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INTRODUCTION:

Making Strange

Naomi de Ruiter, Ryan Wittingslow & Roland Chiu

In Theory...

According to an entry in *Notes*, the Social Science Research Council newsletter, the first attested use of the word ‘interdisciplinary’ appears in a 1937 notice advertising postdoctoral research fellowships that furnish “training of an interdisciplinary nature” (Sills, 1986, p. 18). It is clear even in this early document that interdisciplinary training is framed as affording an epistemic virtue: it presents an opportunity to “broaden the research training and equipment of promising young social scientists” (‘Research Projects’, 1937, p. 251).

From these relatively modest beginnings, the word ‘interdisciplinary’ and its derived forms are now everywhere. Not only do they occupy a central place in the vocabularies of universities—they attract “considerable hype”, to quote a humorously (though perhaps not intentionally) deadpan report from the

Amsterdam Young Academy (Douw et al., 2022, p. 4)—‘interdisciplinary’ teaching and research is also cited as an object of desire by governments and large corporate entities. Students and workers are told that they need to be interdisciplinary in order to adequately prepare for life and work in the 21st century.

While this development might feel new, it’s actually a consequence of a much older change in the way knowledge is produced. The 1937 use of ‘interdisciplinary’ is a consequence of the explosion of disciplinary knowledge that typifies post-18th-century academic research. Thanks to grand advances in scientific methods and technologies during the Scientific Revolution and the Age of Enlightenment, the last two hundred years have witnessed a spectacular multiplication in the number of academic disciplines: a glittering explosion of narrow intellectual taxa, each with their own methods, vocabularies, conceptual frameworks, research infrastructures, funding instruments, and sacred cows. Philosophy, the queen of the sciences, calved into countless subordinate fields, both experimental and theoretical. New disciplines appeared as if overnight, monstrous and hyper-specialised: chromed thoroughbreds of knowledge production.

This process of speciation and specialisation, however, came at a cost. As different disciplines specialised and deepened, they also by necessity became more siloed. Consequently communication between disciplines grew more and more difficult. No longer was it possible for a clever person with enough time and capital on their hands to have deep disciplinary expertise in multiple domains, as might have been the case until even the late 19th century; the price of expertise simply became too high.

The cost associated with disciplinary speciation and specialisation soon became too big to ignore. In the 20th century—and in particular the post-Second World War period—scholars began to identify an ever-increasing number of what we now call ‘complex’ or ‘wicked’ problems: problems such as climate change, social injustice, nuclear weapons policy, drug trafficking, pandemic responses, the Cold War, and so on. Because complex problems are so massive and diffuse, scholars realised, it’s simply not possible for complex problems to be solved, or resolved, via the methods and knowledge of a single discipline. Tasked with needing to actually solve these issues, it became increasingly clear that specialist scholars would need to (re)learn how to communicate not only within disciplinary silos, but between them. It is only by becoming *interdisciplinary* that these big problems could be

adequately addressed—and it is this need of which the 1937 notice is the first attested articulation.

As the academy became more obviously siloed and our problems more obviously wicked, use of the word ‘interdisciplinary’ and its derived terms exploded from the mid-20th century. Perhaps the most influential use of the word can be found in a 1972 report issued by the OECD. In that document, the authors argue that the disciplinary siloing of the contemporary university had caused undeniable social damage; interdisciplinary teaching and research was the only way out. “The guiding principle is not the need to demolish the disciplines, but to teach them in the context of their dynamic relationships with other disciplines and with the problems of society”, they write. “This is justified if only because of the increasing social costs of the over-specialisations of knowledge. Indeed, it may be argued that one of the reasons for the tarnished image of science is public reaction to its power to produce specialised applications of knowledge [...]” (1972, p. 9). Strong sentiments indeed.

Also to be found in this report is a typology of interdisciplinarity: a typology that, due to the importance and influence of this report, quickly became conventional amongst teachers and researchers interested in different kinds of cross-disciplinary collaborations. It is worth quoting this typology at length:

Discipline: A specific body of teachable knowledge with its own background of education, training, procedures, methods and content areas.

Multidisciplinary: Juxtaposition of various disciplines, sometimes with no apparent connection between them, e.g.; music + mathematics + history.

Pluridisciplinary: Juxtaposition of disciplines assumed to be more or less related, e.g.: mathematics + physics, or French + Latin + Greek: “classical humanities” in France.

Interdisciplinary: An adjective describing the interaction among two or more different disciplines. This interaction may range from simple communication of ideas to the mutual integration of organising concepts, methodology, procedures, epistemology, terminology, data,

and organisation of research and education in a fairly large field. An interdisciplinary group consists of persons trained in different fields of knowledge (disciplines) with different concepts, methods, and data and terms organised into a common effort on a common problem with continuous intercommunication among the participants from the different disciplines.

Transdisciplinary: Establishing a common system of axioms for a set of disciplines (e.g., anthropology considered as “the science of man and his accomplishments”, according to Linton’s definition). (OECD, 1972, 23-24)

Not all of these remain in common use: ‘pluridisciplinary’ in particular, while to our eyes a useful distinction, has largely been devolved into a subordinate kind of interdisciplinarity rather than being a kind of disciplinarity in its own right. Nonetheless, most contemporary work on interdisciplinary teaching and research relies on some version of this typology, whether explicitly or otherwise.

...and in Practice...

These are all very fine sentiments, motivated by a justified concern that monodisciplinary teaching and research is simply inadequate for dealing with the problems of the modern world. But this well-stated need is only the first step. We still need to know how interdisciplinarity actually works in practice. What does it look like in the classroom, or in the research laboratory, or in the dusty, wood-panelled chambers of an Oxford don? How should we recognise it? What constitutes the set of best practices for interdisciplinary teaching and research?

We know that to be interdisciplinary is to work at the site of overlap between two or more different disciplines, and that these disciplines should be of sufficient distance before you begin. (Otherwise you would be merely ‘pluridisciplinary’; a much less impressive feat.) Unfortunately, however, this doesn’t give us very much with which to work. Even ignoring the conceptual problem of measuring the distance between disciplines (it is not clear, for instance, whether that distance should be measured morphologically or cladistically, let alone how those differences could be adequately justified),

there's little in the definition to suggest how exactly we should begin this enterprise. Moreover, the little that is offered—the comment on the composition of interdisciplinary groups—strikes us as insufficient.

We take this insufficiency to rest upon a basic assumption—common to much of the material on interdisciplinary and transdisciplinary teaching and research—that all scientific truths are basically and blandly reconcilable: that is, that a truth isolated in one domain will be compatible with all other true claims. This attitude is one that has its origins in the whiggish optimism of Enlightenment science. Per Isaiah Berlin, this optimism is underwritten by three interlocking propositions: first, that questions only have one correct answer; second, that methods exist to discover those answers; and third, that answers cannot be incompatible. As he describes the phenomenon:

The first proposition is this: to all genuine questions there can only be one correct answer, all the other answers being incorrect. If there is no correct answer to it, then the question cannot be a genuine one. [...] The second assumption is that a method exists for the discovery of these correct answers. Whether any man knows or can, in fact, know it, is another question; but it must, at least in principle, be knowable, provided that the right procedure for establishing it is used. The third assumption [...] is that all the correct answers must, at the very least, be compatible with one another. That follows from a simple, logical truth: that one truth cannot be incompatible with another truth. [...] At best, these truths will logically entail one another in a single, systematic, interconnected whole; at the very least, they will be consistent with one another. (Berlin, 2013, p. 25-26)

Of course—and as Berlin himself argues—we now have good reason to be suspicious of these assumptions. There exist any number of apt descriptions of phenomena within given disciplinary domains that may not be portable outside of that domain.

Consider, for instance, perhaps one of the most famous examples from 20th century science. Einsteinian relativity and quantum physics are equally proficient at furnishing good descriptions and explanations within their particular domains. General relativity is useful for describing and predicting the causal behaviour of larger entities, while quantum physics is useful for describing and predicting the probabilistic behaviour of particles. These

theories are fundamentally incompatible with one another (cf. Maxwell, 1985). Relativity is premised upon the assumption that gravitational fields are continuous entities that represent the geometric properties of 4-dimensional spacetime. Quantum physics is premised upon the assumption that fields are *discontinuous*, being composed of well-defined quanta. This means that there can be no analogue for gravitational fields in quantum physics, and it is this lack of analogue that renders the theories incompatible. We will not weigh in on whether or not this incompatibility is evidence of some deeper epistemic disagreement; we happily leave answering that question to those with the relevant interests and training. What *is* worth noting though, is that this compatibility issue (a violation of Berlin's third proposition) is a direct consequence of the fact that there exist two equally apt but non-reconcilable correct ways of describing the world (a violation of the first proposition).

The potential irreconcilability of knowledge claims is not the only problem facing interdisciplinary collaboration. Interdisciplinary collaborations also face stumbling blocks when it comes to establishing methodological or definitional norms. What constitutes convention and/or good practice in one domain may not be apt in another. To share a personal anecdote: some years ago, one of the editors of this volume collaborated with a psychologist, a biologist, and a fellow philosopher on an interdisciplinary paper exploring the different ways in which a person could love their country (cf. Ioannou et al., 2021). As part of that process, the four contributors spent more than one agonising—though, it must be admitted, ultimately fruitful—afternoon in a local café just establishing what we mean when we talk about something being a 'fact'. While we appreciate that this sounds trivial (and, rest assured Dear Reader, it *felt* trivial), it ultimately proved very important to the eventual success of the paper. Had we not gone to the effort of performing that foundational conceptual work, we strongly suspect the paper would never have been published at all.

These kinds of agonising yet fruitful negotiations take place constantly at the University College Groningen (UCG): the faculty at the University of Groningen with whom all the contributors to this volume are affiliated in one form or another. UCG, like all Dutch university colleges, is an interdisciplinary institution premised upon the idea that interdisciplinary collaborations offer all kinds of distinct epistemic and other benefits that are hard to achieve in order environments: benefits like, for instance, being able to speak across the aforementioned disciplinary silos.

And yet, in spite of that grand vision, our students and faculty are constantly confounded by the lack of appropriate rules, guidelines, or best practices when it comes to making interdisciplinary collaborations work. Contrary to the whiggish optimism of most literature on interdisciplinarity, and thanks to the blunt lessons offered by experience, we have learned that interdisciplinary collaboration is, to put it frankly, *really bloody difficult*. We have also become keenly aware just how much of the success of interdisciplinary collaborations is due to the heroic efforts and grit of collaborators. Success cannot simply be assumed. Instead, it is only with hard conceptual labour that the norms, concepts, and practices of different disciplines can be brought into (even momentary) alignment.

...Together

That is where this book comes in. This volume—a collaboration between UCG students, internal faculty, and external staff—is the distillation of years of insight about how to do interdisciplinarity properly. It deals with the methods, approaches, experiments, and challenges that we've encountered, and how we've succeeded (and failed!) in overcoming those challenges.

Crucially, we've encountered and negotiated these challenges together. While disciplines come with sets of shared knowledge of procedures, methods and content areas, little shared knowledge exists for interdisciplinary spaces. We establish these procedures, methods, and conceptual grounding as we go. Sometimes this process begins with an instructor who wants to broaden their pedagogical toolkit within the classroom, sometimes it begins with a student who questions a disciplinary norm. When it comes to interdisciplinary work in practice, we find that co-constructing these spaces with students is inevitable and valuable.

This volume is an experiment that tests the principle of co-constructing knowledge with students. In doing so, we test the boundaries between education and research. We do so by explicitly treating our student contributors not as students, but as researchers. Loosely guided by faculty members in a supervisory role (either during the writing of the chapter, or beforehand in the context of project work), students were given the opportunity to experience first-hand what it means to develop their own research question or proposal, how to select and engage in research methodology, how to communicate what they did in an academic chapter, and perhaps most uniquely,

what it means to contribute to an edited volume. As editors, we—Naomi de Ruyter, Ryan Wittingslow, and Roland Chiu—interacted with the student authors as if they were professional researchers; offering reviews of their work and communicating decisions regarding minor or major revisions that were needed, up until acceptance of their chapters. None of this work was done for credits or grades; it was done out of curiosity and ambition.

With the following chapters, the reader is invited into the process and the outcomes of student-driven education; where students were given the opportunity to pursue their own curiosity, and to take charge of their own acquisition of knowledge. For some of the students, this involved exploring and unpacking their own experiences of learning (Chapters 5 and 6), where they adopted the role of researcher and participant, knower and that which is known. For others, students adopted the role of researcher, engaging in empirical and/or conceptual scholarship. In all cases, students inquired into interdisciplinarity in some way or another. What this meant ranged from how interdisciplinarity research can be done (Chapters 1 and 2), to how innovative research methods can reveal interdisciplinary understanding (Chapter 6), to how non-traditional domains of knowledge construction (i.e., art) can contribute to either philosophical knowledge itself (Chapter 3) or to learning about philosophical knowledge and debates (Chapter 5).

In all cases, students learned what it means to be a researcher, and they engaged deeply with interdisciplinarity. Their reflections on this process can be found in Part 3 of this volume. The knowledge that was constructed regarding interdisciplinary in both broad and rich, as evidenced by the chapters in this volume. Below, we outline what the contributions are to our understanding and practice of interdisciplinarity.

Part I: Foundations and Conceptualizations

In Chapter 1, Daniel MacRae and Hubert Matuszewski lay the foundation for this book, with an all-encompassing framework for engaging in and understanding the collaborative interdisciplinary research process: from selecting an appropriate topic to publishing results. The framework is descriptive, rather than prescriptive, drawing from literature as well as extensive survey research from interdisciplinary researchers working across a wide range of disciplines and from all over the globe. The large-scale data is complemented by in-depth interviews, offering nuance for the framework. With their frame-

work, they offer general descriptions, considerations and recommendations for interdisciplinary researchers.

Chapter 2 builds on Chapter 1, as it draws from a unique portion of the data collection from Chapter 1. MacRae and Matuszewski shift their focus to a consideration of the factors that propel or hinder collaboration in the context of interdisciplinary research. They build on the current literature regarding the practical and unique elements of collaboration in interdisciplinary settings by examining the experiences of researchers via large-scale survey results and in-depth interviews. The chapter provides considerations and suggestions regarding aspects of collaborative work in interdisciplinary settings, including team size, collaboration experience, team-member roles, unique skills, and the influence of disciplines. Together, Chapter 1 and 2 thus provide a critical and useful guide for engaging in research that involves a team of researchers from various disciplines.

In Chapter 3, Patrik Wintergerst and Dr. Benjamin Bewersdorf argue for a specific set of strange bedfellows: art and philosophy. Specifically, they suggest that engagement with artwork can bring about experiences which can function as evidence in philosophical arguments. They illustrate this idea with two specific examples, the duck-rabbit drawing in Wittgenstein's *Philosophical Investigations*, and the use of sculpture and related methods in the context of Buddhist practices. With their chapter, Wintergerst and Bewersdorf show that art offers a valid way of knowing, and thus bridges what may otherwise be seen as a non-academic domain with an academic domain. This chapter also pushes Western scholars to look beyond their own academic culture, and to embrace non-western philosophical traditions which rely more heavily on the aesthetic transmission of ideas.

Part II: Case Studies: Interdisciplinary Education

With Chapter 4, Catherine Lange, Elena Laviolette Di Carpegna, Mosele Jansen, Stela Gkika, and Dr. Marline Lisette Wilders explore the opinions and expectations about interdisciplinary education by examining the University College Groningen as a case study. Specifically, they describe the viewpoint of students, lecturers, and management that attend and work at UCG, and they explore the limitations and strengths of the interdisciplinary educational approach as conducted at UCG. They do so with an interview study, showing that students, lecturers, and management expressed similar ideas about what interdisciplinarity is, that an interdisciplinary education requires

a sufficiently strong disciplinary foundation, and that an interdisciplinary education benefits students by helping them to think outside of the box and to improve their communication skills—two skills that are expected to increase job opportunities after graduation. The student sample and the faculty sample had different ideas about the more specific goal of interdisciplinarity, where students described the contribution to solving complex problems, whereas faculty emphasised the usefulness for gaining a unique understanding of more concrete concepts or topics. The results draw attention to the need to make the goals of interdisciplinarity more explicit within the educational program, as well as the need for strong disciplinary foundations.

In Chapter 5, Twan Tromp, Kerstin Baureis, and Dr. Benjamin Bewersdorf argue that art-making projects should be considered as an additional, and highly useful, educational practice for active learning. Drawing on first-hand experiences of this active-learning method, they show how art-making provides a context in which students themselves are responsible for the generation of knowledge. As such, this method used similar principles as techniques such as flipped classrooms or project-based learning assignments. Engaging in art-making is described as unique as it challenges students to translate a philosophical debate into an artwork. In doing so, students are encouraged to gain a deeper understanding of the philosophical debate, to be open to new opinions within this debate, and to make these philosophical debates their own. While the authors focus their proposal on philosophy education, they suggest that art-making can be used in all domains of education as a useful way of activating students and engaging them in deep learning. As such, this chapter echoes the main thesis in Chapter 3, namely that art should be taken more seriously within the academic domain; but this chapter outlines how it can be used in education itself.

In Chapter 6 Julius Bischof, Alison Cronin, Nikolai Levin, Omer Levy, Mira Singh, and Dr. Ferdinand Lewis describe an innovative method that can be used for gaining new perspectives. The chapter provides an illustration of how autobiographical reflective writing can contribute to the interdisciplinary understanding of well-being, understood as human flourishing across multiple dimensions. In the chapter, the student authors describe their own process of delving into this method, which took place within an educational setting. They demonstrate how the open-ended nature of this kind of reflec-

tive writing is uniquely capable of eliciting a wide range of information about what well-being means, and as such, that well-being is an interdisciplinary concept. This reflexively-written chapter simultaneously demonstrates the process of learning how to engage in research from the student perspective, and demonstrates a way of engaging students with the concept of interdisciplinarity through experiential learning.

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