



Interdisciplinarity at the University of Rochester

We will graduate with an interdepartmental PhD in physics and history. This is not the sum of two doctorates, nor is it a PhD in the history of science. What we have here is a unique dialogue bridging two seemingly disparate and incommensurable departments at the University of Rochester. It is a potentially fruitful enterprise that should add new insights to our current understanding of the development of physics in the 20th century. This is our story of interdisciplinarity at the University of Rochester.

What does the term “interdisciplinarity” mean? To define this concept it is best to start with its root. Discipline is defined by the Merriam-Webster Dictionary as “a field of study” or “a rule or system of rules governing conduct or activity”. This agrees fundamentally with the working definition proposed here: a discipline, in academia, is the study of a well-defined subject matter using consistent methods and concepts. From this definition it is easy to extrapolate the definition of interdisciplinarity. This is the deliberate weaving together of diverse or disparate sets of methods and concepts in order to study a well defined subject. The specialization of disciplines began in earnest in the centuries leading up to the scientific revolution of the 16th and 17th centuries and was an underlying framework of all academia by the early 19th century. As our understanding of the universe, including our humanity, evolved, our descriptions and conceptualizations became ever more complex forcing individual disciplines to splinter and become highly specialized fields and subfields. In the 20th century we have witnessed, in parallel, an explosion of specialization and complexity of our knowledge. This complexity is now forcing us to reconsider the ‘normal’ evolution of this specialization. Is there only room for an evolution along ever finer delineations between fields? Or can we begin to study the complexities of our universe by

bridging disciplines and moving towards interdisciplinary studies?

I think the lively debate between the postmodernists and the ‘hard’ scientists such as Sokal and Bricmont are an indication that this interdisciplinary evolution is in progress and it will not be smooth sailing. In 1959 CP Snow, an English author and physicist, foreshadowed this debate by introducing the concept of the *two cultures* (hard sciences and humanities) on a collision course. It is clear that in this evolution, especially in the 20th century, we have already witnessed many instances of both the positive results of a well done interdisciplinary study (Erwin Schrödinger’s *What Is Life?*) and the negative repercussions of a forced, poorly executed, interdisciplinary study (studies by the French psychiatrist Jacques Lacan).

How interdisciplinary are our proposed studies? If we take a purely interdisciplinary study as one where a novel framework and novel methodologies have been established by the marriage of two or more disciplines then I believe our studies will be closer to a multidisciplinary study where instead of creating a new framework, multiple frameworks are used to study the same subject. It seems feasible to create a successful pure interdisciplinary study with two similar fields such as physics and chemistry or economics and political science; however, it seems quite daunting to try and do this with two disparate fields such as history and physics. Ours will be studies that fall somewhere on the continuum between purely interdisciplinary and multidisciplinary.

— Jose Perillan & Drew R. Abrams
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