

"Interdisciplinarity from a Social Science Perspective": Keynote presented at the GESIS-Institutstag, July 4, 2019

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Jens Jetzkowitz

"Interdisciplinarity from a Social Science Perspective",

keynote presented at the GESIS-Institutstag, July 4, 2019

1. Introduction: Between us

Ladies and gentlemen, we are among ourselves here - among scientists and people who work in a scientific organization. That's why I don't have to apologize straightaway for this weird word construct. "Interdisciplinarity" is an unwieldy term. Its content can only be deciphered by those who are familiar with the organisation of science and its division of labour. And there is even more to say about the unwieldiness of "interdisciplinarity". The term contains the word "discipline". "Discipline" – this has something to do with strict education, order and military exercise. You don't have to be a hippie to have such negative associations. Whenever I talk about “discipline” and “disciplinarity” in my courses I can conclude from the incomprehensible or even disturbed glances of my students that for them the word seems to conflict with the freedom of science.

We're here as scientists, so we know. For us, the concept of "interdisciplinarity" is neither new nor disturbing. Among us, in science, we know what is meant by "interdisciplinarity".

We can rely on the definition presented by the U.S. National Academy of Science:

Accordingly, "interdisciplinarity means "a mode of research by teams or individuals that integrates information and techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or area of research practice." When I took a closer look at this definition, which at first glance seems plausible, I noticed something unusual: This definition is essentially carried by a normative element. You can see this more clearly if you reduce it to its essential structures:

"A mode of research (...) to advance (...) or to solve problems (...)."

Isn't that interesting? "Trickery", I thought as a first reaction. Then I began to think about why this definition was formulated in such a way.

In the following, I will present the results of my considerations along these lines: I will begin by asking about the relationship between disciplinarity and interdisciplinarity in scientific research. Then I will evaluate some experiences from my own interdisciplinary research co-operations and present to you what I believe is beneficial for interdisciplinary research. In my concluding remarks, I will apply the summary of my considerations explicitly to the sustainable development goals (SDGs).

2. Interdisciplinarity and disciplinarity - two sides of the same coin?

"Interdisciplinarity" is a masked normative term. We are interested in "interdisciplinarity" because this term is associated with expectations of a good order of science. In order to describe in which field of science this normative term functions in which way and how, I concentrate on science as a social system. However, I would like to mention here in advance that science also needs to be examined as a cultural practice that can be distinguished from other practices with the same function. I can't explain the difference in the limited time I have available. That is why I assume here that we can regard science as a social system when practices of self-correcting knowledge production are institutionalized in a society. In other words, if self-correcting knowledge production does not remain a random individual case, but becomes a social pattern.

Historically, this obviously took place in Europe in the Renaissance era, when conceptual-theoretical interest was combined with practical craftsmanship. Here the verification of assumptions through observations and the improvement of observation methods established itself for the first time as a system for the production of knowledge.

This establishment took place in schools, i.e. in disciplines. The fresco by the Renaissance painter Raphael, known under the title "The School of Athens", depicts this development in a very vivid way. Raphael puts Plato and Aristotle in the centre of his fresco and gathers around them other philosophers, scientists, mathematicians and artists who have lived in different ages between antiquity and the Renaissance and who mostly stand for their own schools of thought. These schools and disciplines were established by and developed around individuals and their methods. Successively, object-related discipline formation prevailed, in which systematic and self-correcting knowledge production extended to the most diverse aspects of the world.

The decisive factor for the development of a scientific discipline is, on the one hand, the assumption that a particular aspect of the world functions according to its own laws or rules. On the other hand, it is essential that this assumption is shared by a group of scientists who then organise the knowledge production about the discipline's object: by organising specific congresses on this subject, by founding special scientific journals and their own specialist associations, establishing their own courses of study, establishing their own methods and so on.

In this phase of the formation of the sciences, the separation of natural sciences and engineering on the one hand and of the humanities and social sciences on the other becomes dominant. This is exemplified in Wilhelm Dilthey's dictum: "Nature we explain, but psychic life we understand."

There is another trend that goes hand in hand with the formation and establishment of scientific disciplines, namely complaints about fragmentation in science. These complaints are not groundless. They are connected with the well-founded concern that the production of knowledge organized in disciplines will lead to losing sight of the bigger picture and thus the project of a society enlightened by science will be lost. Husserl and Horkheimer have already expressed such complaints. Things don't seem to have changed much since then. The demand for interdisciplinarity can still be heard. To what extent the SDG framework is suitable to remedy this situation will be discussed later in my concluding remarks.

There is a second reason for concern about the disciplinary fragmentation of science: to the extent that sciences organize themselves into disciplines, they develop tendencies towards closure and block dialogue with other disciplines. In extreme cases, the organizational units of science then become communities of believers sailing under the flag of science. Thus, the disciplinary organization of science harbours risks for what science is supposed to achieve as a cultural practice: To generate reliable knowledge about the world and how it changes. If highly specialized scientists deal exclusively with their subject areas and no longer think outside the box, then science may lose its potential for innovation. New insights and new discoveries arise when we are free to speculate about the interrelationships in the world and to examine these speculations. Disciplines clearly restrict this freedom.

I suspect that most people who work in science believe that both concerns are justified. We know that disciplinarity and interdisciplinarity are not two sides of the same coin. The constitution of disciplinary sciences is the established power structure. To put it a little more

pointedly: Those who are in charge within this power structure decide how much novelty may emerge. Perhaps the desire for more interdisciplinarity is a reaction to the creeping suspicion that novelty is too restricted by disciplines and that scientific thinking thus increasingly has a problem of meaning. The measures employed range from the promotion of young researchers to project-related funding and the establishment of large multidisciplinary institutes.

Considering my own experience with interdisciplinary research, I would now like to illustrate the need for such efforts and present my opinion on the applied measures so far.

3. Interdisciplinarity in environmental and sustainability research – a personal view on needs and chances

Environmental and sustainability research cannot currently complain about a lack of attention. The relationship between modern, capitalist societies and nature has been a topic since Rachel Carson published "Silent Spring" and Dennis Meadows and his co-authors "Limits to Growth". This happened in the 1960s and early 1970s. Since then the label "Umweltforschung" exists. The concept of "sustainable development" was coined in the mid-1980s by the report of the so-called Brundtland Commission. Despite all the criticism that can be voiced about it, it has proven to be a regulative idea for the future shaping of globalised social conditions. The central insight here is that the protection of nature and the environment will only be possible if the shaping of society within and between generations is based on criteria of justice.

What does that mean? Well, that could be spelled out at the intersection of natural sciences and engineering on the one hand and humanities and social sciences on the other. And this process could actually have begun in the early 1980s. But it did not. Environmental and sustainability research has largely been regarded as the domain of the natural sciences and engineering and has been appropriated by them. The major funding programmes for climate and so-called global change research have done without the social sciences. The Environmental Sociology Section, of which I am currently speaker, has made every effort to contribute sociological expertise to these research areas. However, our efforts did not meet with the interest of the scientists in charge of these research programmes.

To this day, the lack of social science expertise in the sustainability discourse can be felt. Let us look at sentences such as the following, which are typical of the current state of reflection in the various strands of this discourse:

“Mankind has considerably reduced the forest cover during the Middle Ages and in recent centuries has drained the marshes and bogs or created open areas for food crops and pasture.”

“In the Anthropocene humanity is, for the first time, influencing hard-wired processes at the Earth System Scale.”

“Humanity is on a deeply unsustainable trajectory and unlikely to meet many international sustainable development goals and global environmental targets.”

From a social science point of view, it immediately turns out that we are talking here about "mankind" and "humanity", where we could speak more precisely and more clearly about certain lifestyles and economic practices. Instead, in these discussion contexts one still pretends that society is an actor in need of instruction and admonition. Luhmann criticized this as early as 1986 in his seminal book on "Ecological Communication". Almost nothing has changed.

"Almost nothing," it's worth noting. More recently, changes have been emerging through the work of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). Unlike the Intergovernmental Panel on Climate Change (IPCC), IPBES structures knowledge about biological diversity and its threats through a conceptual framework. This conceptual framework provides a strong momentum for serious interdisciplinary research. It makes a distinction between direct and indirect drivers of biodiversity loss, and includes social structures to the indirect drivers. Thus, institutions and governance structures come into view as "root causes of direct anthropogenic drivers".

What possibilities do we have to take up this momentum for new interdisciplinary research approaches? Let us look at the conditions for interdisciplinary commitment in Germany. You may know that the Global Assessment of IPBES was recently published. Of the 145 scientists selected by an international expert panel, 7 were German scientists. Only three of them hold a full professorship. This makes it quite clear what risks are taken when working in an interdisciplinary context. Those who work on an interdisciplinary basis have a much worse chance of meeting the usual requirements of the academic world. From recent science studies it is known that interdisciplinary research applications always have a lower chance of receiving funding than disciplinary ones (Bromham, L., Dinnage, R., Hua X., 2016). And it is also known that an interdisciplinary commitment significantly reduces the productivity of scientists (measured by publication output) (by 9.6% over the course of a career). Of course,

these researchers are gaining visibility in citations. However, this cannot compensate for the effect of lower productivity on career pathways (Leahey et al. 2017).

How is this manifesting itself? Well, if I apply, for example, for a professorship in social research methods, then my colleagues in the Appointments Committee usually look at my bibliography and ask: Is he really a sociologist? Central publications that underline my methodological expertise have appeared in biology journals. Sociological appointments committees do not read biology journals. So at the age of 51 I find myself in the absurd situation of being on the one hand an esteemed scientist with a unique and sought after skill set – you wouldn't have invited me for this talk otherwise – and, on the other hand, still living from project to project, earning less than a Berlin primary school teacher and likely to be unemployed again at the beginning of October this year. This certainly does not make me an isolated case among the miserable employment structures in German science. But an interdisciplinary profile further worsens the situation. There is just no place for people walking between the boundaries of disciplines in the university system.

Of course, in addition to project-related funding for interdisciplinary research, there are also large non-university research institutes that are committed to interdisciplinarity. The fact that this generally does not lead to new research approaches is now also considered proven in science studies. Disruptive research usually takes place in small teams. However, working there is much riskier - especially for the careers of the scientists involved.

Science - seen as a social system - is dominated by the disciplines. It must be stated clearly that this power structure fulfils an important function: Disciplines represent the state of scientific knowledge and - what seems even more important to me – of methodological standards. In my opinion, however, interfaces between the disciplines must be established in order to create as much room as possible for creative research. Not temporarily within the framework of projects, but in small teams that can test the scope of their research approaches in the long term.

This brings me to my concluding remarks and to the question of whether the SDGs will stimulate interdisciplinary dialogue in science (i.e. in the social system of science).

4. Concluding remarks: The SDGs as an impulse for interdisciplinary dialogue?

Please allow me to stress the punch line right at the beginning: The SDGs are a collection of different, in part competing, goals on which the UN member states could agree for global development by 2030. Perhaps they will help the various UN organisations to coordinate their activities, so that the World Bank does not destroy what UNEP is trying to preserve. And perhaps they will help the German government and the European Commission to see that sustainable development pathways can only be found if social and economic goals are not pursued at the expense of environmental protection and nature conservation. I am not optimistic about this at the moment, but I am happy to be positively surprised. However, the SDGs do not form a conceptual framework in which the concepts of nature, society and the economy behind these objectives are put into relation with one another.

Nevertheless, the SDGs can generate impulses for interdisciplinary research if the search for synergies and - above all - trade-offs between goals is not only carried out by natural scientists. Social scientists should take up this strand of discussion from their own perspective and with their methodological approaches and questions. They should familiarize themselves with the fact that hunger and prosperity, poverty and wealth, inequality, work and other social aspects are not only linked to money and assets, but also to natural conditions and their development. We know, for example, from various empirical studies that there is a connection between the increase in economic inequality in societies and the loss of biodiversity in those societies 15 years later. And we know a lot about the direct drivers of biodiversity loss. These drivers are well researched, we can simply list them: Land use change, for example, climate change, environmental pollution (including eutrophication), invasive alien species, flow modification and overfishing - just to mention the most important ones. However, at the moment we can only speculate about the root causes of direct anthropogenic drivers. So the good news is that there is a lot of work to do here for social scientists in interdisciplinary research collaborations.

However, let me conclude by recalling what I said earlier. If we want the creative stimuli of interdisciplinary research in science, it must be worth something to us. Researchers can generate these stimuli only to a very limited extent in temporary projects. If interdisciplinary research does not receive support for establishing small teams in which researchers can pursue their intrinsic motivations and in which they can nevertheless develop a career, nothing significant will change.

Thank you for your attention.

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