light of the previously described initial situation, the Scientific Entrepreneur takes on an increasingly important role in science, as well as between the scientific community and management practice. We define as follows:

„A Scientific Entrepreneur is a business-oriented promotor in the scientific field, who creates appropriate institutional structures by using start-up-oriented methods and instruments of invention, innovation and transformation, or who uses existing ones, or who modernizes to achieve effectiveness and efficiency.“

One could also say:

A Scientific Entrepreneur is an entrepreneurially acting scientist who, based on his research and his teachings, also realizes the transfer of his accomplishments.

Only when the desirable attitudes of the promotors in the definitions of their roles in the science, find a functional equivalent, and the organizational frameworks allow an effective unfolding as a successful Scientific Entrepreneur, while using the necessary instruments, only then can we speak of a turnaround in the scientific scene.

Statements and demands of this “Sylter Runde”

The Scientific Entrepreneur comes along with an extension of the traditional roles and of the respective expectations of roles of university professors, institute directors, and scientists in general. In addition to research and teaching orientation, the third career goal is now the (successful) transfer of knowledge. It should be noted in this context that the requirements of scientists in all three areas will increase and that this can lead to a risk of excessive demands. Therefore, the basic requirement should be that transfer as an important third column cannot simply be added, but should be added while rebalancing the two traditional columns. The well-known places of transfer are usually not sufficient due to their limited orientation and resources.

To design important frameworks and characteristic of Scientific Entrepreneurship in Germany, this Sylter Runde comes to the following statements and demands:

- ❖ Incentives must be given to motivate more Scientific Entrepreneurs at German universities to become active. This includes that the evaluation of individual and group performance is not solely measured by evaluated publications and numbers of graduates, but that in addition the business achievements should be considered in

terms of the above-characterized Scientific Entrepreneur. The existing evaluation corrupts institute directors too easily, so that they pose as co-authors only because a publication is from their institute. This is noticed to happen a lot in scientific areas.

- ❖ The scientific institutions have to create an appropriate free space for the business potentials at their own institute. For this, constitutional liberalization alone will not be enough. To actively work on an entrepreneurial culture and an appropriate motivation as well as training of considerable persons should be achieved. To avoid unpleasant exaggerations or unwanted failures, certain frameworks should be held on to in a "Codex for Scientific Entrepreneurship".
- ❖ Not only an ethical but also a legal framework should be established so that the addressee of funding generates a personal advantage from it and participates from the entrepreneurial success.
- ❖ Best-practice models should be open and stimulate Scientific Entrepreneurship. Only then can there be a general trend towards an enlightened and effective Scientific Entrepreneurship.
- ❖ The economic practice should be more involved in activities of the Scientific Entrepreneurship. Business aspects and "positive entrepreneurial virtues" can be carried into sciences through a close collaboration with the economy. Third-party funds should also come increasingly from business practice.
- ❖ The necessary expertise for a Scientific Entrepreneurship should be communicated in all universities. The "Scientific Center for Entrepreneurship" would be very helpful for that task.
- ❖ Existing and proven talents of Scientific Entrepreneurship should be part of the vocation criteria for managing positions in universities and scientific institutions.
- ❖ "University Seed Funds" can help establish Scientific Entrepreneurship at universities and develop in the run-up to classical financing channels.
- ❖ Mentoring and coaching models should help to promote the concept of Scientific Entrepreneurship at universities and in science.
- ❖ Team teaching between entrepreneurs from practice and academics is a promising instrument for the promotion of Scientific Entrepreneurship.
- ❖ Scientific Entrepreneurship should not only be promoted, but should also be measured in terms of success. Competitive and profit-based structures in science are helpful here. Nothing against long-term contractual backup solutions, but this is not supposed to mean permanent resting on the achieved level. The classic "science officer" ("Wissenschaftsbeamte") is the arch-enemy of the Scientific Entrepreneur!
- ❖ Successful examples should give suggestions and have positive effects: similar to the private health economics (Gesundheitsökonomisierung) and the private enterprise developments in the media industry. This can offer suggestions for the founder-oriented university as well as the director model from the media industry for the design of the university guidance.

- ❖ Scientific Entrepreneurship should not just be based on individual initiative, because it is often much more likely the result of "Scientific Entrepreneurial Teamwork".

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