"Are we all on the same page?": The Challenges and Charms of Collaboration on a Journey through Interdisciplinarity

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Over the last decade, the Social Sciences and Humanities Research Council has been actively working to encourage interdisciplinary and collaborative approaches to acquiring and disseminating knowledge in Canada. How inter-disciplinarity is understood and how it is translated into practice has been a source of debate, however. In this paper, we examine how we problematised interdisciplinarity and collaboration and how we learned from this process as a student group in the context of Hidden Costs / Invisible Contributions, a large multi-university research project based at the University of Alberta.

Students have been involved at a number of levels in this project: our MA, MSc and doctoral research have become intertwined with and integral to the project; we have authored and co-authored papers and presentations, we have assisted in other members' research, and we have been involved in the SSHRC mid-term review. As emerging scholars, in a project which has combined the research and knowledge of both the social sciences and the humanities, we have had to develop our own strategies for negotiating differ-ences. In this paper, we will investigate four key areas that we have identified as potential challenges to successful collaboration: conceptual, methodologi-cal, pragmatic and personal differences. In our examination of the difficulties and rewards that we faced as students in each area, we will argue that suc-cessful collaborative and interdisciplinary work across the social sciences and humanities requires a reconfiguration of the ways that we are taught to "see" our particular disciplines. We have had to challenge how we understand the language, practice and function of our disciplines and the manner in which we approach this work as individuals. This has been a transformative process for each of us, but also one that has lent a renewed rigour and expanded scope in our own individual work.

"The real voyage of discovery consists not in seeking new landscapes, but in having new eyes."
-Marcel Proust (quoted in Clark, 2006)

Introduction

Since its inception in 1977, the Social Sciences and Humanities Research Council of Canada (SSHRC), a Canadian government-funded agency which supports Canadian and international scholarship, has been actively working to encourage interdisciplinary and collaborative approaches to acquiring and disseminating knowledge in the research it funds (Klein 1996). How that "interdisciplinarity" is understood and how it is translated into practice has been a source of debate, however. In the academy, the term, "interdisciplinarity," has multiple meanings, with different risks and implications for each stakeholder in the research project (Klein 2005). For student researchers, in particular, whose future careers are closely tied to SSHRC funding, and often dependent on research positions within SSHRC-funded initiatives, collaborative interdisciplinarity can be new and difficult terrain to negotiate. Surprisingly, while there has been a significant body of research on interdisciplinarity and collaboration within the academy, there is almost nothing that focuses exclusively on student perspectives. In this paper we will examine the charms and challenges of translating a SSHRC policy of interdisciplinary collaboration into practice by relating our own student experiences working on a SSHRC-funded program of research, *Hidden Costs/ Invisible Contributions* (*HCIC*)[1]. We are going to explain why we believe that interdisciplinary collaboration is important for student training and how this process has given (and continues to give) depth and richness to our individual work, without glossing over the difficulties inherent to interdisciplinary collaboration or the challenges that we face going forward from this project.

Our collaborative journey officially began in January 2003, with the start-up of the *HCIC* program of research. Drawing upon research and knowledge from the social sciences and humanities, this program considered both the costs of caregiving for older adults and adults with disability and the contributions of these individuals to society. The *HCIC* team drew together various researchers, practitioners, NGO partners, policymakers and students from across Canada and internationally, who were united in their interests in aging and disability, and who were willing to work collaboratively with others. *HCIC* posed several major research questions: What are the hidden costs of care to caregivers and what are the invisible contributions made by older adults and adults with disability? How do we define "care" and

"contribution" in modern society? Are these definitions limiting or exclusionary in any way? *HCIC* research has included an annotated bibliography of the representations of care in Canadian literature, historical studies of Canadian and international government programs for older citizens, a study of media representations of disability, and a policy review on caregiver compensation for 10 countries, among others. Although all stakeholders were equally significant, this paper represents the experiences of *HCIC* student members, whose involvement SSHRC explicitly encourages.

SSHRC is the largest single source of funding for social sciences and humanities research in Canada. One of SSHRC's objectives is to "provide unique opportunities for training students and postdoctoral fellows in a collaborative, interdisciplinary research environment" (SSHRC). In addition, the formal application for major research projects requires that researchers address the number of students involved in the project, the overall quality of the proposed training activities, career development opportunities, and the potential to provide student training in a "well-structured, cross-disciplinary research environment" (SSHRC). As *HCIC* students, we were a diverse group from different universities, different disciplines, and were at different stages of our own personal careers when we became involved in *HCIC*.

Our MA, MSc and doctoral research work became intertwined with and integral to the project; we assisted in other members' research; we authored and co-authored papers and presentations (locally, nationally and internationally); we were fully involved in annual team meetings and symposiums; and we had a student representative on the executive committee.

In his seminal text, T*he Reflective Practitioner*, Donald Schön argues that, "in real-world practice, problems do not present themselves to practitioners as givens. They must be constructed from the materials of problematic situations that are puzzling, troubling, and uncertain" (1984, 308). From the first *HCIC* meeting, the student group was concerned with the issue of how we were going to work together across disciplines and research interests. We had a strong desire to work with others and to learn how our work could both complement and be complemented by other team members. We also had a concern for self-reflection, were always thinking about interdisciplinary work, and would get others talking about collaboration. As a result, the student group took a lead throughout the course of *HCIC* research in studying interdisciplinarity and collaborative practices within the larger group. For most of the project, however, this interest was more practical, intuitive and hands-on, than research-centred. We wanted to know how we, as in-

dividuals and as a group, changed and adapted through the process of collaboration and interdisciplinarity. It was not until much later in the project that we began to corroborate our findings with other research in interdisciplinarity. This paper examines how we problematised interdisciplinarity and collaboration as a student group and how we learned from this process.

In all our various conversations with *HCIC* student participants, we found that three key areas stood out as being potential challenges or charms to collaboration. We identified these areas broadly as conceptual, methodological and pragmatic differences. We also noted that personal experiences were often included in discussions of the collaborative process. To further explore the challenges and charms resulting from these areas, we questioned current and former *HCIC* students about their experiences in each of these four areas. Eight of eleven students contributed their opinions, which were then amalgamated for review and discussion. Although this was a self-reflective exercise, we felt that these views and experiences were important to share, and we draw upon some of these thoughts throughout this paper.

Given SSHRC's interest in collaborative approaches and student training, and the gap in the literature, research on the experiences of students working in the context of a large project is timely and relevant.

Our journey will begin by exploring how our way of working together has transformed conceptually, methodologically, and pragmatically areas which we recognise are interdependent and may have some overlapping ideas and themes. Further on in the paper, we will suggest that beyond our conceptual, methodological, and pragmatic training, we have also developed as individuals. Our involvement in this project has taught us what it feels like to be valued and to know good mentorship and it has also significantly changed how we approach learning, teaching, and relationship building. Finally, we will also examine closely the significance of student involvement, what we have learned about the process of collaboration, and how it may facilitate the evolution of future collaborative work. The lessons we learned are useful to anyone thinking about or exploring the possibilities of collaboration, whether student, professor or researcher of any kind, both inside and outside the academy.

Interdisciplinary collaboration – a brief review of the research

Julie Thompson Klein argues that interdisciplinarity is neither a subject matter nor a body of content. It is, she suggests, "a process for achieving an integrative synthesis, a process that usually begins with a problem, question, topic, or issue. Individuals must work to overcome

problems created by differences in disciplinary language and world view" (1990, 188). Before we reflect on our own journey through this process, let us briefly flag what the literature says about interdisciplinarity and how it works.

A growing body of research on this topic addresses the benefits or advantages of collaborative research. Scholars investigating these issues highlight that collaboration among different disciplines fosters creativity (Levine & Moreland 2004), and promotes innovation (Cummings and Kiesler 2005) by bringing together ideas, tools and people from different domains. Others argue that the need to address increasingly complex problems in nature and society calls for interdisciplinary approaches (Massey et al. 2006, Beers et al. 2006) as these are better equipped to integrate "depth with breadth of interests, visions and skills" (Committee on Facilitating Interdisciplinary Research et al. 2004, 2).

While support for interdisciplinary approaches is on the rise, especially among funding agencies and policymakers (Massey et al. 2006), there is also widespread recognition of a particular tension "between the benefits to innovation of working across disciplinary and organizational boundaries versus the risks that arise from the costs of coordination and relationship development in these collaborations" (Cummings and Kiesler 2005, p.704). The chal-

lenges most often discussed as posing significant difficulties to the integration of multiple disciplines and methodologies in a research project include differences among researchers in terms of 'worldviews' and approaches to field practice, and the lack of a common vocabulary (Klein 1996).

Slatin et al. (2004), for instance, describe difficulties in communicating across disciplines due to unfamiliarity with disciplinary language. Qin and colleagues made similar comments a decade ago, suggesting that particular attention in collaborative projects should be paid to differences in "disciplinary terminologies and working norms" (1997, 914). And Fairbairn and Fulton importantly argue that the responsibility of the individual participant in interdisciplinary projects is not so much to learn the disciplines of the others, but "to interpret one's own discipline to the others" (2000, 35). All these scholars underline the importance of quality communication in interdisciplinary research processes, although we recognize, as do Pereira, Marhia and Scharff (2010), that communication across disciplines is neither straightforward nor a simple one for one translation.

To ensure that communication barriers do not affect the success of collaboration, several studies recommend that differences are acknowledged and respected from the onset and that a common conceptualisation of key concepts and

understandings is also achieved (Massey et al. 2006; Larson 2003). As Beers and colleagues (2006) argue, in order to function as a group and bridge their differences in perspective, team members need to negotiate a common ground. The more individual members identify themselves, their goals, and their perceptions about the outcome of their work, the more successful the group becomes. In short, effective communication can help teams to develop shared ideas and concepts (Klein 1994), and allow the establishment of connections among researchers from different disciplines and sites.

Other studies have pointed out that being flexible to a diversity of perspectives rather than judgemental or prejudicial are useful skills when working with people from a variety of disciplines and cultures (Stead & Harrington 2000). Slatin et al. (2004) specifically link the issue of power and disciplinary differences, and point out that not all team members view all disciplines involved in their project as equally important. They explain that some members place greater emphasis on concepts and methods of specific disciplines over others and, intentionally or unintentionally, create a hierarchy of values. Failing to establish the sense of shared power discourages facilitation of trust among team members and their commitment to the project (Stead & Harrington 2000). This indicates

that there are socio-emotional facets to the interdisciplinary process that are integral to a successful outcome. Indeed, in their examination of seven-year research collaboration, Engebreston and Wardell (1997) note that acceptance, validation, commitment, synergy, and having fun are fundamental characteristics of thriving partnerships. In the absence of mutual trust and respect, they conclude, research projects are less likely to reach their potential.

The emphasis on flexibility and openness as components of successful collaboration further suggests that epistemological transformation may be a part of the cognitive makeup of interdisciplinary processes. The study of personal epistemology (or conceptions that individuals have about knowledge and knowing), a flourishing area since William Perry published his first study in the 1960s, has more often examined the relevance of these constructs for teaching and learning (e.g. Schommer-Aikins, Duell and Barker 2003; Schommer-Aikins 2004; Hofer and Pintrich 1997; King and Kitchener, 1994; Khun 1991), but it seems reasonable to similarly consider their potential in the context of interdisciplinary work. Citing a number of authors in the field, Barbara Hofer (2004) maintains that beliefs about the nature of knowledge influence comprehension, cognitive processing and conceptual change learning, but also appear to promote

epistemological development by fostering one's competency to critically evaluate information, resolve competing knowledge claims and coordinate theory and evidence. Along similar lines, we would argue that interdisciplinary work, by engaging a dialogue among researchers of different disciplines both calls upon and stimulates the development of more sophisticated perspectives on knowledge. Studies that have addressed interdisciplinarity in the context of post-secondary education (Newell 1992; Fairbairn and Fulton 2000) seem to provide support to this claim. For instance, William Newell (1992), in his discussion of undergraduate interdisciplinary education, argues that students exposed to interdisciplinary work learn to go beyond logical skill sets and become strong critical thinkers, reflexive of self and discipline. Fairbairn and Fulton (2000) assert that in contrast to the oft-repeated observation that established academics are able to take more risks than less-established academics and are therefore more likely to become interdisciplinary, it is, in fact, "junior" academics that are most often open to learning newer, more interdisciplinary approaches to teaching and learning. While this is an area certainly deserving further attention in the literature, these studies begin to offer some evidence on the multiple intersections at the individual level between participation in interdisciplinary processes and

epistemological development.

Studies in interdisciplinarity have also examined the role of organizational issues in collaboration. Two factors reappear several times in this literature: physical distance and time. In a study examining successful coordination of collaborative research, Cumming and Kiesler (2005) found that multi-university projects tend to be less successful, on average, than projects located at a single university. They also argue that multi-university projects require more complex types of communication systems, including workshops and meetings, because distance and organizational boundaries tend to interfere with such coordination mechanisms that involve frequent and spontaneous conversation and/or problem-solving. And finally, while some studies pointed out time issues as a barrier to collaborative research (Fox & Faver 1985; Katz & Martin 1995), others view time, particularly for relationship-building, as a necessary element of element of team work (Larson 2003).

In sum, an emphasis on quality communication and the socio-emotional aspects of collaboration as foundational axes of successful interdisciplinary work, a growing interest in personal epistemological processes in the context of interdisciplinarity, and attention to organizational aspects of multi-site, multi-disciplinary research are some of the critical issues raised in the literature on interdisciplinarity. These

broad topics roughly correspond to the four areas (conceptual, personal, methodological and pragmatic) that the student group in our project identified as crucial to our journey toward interdisciplinarity. We now turn to the analysis of this experience.

A journey through collaboration: expanding the conceptual landscape

The first area identified in our discussions around interdisciplinary collaboration, the conceptual, was also the most difficult to isolate and define clearly. Paradoxically, however, it was also the area where students felt the most profound changes in the course of the research project. The Oxford English Dictionary defines a concept very loosely as "an idea of a class of objects; a general notion; an invention" (OED). The concept is what lies behind the research project: it is simultaneously the idea or "invention" around which the research project is built and the main research question that becomes the framework of the project. At the conceptual stage we look at and think about all the given data on a particular subject and ask ourselves, "What is missing?"

It is important to note, however, that the concept behind a research project is also in large part that "idea of a class of objects." In the conceptual stage disciplinary foci are most apparent, because the ques-

tions asked and the things asked of them are informed by the theory central to each discipline. In thinking about care and caregiving, for example, where a literature scholar asks questions about the depictions of older adults in fiction over the last twenty years, a sociologist might ask questions about the statistical data of a particular segment of the population. Each approach is perfectly valid for their individual disciplines, and indeed, the questions they each pose of their subjects might be quite similar, but the questions are limited to a particular class of objects, which in turn circumscribes and limits how each individual sets up a research project.

Students were integrated into the *HCIC* project from the earliest stages of development. Much of our anxiety at the beginning revolved around how were going to work together across these disciplinary boundaries and much of our time was spent in thinking conceptually about how we were going to build working relationships with each other. How were we going to communicate, express ideas, and work across our very different disciplines?

These anxieties were very real and appeared at first almost insurmountable. Since we were all, more or less, thinking within a discipline, it was difficult to think conceptually outside of those boundaries. Would it not be a challenge to balance all the ideas and viewpoints of the student group and then synthesize them into

one research project? Would it not be difficult for each of us to find an individual place within the research, and would it not be even more difficult to focus – to not be so inclusive that the work would lose its impact? Or would one form of research, one discipline, take precedence over the others? Where would we draw the line? Consequently, student presentations, in these early stages of *HCIC* research, tended to focus on how the lines of communication and responsibility between researchers might operate over the course of the project.

What we were really modelling, as it turns out, was how to build trust. Paramount to a successful working relationship was to understand, at the conceptual level, how we each approached a problem, how we defined that problem, how we communicated it to the rest of the group, and how we could use this productively as a group. As the student group began to work together collaboratively on posters and panel presentations, and with other team members on *HCIC* research and individual dissertation work, we had to come up with our own practical strategies for overcoming our seeming differences. Somewhat ironically, the students we interviewed said that the more the students worked together, the more they trusted each other – and the more they trusted each other, the more faith they put into the process. It was surprising how quickly and how fully that trust

developed within the student group as a discrete entity within *HCIC*. Perhaps, as Fairbairn and Fulton (2000) suggest, because we were students, at an early stage in our academic careers, and able to immerse ourselves fully into an experience like *HCIC*, we were able to try on and discard new ideas and new approaches without inherent risk to our academic futures. It may also be that we were individually very open to the process of collaboration and found that it fit our own personalities and learning styles. It likely also has a lot to do with the leadership of more senior colleagues on this project; colleagues who welcomed student ideas and student input and enthusiastically supported our initiatives. We believe that the SSHRC funding for graduate research assistants and the ability to work long-term on this project also helped. The students within *HCIC* were all involved with the project for two or more years, while the authors of this article were involved, whether directly or indirectly, for 3 or more years.

It is important to recognize, too, that *HCIC* included only disciplines from humanities and social sciences. Engineering and science, which Biglan (cited by Schommer-Aikins, Duell and Barker 2003) calls the "hard disciplines," were not a part of the collaboration team. According to Alexander (1992), in the humanities and social sciences, answers to problems are often incomplete, and

naturally encompass multiplicity. As humanities and social sciences researchers, we have been trained in relativist thinking. It is possible that such exposure has helped us develop, even before participating in *HCIC*, a personal epistemology that was more prone to accept an understanding of the nature of knowledge as complex, interrelated and fluid. Had the team included hard disciplines, it is very likely that reaching an agreement on basic concepts would have been more difficult.

Students within *HCIC* all clearly identified significant changes in their conceptual thinking as a direct result of their collaborative and interdisciplinary work on the project. All of them said that the theoretical base from which each is working is richer for having listened to, and worked with, each other. The "literature" person now sees historical, anthropological and sociological implications to literary texts, the "sociology" student is incorporating philosophical concepts and literary images to expand and enrich her social analysis, and the "human ecologists" have expanded the interdisciplinary theory they had already absorbed into a larger context. We do not suggest that these approaches have magically synthesized into one overarching or meta-discipline, nor, would we want them to. Rather, we have instinctively begun to integrate other approaches into the questions we ask – and into the class of objects we apply them

to. We are no longer content with limiting ourselves to the approaches defined by our disciplines – and this has transformed, expanded and reshaped our individual research outside of the *HCIC* project.

Addressing methodological challenges

This process has not been easy, clearly, and it has required some time, patience and a willingness to try out new approaches. Once embarked on that journey though, we very quickly realized that we were questioning our epistemological stance: what constitutes knowledge and how do we get it? In a very practical sense, these interrogations translated in our group into issues of scientific methodology. Methodologies are modes of procedure, or systematic ways of "doing things." Methods, in turn, are the techniques researchers use to access and interpret their data (Hesse-Biber and Leavy 2004). Methodologies and methods are very important parts of the research process, and therefore also make up some of the charms and challenges of working with an interdisciplinary team.

In the social sciences and humanities, researchers apply a variety of methodologies: some rely on quantitative approaches drawing from national or even multinational surveys, performing complex statistical analysis and elaborating graph-

ics and tables to interpret and depict their data. They work with large numbers and anonymous samples that make possible the generalisation of results to a wider population with an estimated degree of error. Others are more closely associated with qualitative methodologies and assemble their data based on observation, interaction, interview, narrative and discourse analysis, and other unobtrusive modes of gathering information and knowledge. They work with smaller samples, collecting stories, meanings and worldviews, accumulating field notes, searching archival documents, examining images and texts. Their data is interpretative, process oriented and holistic.

Academics from the two traditions work within very different paradigmatic frameworks. The quantitative paradigm is often associated with positivism (and post-positivism), which assumes that all phenomena can be reduced to empirical indicators, that an objective reality exists independent of human perception, and that the investigator and the investigated are independent entities (Sale, Lohfeld & Brazil, 2002). In this sense, positivists assert that research can be conducted within a neutral, value-free framework. In contrast, the qualitative paradigm is based on interpretivism and constructivism. It claims that reality is socially constructed and constantly changing, and therefore is multiple and cannot be accessed independently of our minds. In this sense, for qualitative investigators, the positions of both the researcher and the researched are intrinsic to the research process (Sale, Lohfeld & Brazil 2002). In short, there is no such thing as value-free, neutral knowledge-production processes.

In most disciplines, one of these approaches is usually privileged over the other. Students are frequently more familiar with one tradition or the other, as the two paradigms tend to be taught as independent of one another, and it is uncommon that graduate programs emphasize both to the same degree. *HCIC* encompassed a large, multidisciplinary team and involved multiple projects that employed qualitative and quantitative methodologies. Not surprisingly then, from a methodological perspective we found that participating in *HCIC* was beneficial as it provided us with exposure to a wide range of approaches. In sum, as one student put it, being a member of *HCIC* has helped us in developing research skills and becoming "more competent researcher[s]".

Curiously, student responses did not express many concerns in relation to collaboration around methodological issues. Part of this may actually stem from the way that we approached collaborative research. We spent a lot of time just talking in *HCIC*: talking as a research group, talking as student researchers, and talking as colleagues. The unintended effect of these dialogues

was that it allowed us to explore and overcome methodological differences both before and as we were collaborating on research projects.

While the *HCIC* initiative offered students great exposure to a variety of methodologies, it was not necessarily a "multi-methods approach". Collectively, the various research projects conducted under *HCIC* employed different methodologies, but individually each one of them was more closely associated with a qualitative or a quantitative approach. It was only towards the end of the project, and especially in the context of discussions regarding a possible second application for funding, that the possibility of mixing and matching methodological approaches in single studies in order to acquire a more holistic perspective of a particular problem became more prominent. This shift, again, was one that students seemed to experience more acutely than any other members of the *HCIC* team. Certainly, with Bryman (2006) and others, we are aware that mixed approaches are not a panacea to all research, and that ultimately it is the question under investigation that should guide our methodological decisions. But by using multiple methods we will be able to find broader, more comprehensive answers to our problems because we will be asking different, more substantive and exciting questions. To us, the student group, this is perhaps one of the most valuable experiences *HCIC*

has offered us, in terms of enriching our academic training and enhancing our career prospects as future researchers.

'Against all odds': confronting pragmatic difficulties in collaborative research

The third key area identified in student discussions around inter-disciplinarity and collaboration was the pragmatics of working together. After the conceptualisation of a project, and the subsequent planning, there comes a time when the project has to be put into motion. This is the pragmatic stage of collaborative research, which we define as the actual practise of implementing a project. This was the area which students most often identified as being a challenge and over the course of the *HCIC* research, we developed a number of strategies to overcome (both real and imagined) differences.

Power-sharing was principal among student-identified concerns. Because *HCIC* included scholars from a variety of disciplines, as well as practitioners, policy makers, and community partners, this meant differences, not only in discipline, but also in member investment in the outcome of the project, goals for the research and interests in the project. This had particular significance for students, especially at the beginning of the project, who perceived themselves as the least senior members

of the research team. The physical distances between team members was also identified as a major challenge, since the project involved a number of universities and community agencies across Canada and other countries.

We believe that there was a strong commitment to interdisciplinary collaboration and to fostering student involvement from everyone involved in *HCIC* during the five years of the project. All the students consistently reiterated that the encouragement they received from senior team members and community and government partners was a major reason for our positive experience with *HCIC*. We were given the opportunity and the funding to do week-long "campus exchanges," so that we could each visit another university campus and work with other researchers involved in *HCIC*. Student-initiated research was welcomed and supported. One student, in their response to our questions, suggested that this encouragement gave students the belief that we can and will be able to resolve differences and solve problems. We were able to work successfully within the project largely because it was a strong expectation of the project that we could and would contribute in a real way. We were expected to offer insights and make suggestions, to integrate our research into the larger project and to publish this work abroad. Because we knew that our ideas and our research were re-

spected and valued not as "student" research but as research in its own right, we pushed ourselves to think more broadly and more deeply. When we presented our ideas to others in the project, the response we invariably got, is not "can we make this work?" but "how do we make this work?" and "what are the tools with which we can provide you to make this work?"

This is not to say, however, that there were no individual challenges with power-sharing. Although the base for the project was at one university, *HCIC* research was managed by a number of partner universities geographically distant from each other. As a result, it was sometimes difficult to interpret directives and suggestions from more senior partners at other universities. With multiple projects operating simultaneously, there was also the potential for some students to feel lost and isolated in the larger group. To combat this, during annual team meetings, especially, we allotted a large portion of our time to come together as a group (both as a whole group and as a student group) to play games, exchange ideas and discuss issues. This practice was fostered by the senior researchers and team leaders in the *HCIC* project and, as one student put it: "Meetings are great opportunities to put faces on names and re-connect with the team and the project. It's great to hear about what each one of us is doing. Meetings really boost

my energy to continue for the following year". Meeting face-to-face during the annual meetings made subsequent discussions through email and the telephone easier.

We had the luxury of working together over an extended period, which also allowed us to develop strong relationships with one another. The challenge, however, is that the multi-year period of SSHRC special project funding also meant we had to sustain our energy and enthusiasm over months and years. This was where the planning and the practise sometimes diverged: while we thought initially that WebCT and email would be effective tools to help bridge the physical distance between us, it was difficult at times to sustain conversations through this very impersonal form of communication. What came across in student responses was that between team meetings, we could quickly lose momentum, and it was easy to fall back into the feeling of isolation. We made it a consistent and conscious effort of the student group to try to keep in contact with each other, even if it was just to discuss minor issues. We found that frequent telephone and Skype meetings, where we could hear the nuances of each other's voices, helped us with this.

The personal impact of collaborative and interdisciplinary research

The importance of the personal in collaborative research is often undervalued, as studies on collaboration tend to focus on the academic aspects of research. Yet experiences at the personal level are as important as those in other areas because the personal actually underpins the whole process of collaboration. In our journey together, we learned that the energy of interdisciplinary collaboration may actually be embedded in the socio-emotional dimension, including the process of building and maintaining personal relationships and trust.

The *HCIC* project encouraged students not only to gain knowledge of new academic-related skills such as multiple perspectives, methodologies, concepts, and process of research, but also to develop less obvious, but equally important skills. Working in a team helped students to learn how to interact with others at both professional and personal levels, to develop negotiation and problem-solving skills, and to learn to ask people for help. Furthermore, we found a sense of community and belonging within this interdisciplinary project, and took inspiration from the personal and working experiences of other researchers and partners. For example, over the last year, while working on this paper, our academic, topic-centered conversations were often permeated with personal anecdotes, providing deeper insight into our respective worldviews. This ongoing process of exchange and sharing was ex-

tremely important in fostering mutual understanding and bringing us closer to each other. We began to understand the world through each other's eyes, to respect the unique contributions that each brought to the project while at the same time allowing ourselves to transform with the new concepts, methods and perspectives that emerged through and with this dialogue. These socio-emotional experiences not only apply to interdisciplinary collaborations, but will be relevant to the development and maintenance of our future personal and professional relationships.

Discussion: lessons learned and challenges ahead

The authors of this paper have travelled together along a collaborative journey as members of the *HCIC* team. Through the research process we have broadened our conceptual approach to issues, learned the epistemological value of methodological pluralism, and have developed effective ways of working together. All of these skills will not only help us in our own individual work, but will also enhance our skills as future researchers and collaborators.

While SSHRC requires that major funding initiatives involve students to provide training opportunities, we have gotten far more out of this experience than research training. An unexpected result, and one which is not given enough attention in the literature on collaboration and interdisciplinarity, is our evolution as individuals. Through our active engagement in the *HCIC* team we learned more than simply how to do good research. Our constant exposure to each other's work styles, life views and disciplinary influences, has quite simply transformed us. We are less ego-driven and more open to the input and approaches of others. We are more supportive of our colleagues, and less inhibited in how we learn and teach. As we reflect on this journey against the backdrop of the literature on interdisciplinarity, we want to reiterate the key lessons that have helped us, both as students and scholars, to overcome challenges and contribute to successful collaboration:

• *Openness*: For us as a group, successful collaboration required flexibility to other perspectives, a genuine interest in understanding and learning from others, a non-judgmental attitude and a willingness to take the risks inherent in trying new approaches. In other words, we came to realize that successful collaborative work builds upon personal epistemologies that accept intellectual pluralism and the relativism of knowledge and ways of knowing (Hofer and Pintrich 1997; Schommer-Aikins, Duell and Barker 2003; Hofer 2004). While all members of the *HCIC*

team were open to the process of collaboration, as students we were particularly eager to try on new ideas and new approaches. Our experiences substantiate previous studies, which found an increase in interdisciplinary programs of study among undergraduate and graduate students who are often open to learning new perspectives (Committee on Facilitating Interdisciplinary Research et al. 2004).

• *Sharing power*: In a multidisciplinary, multi-stakeholder project like *HCIC*, it is very important to create a sense of shared power and equal value among all disciplines and team members (Stead & Harrington 2000). As students who are typically at the bottom of the academic hierarchy, we were fortunate to be involved at all levels in *HCIC* and we always felt that our opinions and ideas were respected and valued. Working in a less hierarchical environment encouraged us to work harder and more creatively. This is an area that would benefit from further attention in research programs involving students.

• *Ongoing communication*: Referred to in some studies as "negotiating common ground" (Beers et al., 2006), a conscious and consistent effort to maintain open communication was fundamental for our collaborative work to be successful. From the onset it was necessary to recognise and respect differences among team members and to define (and re-define) clearly the common goals of the project. These experiences were not unique to our student group, as the importance of establishing common goals and language is well documented in interdisciplinarity literature (i.e. Klein 1994, Massey et al. 2006; Larson 2003). However, as we reflect back on our experiences in *HCIC*, we realize the negotiation of that common ground came largely through our willingness to dialogue openly with one another.

• *Trust*: Trust was another key element in our experience. The more we worked together, the more we came to trust one another; the more we trusted one another, the more we were committed to the process of collaboration. Successful interdisciplinary collaboration requires a trust both in the process and in each other (Engebreston and Wardell, 1997). Project participants have to come to the project with a commitment to working together and a willingness to resolve differences openly. At a certain level this also requires a belief that the other members of the team are as equally committed.

• *Time*: Needing more emphasis in the literature on collaboration and interdisciplinarity is the issue of time. None of this would have been possible without the

luxury of working together over an extended period. Learning about each other and building trust, relationships and consensus takes large commitment of time and a considerable level of patience (Larson 2003). Again, this requires a commitment from the project participants, both to the process and in their investment in the outcome.

We would like to point out that there are challenges ahead for us. As the funding for this project has ended and we are each finishing our respective degrees, the authors of this paper are faced with the challenge of how to continue to work together. Since the *HCIC* program began, SSHRC has shifted from funding 5 year programs to 7 year programs. This is a positive move, as it allows for an evolution conceptually, epistemologically, and pragmatically into more integrated ways of working together. Importantly, it also allows team members to learn from each other and grow as individuals. Yet as we begin to look outside of this one program of research, we see difficulties ahead. As acknowledged by the Committee on Facilitating Interdisciplinary Research et al., "home departments [that] do not recognize, encourage, and reward such activities may not be willing to make the extra effort required for interdisciplinary activities" (2004, 62). Indeed, in the humanities (at least in Canada) there is still

little recognition of (and low funding for) collaborative work. In the sciences and the social sciences there is still not enough recognition of the value of a holistic perspective that includes the arts, history, and philosophy. In some cases, we face the problem of how to translate what we have learned for our individual (and occasionally sceptical) departments.

Yet the process of interdisciplinary collaboration continues to motivate and excite us. We did not realize, for example, that interdisciplinary work might offer us more career choices down the road: with the economic downturn and a hiring freeze in tenure track job postings, several of us are looking outside of traditional disciplines (and outside traditional academic jobs in several cases) for our careers. We remain firm in our belief that there is room in the academy for this kind of work. Choi & Pak (2006) argue that there are varying degrees of collaborative involvement which occur along the same continuum:

Multidisciplinarity draws on knowledge from different disciplines but stays within the boundaries of those fields; Interdisciplinarity analyzes, synthesizes and harmonizes links between disciplines into a coordinated and coherent whole; Transdisciplinarity integrates the natural, social and health sciences in a humanities context, and in so doing transcends each of their traditional boundaries. (359)

We would argue that transdisciplinarity also works in the opposite direction, by putting the humanities into a natural, social and health sciences context. Is this perhaps more than SSRHC bargained for? As a student group, we do not yet consider ourselves to be transdisciplinary, but we do believe that this is the path on which we are headed: unsure both of the final destination and if we will get there, but fascinated by the process. And we are looking forward to having more people join us on this exciting adventure.

Endnotes

[1] www.hcic.ualberta.ca

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