The Pufendorf IAS Symposium on Interdisciplinarity

ABSTRACT BOOKLET

4 May 2018

The Pufendorf Institute for Advanced Studies welcomes you to the Symposium on Interdisciplinarity.

The speakers have been invited to give us a deeper and varied understanding on the demands for epistemic agility called for by an institute such as ours, where the ethos is: groups can and will work in any number of ways; we refrain from telling our participants what to work on, and there is no format for "deliverables".

PUFENDORF INSTITUTE

For Advanced Studies

Program

Venue: Kulturen, Tegnérsplatsen 6, Lund

8.30 - 9.00	Coffee and registration
9.00 - 9.10	**Welcome** Ann-Katrin Bäcklund (Director, Pufendorf IAS)
9.10 - 9.40	**Asymmetries in Interdisicplinarity** Uskali Mäki (Professor of Practical Philosophy, University of Helsinki)
9.45 - 10.15	**Introduction to the Pufendorf IAS (non-) Model** Sune Sunesson (Senior Professor, Pufendorf IAS, Lund University)
	Part 2: **Digiwork: An Interdisciplinary Journey** Elizabeth Bjarnason (Associate Professor, Department of Computer Science, Lund University)
10. 15 - 10.30	Fika
10.30 - 11.00	**Philosophy and the Facilitation of Interdisciplinary Communication** Michael O´Rourke (Professor of Philosophy, MSU Center for Interdisciplinarity, Michigan State University).
11.05 - 11.35	**Training for Different Types of Interdisciplinarity** Hanne Andersen (Professor of Philosophy of Science, Department of Science Education, University of Copenhagen)
11.40 - 12.00	**Discussion** Moderator: Lennart Olsson (Professor of Physical Geography, LUCSUS, Lund University)

12.00 - 13.00 Lunch

13.00 - 13.30 **Epistemic Virtues in Interdisciplinary Science**
Lisa Osbeck (Professor of Psychology,
University of West Georgia)

13.35 - 14.05 **Towards a Theory of Interdisciplinarity**
Miles MacLeod (Assistant Professor, Behavioural,
Management and Social Sciences, University of Twente)

14.10 - 14.40 **Data Sharing and Reuse in Interdisciplinary Scientific Collaborations: Challenges of Heterogeneous Practice**
Christine Borgman (Professor of Information Studies, University of California)

14.40 - 15.00 Fika

15.00 - 15.30 **The Founding of Bio-X at Stanford University** *(via Skype)*
Richard Zare (Professor of Chemistry, Stanford University).

15.35 - 16.00 **Concluding Discussion**
Moderator: Lennart Olsson (Professor of Physical
Geography, LUCSUS, Lund University)

This symposium has been made possible by the generous support from the LMK Foundation

9.10 - 9.40

Asymmetries in Interdisciplinarity

Uskali Mäki

Interdisciplinarity in scientific research is often conceived and recommended in terms of programmatic ideals that depict it as symmetric and equal between disciplines in many ways, such as in terms of symmetries in collaboration, understanding, appreciation, contribution, benefit. These symmetries are often presented as virtues of genuine or otherwise advisable or successful interdisciplinarity. I'll make two claims and sketch arguments for them.

[1] Asymmetries abound, and they are diverse. Just a glance at actual scientific practice reveals major asymmetries. Considering the simple case of just two disciplines D1 and D2, the possible asymmetries between them range from instrumental asymmetries, wherein D1 provides D2 with techniques, principles, auxiliary theories, evidence; to critical asymmetries, wherein D1 sets out, or is used, to criticize / revise the contents or ways of functioning of D2; to imperialistic asymmetries, wherein D1 dominates / invades / subsumes D2; to discriminatory asymmetries, wherein D1 dismisses / discriminates against D2. Naturally, the boundaries between such asymmetries are not sharp; and they can be divided into further sub-types, depending on the precise relationship between D1 and D2. [2] Each of them requires a distinct normative evaluation in terms of epistemic virtuosity. No generalized evaluation of either symmetry or asymmetry is available. Many asymmetries are not just tolerable but recommendable, while others are problematic.

9.45-10.15

Introduction to the Pufendorf IAS (non-)Model.

Sune Sunesson (part 1)

As you may have heard, we have a reputation of being successful. So, I always hear: Sune, describe the Pufendorf method! Describe your model! However, we don't have one. We have a way of working, but it is not a model, nor a method. Three traits were fundamental in creating the Pufendorf Institute. They all have to do with ethos, space and framework.

The first is the bottom-up principle. We refrain from telling our participants what to work on. We select them because they express an interdisciplinary interest and present a problem suitable for interdisciplinary enquiry. They form groups, choose topics, and set goals by themselves. The second is the "no expected deliverables" principle. When we invite a Theme to the institute, we do not prescribe the way we want them to report their results. The third is the open space and framework principle. This may seem airy – but it means that the groups can and will work in any number of ways, as long as they are present at the institute regularly, and treat us, each other and their peers as academic citizens, with a mix of respect and curiosity.

Our framework is describable, and open to criticism, rather than falsifiable. You are invited to help us make that description. And, if you ask us – "Regrets, we had a few…" But we are not above reckoning them.

Elizabeth Bjarnason (part 2), Digiwork: An Interdisciplinary Journey

The Digiwork theme consisted of eleven researchers from four faculties who embarked on a journey to explore the impact of digitalisation on work life and organisation. Work life scenarios from case studies of doctors, nurses, lorry drivers, and others were used as a focal point for multidisciplinary analysis, and analytical points were illustrated using professionally produced comic strips. The work resulted in a poster exhibit and a book, and helped establish new personal networks between researchers from different disciplines. The theme created a way of working together across disciplines by combining open discussions and the freedom to explore while working together towards a common goal.

10.30 - 11.00

Philosophy and the Facilitation of Interdisciplinary Communication

Michael O´Rourke

Interdisciplinary activity among collaborators can be challenging for a host of well-documented reasons, e.g., lack of recognition and reward for interdisciplinary accomplishment, cultural variation across disciplines, and institutional obstacles to collaboration across units. An important challenge derives from differences in language and conceptualization across disciplines. Disciplinary expertise is obtained via training that emphasizes specific ways of thinking about and acting in the world, and these ways differ discipline to discipline. This can be difficult to appreciate, though, because disciplinary practice causes many of the commitments and tendencies that shape this expertise to recede into the background, making one's own perspective seem natural or even inevitable. Failure to appreciate differences in disciplinary conceptualization can compromise the ability of collaborators to communicate effectively and, ultimately, undermine pursuit of project objectives.

In this talk, I discuss a philosophically informed approach to this problem that has been developed by the Toolbox Dialogue Initiative (TDI). Using structured dialogue in over 250 workshops worldwide, TDI has worked to facilitate the communication and collaboration of cross-disciplinary research teams. I'll focus specifically on the complex, mutually informative relationship between philosophical practice and interdisciplinary communication that is at the heart of the Toolbox approach.

11.05 - 11.35

Training for Different Types of Interdisciplinarity

Hanne Andersen

Over the last several decades, science has grown increasingly collaborative and interdisciplinary, and much scientific knowledge today is produced in groups in which scientists with different disciplinary backgrounds collaborate in order to combine their knowledge and resources.

At the same time, there is an ongoing specialization in which interdisciplinary fields create not only journals, societies and conferences dedicated to their research, but also interdisciplinary degree programs. Often, these are intended to provide new generations of scientists with a broad training including all of the disciplines that the interdisciplinary field includes.

In this talk, I shall briefly present a gradualist and multidimensional account of contemporary research and explain how some of the main challenges for interdisciplinary research stems from disciplinary ideals that are largely untenable, and that the same untenable ideal are also what often determines the structure of interdisciplinary degree programs. Next, I shall argue that students in such interdisciplinary programs are often not trained to work collaboratively and interdisciplinary in the same way as they will be expected to work as researchers. Finally, I shall provide an analysis of some of the competences that are required for interdisciplinary research collaboration and discuss how they can be promoted through education.

13.35 - 14.05

Towards a Theory of Interdisciplinarity

Miles MacLeod

It would be perfectly reasonable to think that any generalizations about interdisciplinarity are likely to be fraught. Indeed many generalizations (whether normative or descriptive) that are made today are of an arguably vague enough kind to lack any risk of falsification, for example the claim that interdisciplinary requires the development of a language across boundaries and so on. In reality interdisciplinarity (and by extension transdisciplinarity) represents a multitude of interactions amongst different fields, along many different dimensions. Fields or disciplines may interact in terms of methods, data, theories, experiments, explanation, values, and beyond that in terms of a multitude of institutional and educational practices and even architectural ones. And this knowledge must be combined with the fact that even notions of "discipline" and "field" are hard to qualify. However I have a certain optimism that, with good accounts and case studies of practice, certain generalizations about interdisciplinarity can be made.

In this paper I want to lay the groundwork for a theoretical account of interdisciplinary collaboration, which in some ways offers predictions of how we should see ID play out in practice in at least a good number of cases. This theory is based on insights by Hanne Andersen, Marcovich and Shinn, and my own work on practices in systems biology with Nancy Nersessian, and on collaborative practices in the environmental sciences with Michiru Nagatsu. Our starting point in this paper is the notion that cognitive constraints, as well as institutional constraints, do affect decisions researchers make about how to interact and restrict their modes of interaction. We will pose that fields tend to interact using existing methodological tools which afford relatively easy or straightforward interaction without requiring revision to established practices and conceptual frameworks. An understanding of the cognitive mechanisms governing scientific practices helps rationalize why. On this account interdisciplinary work is to be expected to be conservative rather than revolutionary, an insight which should shape the expectations we have of ID and how to promote it.

13.00-13.30

Epistemic Virtues in Interdisciplinary Science

Lisa Osbeck (with Nancy J. Nersessian, Harvard University and Georgia Institute of Technology)

Interdisciplinarity is a hallmark of frontier 21-century research in the sciences and engineering. It is promoted by institutions and funding agencies for its affordances for integrative and innovative problem-solving. However, integration is fraught with difficulties both conceptual and social: normative differences between disciplines impact the potential for development of hybrid concepts and generative methods. Our ethnographic investigations of pioneering university research labs in the bioengineering sciences have aimed at determining the particular challenges confronting different forms of interdisciplinary research and developing strategies for facilitating learning through emerging cognitive and collaborative practices. The bioengineering sciences provide an excellent source for case studies because of the distances between the participating disciplines (engineering, biology, medicine) and because of the variety of configurations of interdisciplinary practice.

In this talk we provide examples of particular challenges confronting the different kinds of interdisciplinary researchers we studied in biomedical engineering and systems biology. Although we stress the importance of understanding these differences, we will focus on the cultivation of epistemic virtues we believe to be important to any interdisciplinary practice. The idea of epistemic virtue has historical roots to Aristotle, yet can be re-invigorated in the face of the unique problems confronting interdisciplinary collaboration. We suggest a set of epistemic virtues specific to interdisciplinary practice and required to foster interdisciplinary learning, creativity, integration, and collaboration within these settings. As one important example, we will discuss the cognitive and collaborative importance of cultivating the epistemic virtue of perspective-taking, how perspective-taking relates to epistemic identity, and how it might be facilitated through targeted learning experiences.

14.10-14.40

Data Sharing and Reuse in Interdisciplinary Scientific Collaborations: Challenges of Heterogeneous Practice

Christine Borgman

Drawing on 20 years of studying data practices in the physical sciences, life sciences, medicine, engineering, and technology, this talk will address the question of "How is 'interdisciplinary' done?" by presenting several case examples. One scenario from the Center for Embedded Networked Sensing will illustrate how one research team's evidentiary signal may be noise to another team with whom they are collaborating. A scenario from the Center for Dark Energy Biosphere Informatics will illustrate how methods decisions made early in the data collection process determine how and whether other disciplines can make use of physical specimens later. The third scenario, drawn from astronomy, will demonstrate how data taken from a single instrument can diverge in form and evidentiary value when processed by scientists in multiple sub-disciplines of the field. While data sharing and reuse are concerns in all of these fields, concepts of data "use" differ widely.

15.00-15.30

The Founding of Bio-X at Stanford University

Richard Zare

Bio-X is Stanford's pioneering interdisciplinary biosciences institute, bringing together biomedical and life science researchers, clinicians, engineers, physicists, and computational scientists to unlock the secrets of the human body. In 1998, Steve Chu, Jim Spudich, Lucy Shapiro, and I conceived of Bio-X in Steve Chu's office in the Stanford Physics Department. This concept was sold to the Stanford administration with the mission of encouraging research collaborations between faculty and students in engineering, chemistry, physics, biology, medicine, humanities, ethics, and the law. The idea was simple: to encourage these bright minds to pursue research that might otherwise fall between the cracks.

In 2000 ground was broken for a new building to house some of the Bio-X activities, and in 2003 construction was completed of what is called the Clark Center, named after James H. Clark, former Stanford faculty member who founded several notable Silicon Valley companies, Silicon Graphics, Netscape, Heatheon, myCFO, and Shutterfly. The Clark Center, which is three stories tall and has 146,000 square feet, was designed by architects Foster + Partners who are also known for projects like the Hong Kong Airport and the Millennium Bridge in London.

Since then, Bio-X has become a huge success with more than 600 faculty and thousands of other scientists across campus, who work together to conduct collaborative research. Its governance is by the Deans of three different schools, Stanford School of Engineering, Stanford School of Medicine, and the Stanford School of Humanities and Sciences, who with the Director of Bio-X, presently, Prof. Carla Schatz, set policy and decide thorny issues such as space allocations in the Clark Center. However, the birth of Bio-X was fraught with pain, unexpected surprises, and compromises, and I hope in this brief presentation to tell you about some of the problems faced and how they were overcome.

LUND UNIVERSITY

PUFENDORF INSTITUTE

For Advanced Studies