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Arriving at Interdisciplinarity
Arriving at Interdisciplinarity

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Abstract
There are many ways in which members of academic disciplines may work together from the occasional provision of particular expertise, to the pooling of intellectual resources that can produce a new kind of knowledge in the context of complex social problems and situations. The terms applied to such co-operative and collaborative work include cross-disciplinary, multidisciplinary, interdisciplinary and transdisciplinary, but it is rare to see a considered discussion of which one best applies to a given study. Some studies even invoke such terms without definition. In this paper we attempt to provide models of these varieties of interdisciplinarity and describe how in our projects they have produced different results for different audiences. In doing so we pay special attention to the ways in which research may be said to be in the interests of the public good.

Keywords
Research methods, academic professional development

Introduction
If educational research is to be able to claim that it operates in the service of a larger public good it must, in our view, situate education within and relate it to the complex social situations which define and arise from education. In the research our team has been involved in we have paid attention to the relationship between school, home and community. There has been much discussion of how such relationships may be used to strengthen educational outcomes, for instance in making curricula better suited to real world demands and in better serving ‘at risk’ children. We suggest that in order to understand education in its fullest context research needs input from many disciplines with a variety of epistemologies and methodologies. In this symposium we will be exploring our own experience in this mode of work. This experience stretches over four years of collaboration on several different projects which have related classroom learning to home and community settings and has involved researchers from education, anthropology and sociology (Coco and Jolly 2003; Goos and Jolly 2004).

There are many ways in which members of academic disciplines may work together from the occasional provision of particular expertise, to the pooling of intellectual resources that can produce a new kind of knowledge in the context of complex social problems and situations. The terms applied to such co-operative and collaborative work include cross-disciplinary, multidisciplinary, interdisciplinary and transdisciplinary, but it is rare to see a considered discussion of which one best applies to a given study. Some studies even invoke such terms without definition. In this paper we consider some of the claims made for each of these approaches and reflect on the extent to which our experience matches them. Although it has been noted (Smelser 2003) that there is in some quarters a glow about the term interdisciplinary which may open special dedicated funding reserves, we conclude that in fact true interdisciplinarity is hard to achieve and even sometimes hard to have recognised. Journals are usually discipline specific and sometimes find interdisciplinary work hard to place, which has concomitant effects in tenure and promotion processes. While this is changing slowly it represents a powerful disincentive to academics to join in interdisciplinary
work, where the difficulty of cross-discipline communication already makes the work more difficult. A subsidiary aim of this symposium is to describe how we have gone about working across disciplines and to learn from the experience of others in the audience.

Definitional issues
The simplest and most common way in which disciplines work together is simply additive, “when the work of each of them is added to that of all the others” (McDonnell 2000:27) and we understand this to be the multidisciplinary or cross-disciplinary approach. This leaves each of the contributing disciplines to work within their own worldview with their own standard methods. This allows the research to proceed at the maximum pace, if the researchers are experienced, and with the least amount of effort going into managing communication and teamwork issues. There may also be some reflection within the team on how the insights of one discipline are modified by, amplify or contradict the insights of the others, but each discipline is generally left to ask its own kind of questions in its own way. This is significant when we come to consider how research can be dedicated to the public good for each of our disciplines makes different assumptions even about who the public may be and what might count as a public benefit. For instance, when considering the links between schools and communities, one’s view of the relationship is highly coloured by whether one takes the view from inside the school or the one from inside the community. Furthermore, there is the difficulty that in an additive approach some particular someone is left to do the addition. If this happens during the compilation of a single summary report, those preparing it will inevitably do so from their own perspective or that of the commissioning body. If, on the other hand, the contribution of each discipline is supplied alongside that of the others with no attempt at synthesis, as in some edited collections, it is left once again to the individual reader to make what connections they will. If research is to serve the public good it must do more than this to have its findings serve the complex yet integrated context which is where public interest lies. It is, we argue, necessary to go beyond multidisciplinarity to do justice to education in context.

In this we align ourselves with a growing literature on the best ways to address complex problems such as arise in management of the environment, urban planning, public health, technology, and, increasingly, education (Klein et al 2001). There is some argument over whether this should be called interdisciplinarity or transdisciplinarity and what the significance of any difference may be. The most contrastive understanding of these terms would have interdisciplinarity as an approach which starts with a complex problem, simplifies it by reduction to parts that can be dealt with by separate disciplines and then, as it were, reassembles the resulting findings into an integrated answer (Lawrence and Despres 2004). On the other hand, transdisciplinarity is often represented as a new way of understanding reality which acknowledges and works with its complexity by establishing new sets of axioms across sets of disciplines and yet is not to be seen as a new or super-discipline (Klein 2004).

Most discussions of transdisciplinarity refer to the inherent difficulty in defining such a transgressive concept. Klein (2000) is typical of many who stop short of definition with programmatic statements such as “The task of transdisciplinarity is to create meaningful webs of meaning across forms of knowledge and action that are characterized by complexity, diffusion, permeation and heterogeneity” (Klein 2000: 59). This kind of discussion often derives ultimately from Gibbons et al’s well-known distinction between Mode1 and Mode 2 knowledge production:

in Mode 1 problems are set and solved in a context governed by the, largely academic, interests of a specific community. By contrast, Mode 2 knowledge is
carried out in a context of application. Mode 1 is disciplinary while Mode 2 is transdisciplinary. Mode 1 is characterized by homogeneity, Mode 2 by heterogeneity. Organizationally, Mode 1 is hierarchical and tends to preserve its form, while Mode 2 is more heterarchical and transient. Each employs a different type of quality control. In comparison with Mode 1, Mode 2 is more socially accountable and reflexive. It includes a wider, more temporary and heterogeneous set of practitioners, collaborating on a problem defined in a specific and localized context. (Gibbons et al 1994: 3)

The socially accountable and reflexive nature of Mode 2 knowledge production fit it well to the aim of serving the public good and this seems to imply that transdisciplinarity ought to be the aim. Newell (2000: 42-3) cautions however that although transdisciplinarity may be superior for the way it “synthesises the disciplines by subsuming them within a single system…through a single overarching epistemology”, it is yet to go beyond theoretical appeal and the more modest procedures of interdisciplinarity may be pragmatically preferable.

Unfortunately interdisciplinarity may be understood in a number of ways too. Smelser (2003: 645), for instance, defines it as the “bringing different disciplinary variables, concepts, frameworks and perspectives to bear on the understanding and explanation of some empirical phenomenon…” The OECD (1998:4) definition goes further by emphasising that the researchers from different backgrounds must be “organised into a common effort on a common problem with sustained intercommunication among the participants”. Our own experience, discussed below, suggests that even the task of arriving at a common understanding of the problem is much less obvious than it at first appears and it is these kinds of issues that make interdisciplinary work difficult. However, we would like to think that there is more to distinguish interdisciplinarity than organisational issues, however important they may be. Good interdisciplinary work ought, for instance to be able to theorise its findings using interdisciplinary frameworks. Newell (2000: 43) reminds us that “a perspective developed through interdisciplinarity is constructed for a limited use and may clash with another interdisciplinary perspective constructed from the insights of other disciplines to address a different question, issue or problem”. In order to theorise interdisciplinary findings so that they have wider significance than the solution of particular problems, Rowland (2003:17) advocates a ‘critical interdisciplinarity’ which “involves the learner in confronting the critique which emerges as different disciplines contest each other’s theoretical frameworks, perspectives and practices”. Only through this critique and theorising beyond the immediate problem can we be serving the public good in its highest sense. While interdisciplinary teams are often formed in response to complex social problems it behoves us as academics to retain sight of the fact that research is for the production of new knowledge, new and better understandings of the human condition and the public good itself.

A related point is raised by McNeill (1999) who points out the difficulty of evaluating interdisciplinary research, whether in terms of its outcomes or as a measure of any particular academic’s productivity. In single-discipline research matters such as originality are assessed with respect to an established canon of knowledge and the competence of the researcher with respect to how they handle the tools of that discipline’s trade. Interdisciplinary work necessarily involves Creole frameworks and methods and Newell (2000) would have it that no Standard Language of interdisciplinarity will ever emerge. While this may be so in the sense of a single way of doing interdisciplinary work or a core repertoire of frameworks, we propose that the generalisability referred to above is one way in which interdisciplinary work can be rigorously evaluated.
McMichael (2000: 218) perhaps best encapsulates the distinction we are searching for here when he says “Multidisciplinarity and interdisciplinarity may help us to obtain better, fuller answers to orthodox questions: transdisciplinarity enables us to ask different questions.” In what follows we describe our experience of working in these various modes. We have found that good research across disciplines requires a special approach. With Katherine Young (2000: 221) we believe that this kind of work requires a problem focus as well as “expertise combined with an open and experimental approach; a common goal and recognition of the need for a common (or integrative) methodology; respect and trust among those working together; willingness to accept leadership; leadership itself; clearly defined tasks and deadlines; and ethical accountability.” In addition, our experience emphasises the need for rethinking more global aspects of research projects. The total time allocated to the project may need to be extended to allow for the contributions of various disciplines, especially where participant observation is to be employed. Care needs to be taken to avoid privileging one type of data or analysis and allowing for different participants’ needs in terms of publications and career progression. Commitment to regular and extended team meetings is necessary from all team members to keep such issues in everyone’s sights and, most importantly, to build and maintain what Sandy Toussaint (pers. comm.) has labelled bridging paradigms, ways of conceptualising the problem that different discourses can understand. Even between disciplines that may be considered quite close such as anthropology and sociology, there is a need to find tropes from all participating disciplines’ discourses which resonate with the partners and allow the development of a common language.

The development of the team
Our team first came together in 2000 to investigate Technology Aided Learning in School, Home and Community. We have since addressed wider educational issues than just those associated with technology but our interest in spheres of action that pertain across the normally distinct arenas of school, home and community persists. Our original project examined the installation of a computer lab in a community centre in a low income area of outer Brisbane. The research team was made up of educationalists, anthropologists and sociologists and the project as a whole was managed by the Community Service and Research Centre, UQ on behalf of the Brisbane City Council. The difficulties for the researchers and the community members of negotiating these various demands and discourses is described in detail in Coco and Jolly (2003) and Coco (2004). For the most part this was a matter of dealing with different approaches, goals and values between funding bodies, researchers and community, a dilemma that reflects those of the multidisciplinary team described above. For us, the lesson was that in order to provide research that served the public good (whether the public in question was a local community or a public funding body) we had to pay more attention to the needs and assumptions of others than we had previously been used to. At this stage it would be fair to characterise our work as suffering from some disjunction between what might be called the sociological and the educational halves of the team. Team meetings were irregular, members of the team were geographically dispersed and the immediate needs of the community centre eventually overshadowed the team’s internal priorities.

Some members of the local community had undergone various types of computer training or familiarisation as a result of involvement with the Community Centre Computer project. We

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1 Jolly would also like to acknowledge her debt to many other colleagues she has worked with in interdisciplinary projects, including colleagues in the Behavioural Studies program, in the Catalyst Centre for Research in Society and Technology and fellow participants in Prof. Veronica Strang’s seminar on communication between natural and social scientists at the University of Queensland in October, 2004.
had hoped to extend that project and the use of computers into the nearby school, which was at the time rather under-resourced in this regard. A small homework club was in operation at the Centre using the computers but it met irregularly. We hoped to revitalise that club and involve the community members with some computer training as classroom aides to help students work on the computers in the school. While we had some limited success with the latter aim we never succeeded in really exploiting the full potential of the existence of an under-used computer facility very close to a school which was in need of computers. In part this was because as a team we had not yet aligned either our goals nor our processes. At this stage our work was still at the multidisciplinary stage and this limited what we were able to achieve. However, we were interested enough in the experience to want to go on exploring the possibilities and its likely that without this period of adjusting to each other we would not have been able ever to function effectively in interdisciplinary or transdisciplinary mode.

Our most recent work together was a much larger project for the Department of Education, Science and Training in which our original team formed the nucleus of a nation-wide research project which was asked to investigate Home, School and Community Partnerships to Support Children’s Numeracy. While still having to work within parameters set by the funding body, we found greater scope for setting up the question in an interdisciplinary way in the tender format. We were able, for instance, to argue for sociological and anthropological techniques involving relatively extended periods of observation of and interaction with target groups which we believe yielded richer and more reliable data. If interdisciplinarity means better fuller answers, we were being interdisciplinary, but we were also able to ask different questions because we didn’t have focus just on schools. While part of the investigation, and a very important part, involved talking to schools about their partnerships and observing teachers at work, we also spent time with families and community members and incorporated their view of the tripartite partnership in our findings. In this way we were also being transdisciplinary.

Our past experience of working together had by this time developed some common understandings amongst the team so that it was easy to formulate and plan for these new questions. Regular team meetings meant that dialogue could be ongoing and while it would be hard to specify just what our common paradigm is, we are able to operate quite comfortably together without too much need to explain our points of view or assumptions. When the disciplines involved in a project are more distant from each other the question of a bridging paradigm becomes more urgent and more obvious. For instance, LJ, an anthropologist, is an associate of the Catalyst Centre for Research in Society and Technology where most of her colleagues are engineers. She has found it hard to explain the nature and significance of the culture concept to these colleagues so her explanations of the cultural dimensions of engineering practice and how it relates to social issues such as sustainability have often fallen on deaf ears. This situation has improved since she has substituted the word ‘system’ for the word culture. System is a concept engineers understand as giving them more holistic and interconnected views of physical processes involving feedback loops and homeostatic mechanisms. While this is not exactly how an anthropologist understands culture it gives enough common ground to begin dialogue that has some meaning for both parties. This kind of reframing of the discourse is surely squarely in the transdisciplinary and hence potentially very useful and exciting area of research for the public good.

References


