

Interdisciplinary research takes time

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Prof. Ruth Müller talks about challenges to interdisciplinary research. Credit: Uli Benz/TUM

Interdisciplinarity is becoming increasingly important in research. Yet there are structures in place that make careers in science more difficult for interdisciplinary researchers, according to Ruth Müller, Professor of Science and Technology Policy at the Technical University of Munich (TUM). In this interview, she talks about her study on a research center in Sweden and about how existing hurdles could be overcome and interdisciplinary research could be promoted in more sustainable ways.

It seems that new scientific institutions and research

projects are all about interdisciplinarity." Is it all hype?

It is not all hype, not at all. We are increasingly encountering issues that cannot be resolved using the methods of any one discipline. As a matter of fact, interdisciplinarity was already enabling major leaps forward even before it was intentionally promoted: After the Second World War, several physicists transferred to biology in the wake of the atomic bomb shock. This influx significantly contributed to the birth of molecular biology, as they applied their physics-based perspectives to biological research questions.

You studied at an [interdisciplinary research](#) center in Sweden and used interviews to identify which obstacles researchers face when conducting interdisciplinary work. Has something gone fundamentally wrong at this center?

Not at all. It's a great [research center](#) with dedicated colleagues who do superb interdisciplinary work. But the study clearly demonstrates the complexity of interdisciplinary research and the specific challenges arising from it.

What exactly did you observe?

Well, for instance, after a while the institute's management came to the conclusion that—despite the institute's important contributions to addressing global challenges—its influence within the scientific community was not significant enough. The most important benchmark of successful research to date is often the number of publications in reputable journals. So this resulted in pressure to publish more articles in such journals. Since the most prestigious journals are often geared towards a traditionally disciplinary audience, this forced researchers to

"discipline" their work to a certain extent in order to get published—not least because the number of such high-profile publications significantly influences researchers' success in attaining funding for new projects. Such pressures to become more disciplinary significantly affected the social and intellectual dynamics between the researchers at the center.

Are these fundamental problems that interdisciplinary research centers face?

There is little research into these issues so far. However, some studies indicate that researchers perceive the cost of working interdisciplinarily to be potentially very high—that it poses challenges to their career development, for instance. I have observed this, too: At the Swedish institute, I was told several times about an interdisciplinary Ph.D. researcher whose research was highly valuable in terms of its contribution to addressing global challenges, but who found that at his thesis defense, his research was being assessed by an external examiner based on narrow "disciplinary" perspectives. For him and his supervisors, this raised the question as to how young interdisciplinary researchers can be prepared for an academic world that often still works along highly discipline-specific lines.

What do you think needs to change?

To date, evaluation systems are often based on a single criterion—and this is the number of high-profile publications. However, particularly when it comes to evaluating interdisciplinary research, it would be important to consider a range of evaluation criteria. Alongside publications, these might include research findings that lead to successful applications in society, or that result in actionable knowledge that empowers communities or society at large to tackle social and environmental challenges. To this end, we need well-trained reviewers,

who are able to see the big picture and look beyond disciplinary confines. They should have a clear idea which mission an interdisciplinary project aims to accomplish and be able to evaluate its success using a variety of indicators. More reflective engagement with evaluation processes and specific trainings for the reviewers would be key to achieving these goals.

Apart from review processes, what else could be done to promote interdisciplinary research?

Pace is a very important factor: Interdisciplinary research takes time. If you want to develop something together, you first have to find a common language; immerse yourself in each other's way of thinking. In practical terms, one approach would be to allow more time for interdisciplinary theses from the start, for instance by funding [interdisciplinary](#) doctoral positions for four years instead of the usual three.

More information: Ruth Müller et al, Re-disciplining Academic Careers? Interdisciplinary Practice and Career Development in a Swedish Environmental Sciences Research Center, *Minerva* (2019). [DOI: 10.1007/s11024-019-09373-6](https://doi.org/10.1007/s11024-019-09373-6)

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