Social Sciences and Humanities Research Council of Canada
Conseil de recherches en sciences humaines du Canada

PERFORMANCE REPORT:

SSHRC's Major Collaborative Research Initiatives (MCRI) Program

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FINAL REPORT

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EXECUTIVE SUMMARY

Context and Aim

The Major Collaborative Research Initiatives (MCRI) program is one of SSHRC's most important research granting programs, awarding funds for up to five years to established researchers working in collaborative, multi-centre teams. Established in 1993, the MCRI aims to support leading edge research with true potential for intellectual breakthrough that addresses broad and critical issues of intellectual, social, economic and cultural significance through the effective coordination and integration of diverse research activities and research results. The main aim of this Performance Report is to provide accountability evidence about the MCRI program: a complete, comprehensive and in-depth portrait of its performance, while recognizing that many aspects of performance are not easily measurable and are observable only in the longer term.

Information Sources

The performance assessment framework was based on the program's Results-Based Management and Accountability Framework (RMAF). Data on all the dimensions in the framework were obtained through multiple sources:

- In-depth case studies of 11 MCRI's funded between 1995 and 2000. The cases were selected systematically, through content analysis of mid-term peer review committee reports, to ensure variation on the MCRI program's fundamental features, as well as to ensure representativity across disciplines and locations. The case studies involved in-person or telephone interviews with a total of 54 individuals, including project directors, Canadian and foreign investigators, students, project partners, and project staff;
- Secondary analyses of SSHRC's awards databases; and
- Key informant interviews with seven SSHRC personnel.

Findings

This performance assessment provides evidence that the MCRI program has realized the goals that SSHRC has set for it, supporting leading edge research with true potential for intellectual breakthrough that addresses broad and critical issues of intellectual, social, economic and cultural significance through broadly based collaborative research as the central mode of research activity. Many of the issues addressed through the funded projects would not be addressed either in Canada or elsewhere in the world without the MCRI program, and it has provided critical support to highly successful advanced scholarship in the social sciences and humanities.

Program Strengths

The program has particular strengths in several areas:

- A foremost strength is in **teaching and mentoring**, where future generations of social sciences and humanities scholars have been and are being prepared to conduct research of a high level of intellectual complexity and are gaining experience in transcending disciplinary boundaries and in using their work to address broad, critical issues of intellectual, social, economic and/or cultural significance.
- The program has also been directly responsible for helping several groups of Canadian researchers propel themselves to the **worldwide center of leading-edge research** activity in their research domains; without the MCRI program, these advances would not likely have occurred.

- The MCRI program has also contributed to **improved programs, services and policies benefiting Canadians.**

Program Challenges

Some challenges have also been identified in this performance assessment:

- There are **clear differences in research productivity** among the supported teams, and indications that lower levels of productivity could be improved through adoption of best practices.
- There are wide differences in co-authorship practices in the MCRIs studied, **raising questions about the integrativeness of the research outcomes** in some projects**.**
- There is some evidence that **SSHRC's vision has exceeded the capacity of traditional university environments to adapt to changing modes of research**, with the result that MCRI participants are sometimes caught in frustrating and discouraging situations.
- Of particular concern were the findings that participation in collaborative, interdisciplinary research can **pose threats to students' career trajectories**, and that some **potentially valuable contributions to MCRI research outputs have been lost** because of pressures on younger faculty.
- Tensions between responsiveness to stakeholders and maintaining high levels of scholarly productivity requires the project's researchers and scholars to develop and maintain a **complex balance between competing demands**.

Best Practices

The Performance Report identified the characteristics of successful projects funded under the MCRI program, as seen through the lens of the overall Performance Framework, as well as the best practices of successful projects. These are summarized in the following table.

Summary of successful MCRI project characteristics and best practices

Characteristics of successful projects	Best practices identified in case studies
Successful collaborative research	
Prior successful collaboration	Inclusion only of researchers with certainty of collaboration success
Shared conceptual and methodological framework developed collectively early in the project's funding period	Initial meeting of the entire research team in first months of the project Time for informal discussion and exploration of interdisciplinary differences
Communication of clear expectations for productivity	Directiveness from the project director Contracts to formalize expectations Peer pressure to stimulate production
Encouragement of integration and synthesis through constant engagement of all members with all aspects of the research program	Annual conferences and frequent meetings including all team members (researchers and students) Inclusion of an integration phase Proactive use of the project website
High level of ongoing interaction among the team members ensuring constant overarching integration and openness to scrutiny	Frequent group communication using multiple, open channels
Balance between disciplinary and interdisciplinary publications	Identification of both core integrative and discipline–driven outputs Ensure adequate balance for PhD students and junior faculty
Adaptation of funding flow to organizational realities	Staggered project funding, with slower start-up while project coordinator is hired, and some funds maintained past year five for ongoing dissemination
Successful training and mentoring	
Real and valued role for students in the research program	Participation of students in key research meetings Student involvement in all research activities and operations Atmosphere characterized by respect for other disciplinary perspectives, intellectual openness, and strong mutual support among researchers and students
Provision of opportunities for students to develop and share their work in at climate of constructive criticism	Creation of a student/post-doc caucus Special student-focussed forums at annual research teams meetings and conferences Resources and encouragement for students to present their work at MCRI team regular research meetings and conferences.
Interdisciplinary and inter-institutional involvement	Systematic assignment of students to supervisors of different disciplines Nurturing of opportunities for students from different disciplines and settings to interact regularly and informally Regular interdisciplinary seminars with student presentations Organization of formal inter-institutional movement of students across the different settings
Physical and structural arrangements that support students' opportunities for growth	Adequate office space with all students grouped together Each project site involving sufficient numbers of students to create a sense of community and support
Successful dissemination	
Production of a major integrative work, synthesizing findings and implications	Production of at least one major integrative research output such as a special journal issue or peer-reviewed book or monograph
Direct involvement with stakeholders	Ensuring stakeholder involvement through partnerships within the research program Stakeholders part of the project Advisory Committee
Use of a wide variety of dissemination vehicles	Proactive outreach to reach policy and decision-makers: proposing presentations and meetings; invitations to participate in regular research sharing activities; communication tools including websites and electronic newsletters Reach to the public: development of accessible education materials, provision of opportunities for the public to visit and meet the research team; media communications such as newspaper and radio coverage

1. CONTEXT OF THE PERFORMANCE REPORT

1.1 SSHRC Context

The Social Science and Humanities Research Council (SSHRC) is Canada's main research granting organization in the social sciences and humanities. An arm's-length federal agency that promotes and supports university-based research and training, SSHRC now has an annual budget of $230 million. Its grants and fellowships programs support researchers in over 30 disciplines and targets research to specific social needs. SSHRC programs also provide support for research training and research communication activities. It partners with a variety of government, business and non-profit organizations to develop and fund strategic research programs.

SSHRC is currently undergoing a process of transformation, "to rethink and restructure its organization and programs to better respond to a rapidly changing research and social environment[1]". Canada-wide consultations were held in 2003 and 2004, and five priority areas have emerged:

- strengthen research foundations to intensify discovery and understanding;
- expand opportunities for learning through research;
- promote research interaction and knowledge mobilization through clustering of research efforts;
- enhance the mobility of researchers and their ideas; and
- provide leadership in promoting and mobilizing social sciences and humanities knowledge[2].

Over the next year, results of these consultations will be used to guide SSHRC's transformation from a granting council to a more comprehensive knowledge council.

1.2 Program Description

The Major Collaborative Research Initiatives (MCRI) program is one of SSHRC's most important research granting programs, awarding funds for up to five years to established researchers working in collaborative, multi-institutional teams. The MCRI aims to support leading edge research with true potential for intellectual breakthrough that addresses broad and critical issues of intellectual, social, economic and cultural significance through the effective coordination and integration of diverse research activities and research results. The current (March 2004) objectives of the MCRI program are to:

- *support leading edge, collaborative research that meets high standards of excellence, promises a significant contribution to the advancement and transfer of knowledge in the humanities and social sciences, and encourages discussion and debate from a broad perspective on critical issues of intellectual, social, economic and cultural significance for Canadian scholarship and society;*
- *promote broadly based collaborative research as the central mode of research activity—both within and among disciplines, departments, and faculties as well as with other sciences at universities across the country and abroad;*
- *promote the development of active partnerships with private or public sector groups to ensure their participation in the design and conduct of the research project and in the dissemination of research results;*
- *promote the development of links with appropriate stakeholders;*
- *provide unique opportunities for training students, postdoctoral fellows and young researchers in a collaborative, interdisciplinary research environment;*
- *support research that achieves integrated and comprehensive syntheses of the issues under study;*

[1] http://www.sshrc.ca/web/about/publications/sshrc_annual_2003_e.pdf

[2] http://www.sshrc.ca/web/about/council_reports/news_e.asp#1

- *encourage dynamic and innovative approaches to disseminating research findings that will have a major impact on Canadian scholarship and society by reaching both traditional and new audiences, including Canadian and international scholars, policy makers, stakeholders and the general public; and*
- *involve postsecondary institutions in long-term commitments to the development of unique, large-scale inter-university research initiatives*[3].

The MCRI program follows a two-step application process. Interested teams may submit letters of intent (LOI) that undergo an initial peer review. Those judged most promising are invited to submit a full proposal and awarded a proposal development grant of $20,000. Full proposals are then received and reviewed, and may receive a maximum of $500,000 per year for up to five years. Teams may apply for a second and final grant; these applications are not considered renewals and are adjudicated through the regular competitive process.

A total of 49 MCRI projects have been funded in the competitions held annually from 1993 through 2003, out of a total of 444 eligible applications, for an overall success rate of 11%. This rate is much lower than that for SSHRC's other granting programs (for example, an average of 28.6% for the same period for Standard Research Grants), attesting to the very high level of competitiveness of the MCRI program.

The program has evolved since 1993, with its objectives growing more focused on involvement of stakeholders, dissemination, and integration and synthesis. Objectives focusing on international collaboration and on inclusion of research networks, originally present as distinct objectives, are now integrated into the wording of overall objectives. Table 1 summarizes the main changes in the program objectives between 1992 and 2004, using the current objectives as a reference.

[3] http://www.sshrc.ca/web/apply/program_descriptions/top#top

Table 1: Evolution in MCRI program objectives

2004 Objectives	Main changes	When implemented
Support leading edge, collaborative research that meets high standards of excellence, promises a significant contribution to the advancement and transfer of knowledge in the humanities and social sciences, and encourages discussion and debate from a broad perspective on critical issues of intellectual, social, economic and cultural significance for Canadian scholarship and society;	In 2002, modified to change the term "innovative" to "collaborative", substitute "international" for "high" standards, and broadened to include transfer of knowledge. In 2000 to include "broad discussion and debate"	2000 and 2002
Promote broadly based collaborative research as the central mode of research activity—both within and among disciplines, departments, and faculties as well as with other sciences at universities across the country and abroad;	In 2002, modified to include "broadly based" and split off the partnership objective. In 2000, removal of the objective of support to research networks	2000 and 2002
Promote the development of active partnerships with private or public sector groups to ensure their participation in the design and conduct of the research project and in the dissemination of research results;	Added as a separate objective, split from the previous and broadened in terms of partners' involvement in the research phases	2002
Promote the development of links with appropriate stakeholders;	Added	2002
Provide unique opportunities for training students, postdoctoral fellows and young researchers in a collaborative, interdisciplinary research environment;	Wording changes, adding interdisciplinarity	2003
Support research that achieves integrated and comprehensive syntheses of the issues under study;	Added	2002
Encourage dynamic and innovative approaches to disseminating research findings that will have a major impact on Canadian scholarship and society by reaching both traditional and new audiences, including Canadian and international scholars, policy makers, stakeholders and the general public;	Added	2002
Involve postsecondary institutions in long-term commitments to the development of unique, large-scale inter-university research initiatives	No change	
Foster unique opportunities to collaborate in international research activities involving many research interests and agencies	Partly integrated into second objective as "and abroad"	2000

This performance assessment takes these changes into account, by assessing the performance of funded project within the context of the program objectives in place at that time.

1.3 Aims of the Performance Report

This Performance Report on the MCRI program is part of SSHRC's evaluation plan for 2002-2006. The main aim of the Performance Report is to provide accountability evidence about the MCRI program: a complete, comprehensive and in-depth portrait of its performance, while recognizing that many aspects of performance are not easily measurable nor observable until several years after the individual research initiatives are funded. It also aims to go beyond anecdotal accounts or examples of excellent performance at the level of individual grants, toward an explanatory account of overall program performance and identification of best practices, while taking into account the evolution of the program over time.

A Project Advisory Committee, composed of MCRI program management, performance and evaluation staff, and SSHRC senior management, oversaw the performance report study. Its members are listed in Appendix 4.

2. PERFORMANCE REVIEW PROCESS

2.1 Performance Assessment Framework

The performance assessment framework[4] was based mainly on the program's Results-Based Management and Accountability Framework (RMAF)[5], which was developed in 2004 based on a document review, consultations with stakeholders, and an internal workshop. The RMAF contains a program logic model for the MCRI program, specifying the expected outputs and outcomes of the program (See Appendix 2). These were used as the main dimensions along which the performance of the program was assessed. They were complemented by several additional dimensions: 1) the risk management issues identified in the RMAF that were not already captured in the logic model ; 2) persistent issues and concerns raised by the MCRI Adjudication Committees, as captured in their records of policy discussions, and 3) a brief literature review on effectiveness and productivity of collaborative research teams. The performance assessment dimensions are summarized in Table 2.

Table 2: Summary of performance dimensions

Outcome area	Performance dimension
1. Research	2.1 Production of integrative research findings generated through conduct of collaborative research and whose innovations would not have been produced otherwise 2.2 Timely production of high-quality research publications, with co-authorship and venues representing the collaborative nature of the research 2.3 Increased potential for intellectual advance 2.4 Increased capacity to address broad, critical issues of intellectual, social, economic and/or cultural significance 2.5 Canadian and international recognition/stature of team and of research findings
2. Collaboration and partnership	1.1 Mechanisms and processes for creating relationships, and fostering collaboration and integration 1.2 Active partnerships and links with stakeholders 1.3 Increased collaboration within and across all components of the research questions
3. Training and mentoring	3.1 Students', postdoctoral fellows' and young researchers' acquisition of unique training and mentoring experiences, and career development opportunities in a collaborative, interdisciplinary, international research environment 3.2 Creation of interdisciplinary and/or international linkages involving students and postdoctoral fellows
4. Dissemination	4.1 Plans, approaches and vehicles for dynamic, innovative dissemination 4.2 Stakeholder involvement in dissemination 4.3 Reach to traditional and new stakeholder audiences (capitalizing on the outcomes of MCRI-funded research)
5. Management and institutional support	5.1 Project management adequacy 5.2 Institutional support
6. Contributions of international collaboration	6.1 Roles and mechanisms for effective international collaboration 6.2 Contributions of international collaboration

2.2 Methods

2.2.1 Study design

Several approaches to study design were explored during the development of the performance report framework. After some preliminary file review, it was established that the MCRI project files do not necessarily contain the necessary information of all outputs and outcome areas in formats that will allow compilation across MCRIs for an overall view of program performance. It was thus decided to combine

[4] MCRI Performance Report Proposed Framework, September 2004

[5] Results Based Management and Accountability Framework for the MCRI program, July 2004.

the file review with original data collection through an expanded set of case studies addressing all of the performance dimensions shown in Table 2. Complementary information on some of the performance dimensions was gained through secondary analyses of SSHRC's awards databases and key informant interviews with SSHRC personnel. In addition, these interviews examined the role of the MCRI program in SSHRC's overall portfolio.

In the RMAF, indicators using multiple lines of evidence were identified for each of the performance dimensions. These were further developed during the process of preparing the performance assessment framework and validated with the Project Advisory Committee. The complete list of the performance dimensions, their indicators and their data sources may be found in Appendix 3.

2.2.2 Case studies

Case selection process

The case studies were systematically selected so as to maximize their variation in performance on the MCRI program's fundamental features, while providing a representative portrait across the years of program operation. The performance dimensions on which the case study selection is based were:

- effective collaboration;
- intellectual complexity of the research issues addressed, resulting in need for interdisciplinarity;
- integration and synthesis across broad and complex research issues; and
- innovation that would have been unattainable through non-collaborative, smaller-scale grants.

The assessment of the MCRIs on these dimensions was based on the most objective and comparable measures that were available for all or most MCRIs – the midterm site visit reports prepared by the independent peer review committees.

To select the case studies, the midterm site visit reports of 32 MCRIs funded since 1993 and who had completed their midterm site visits were systematically reviewed. More recently awarded MCRIs were excluded so as to ensure that the selected cases would have had enough time to produce their main research outputs by the time the case study was completed. Data were available for 29 of these MCRIs[6]. The midterm site visits reports were content-analyzed for mentions made by the peer review committee of the MCRI's performance on the four dimensions above, and the degree of success of the MCRI on each of these dimensions rated.

Based on the ratings, a selection was made of 12 cases, eight of which showed outstanding or exemplary performance on at least one of the dimensions based on the review committee's report, and four for which the review committee expressed written concerns about the team's performance on a dimension[7]. Funded between 1995 and 2000, the resulting case selection represented a balanced sample across disciplines, regions, and universities. Three of the MCRIs projects selected for case studies had received a second MCRI; in two cases, the case study was to focus on the first, and in one case, on the second. Backup cases were also selected for each case.

Out of concern for protecting the confidentiality of the case study projects, no identifying information is provided in this report. Readers are invited to consult Appendix 1 for an overview of the diversity of funded MCRI projects overall.

[6] Of the 36 eligible MCRIs, four did not undergo a site visit. The files for two of the MCRIs were at the Historical Branch of the National Archives, and were inaccessible. Data was therefore available for 94% of the MCRIs that had undergone a mid-term review (30/32).

[7] Note that this does not imply that the ultimate performance of the MCRI was unsatisfactory, as the midterm review constitutes a formative evaluation offering suggestions to the MCRI as to how to improve their project. Note also that the midterm review committee does not re-address the scholarly significance of the research program. The issues currently addressed in the site visit are: overall quality and progress of the research; effectiveness of collaboration and exchanges; effectiveness of project management; and diversity and outreach of the dissemination activities both implemented to date and planned for the project's conclusion.

Data collection

The projects' participation in the case studies was initially solicited by SSHRC through e-mail letter and fax. Two of the initial 12 cases declined to participate. One was substituted with an equivalent case, but for the second, two substitute cases also declined participation. Eleven case studies were therefore conducted, as given the time constraints of the assessment, it would not have been possible to include another substitute case.

Each of the case studies involved the following data collection procedures, to complete a case study template based on the performance framework:

File review: As much of the data as possible was extracted from the existing files and project websites and was used to partially complete each case study template. These data were extracted from the following sources: project application and milestone reports, as baselines for expected performance; mid-term review reports submitted by projects; mid-term peer review reports; response to mid-term review report, and related correspondence; project websites, and Final Research Reports (although only one MCRI, funded in 1997, had completed this report).

Interviews: For each of the selected cases, semi-structured individual or group informant interviews were conducted with at least four project representatives. The choice of informants was negotiated with the project director, and varied according to the nature of the project. Thirty-one interviews were conducted, 13 in-person and 18 by telephone, reaching a total of 54 individuals. Table 3 shows the types of interviewees.

Table 3: No. of interviewees

Type	No.
Project directors	11
Canadian co-investigators	25
Foreign co-investigators	3
Students/post-doctoral fellows	9
Canadian project partners	1
Foreign project partner	1
Project staff	4
Total	**54**

Calls placed to an additional six Canadian and four foreign participants were not returned.

The interviews were conducted using semi-structured interview guides in English and French, covering the performance dimensions for which information was not readily available through the project files.

Compilation and analysis

The interviews and file review data were summarized in a summary profile of the performance results of each initiative, structured according to the performance dimensions.

A second, cross-case level of analysis compared the findings from each case on the performance dimensions, aiming to identify factors that discriminate among the MCRI teams' levels of performance, characteristics of successful projects, and best practices and lessons learned.

2.2.3 SSHRC AMIS database extractions

In addition, information about some performance dimensions was extracted from SSHRC's AMIS databases. These data included:

- Total numbers of applicants, co-applicants and collaborators per MCRI team
- Number of collaborating institutions per MCRI team
- Number and role of foreign investigators and institutions
- Extent of collaboration or interconnectedness among MCRI team members on other SSHRC grant applications

- Payments made to students involved in MCRI teams
- Volume of SSHRC grants held by MCRI project directors.

2.2.4 Key informant interviews with program staff and management

A final data source was key informant interviews with seven MCRI program staff and management representatives, using semi-structured interview guides. These interviews asked respondents to assess program performance from their perspectives, as well as to comment on the role of the MCRI program within SSHRC.

2.3 Limitations

This methodology has several limitations that should be taken into consideration when reviewing the findings.

First, although every attempt was made to ensure that the selected cases were representative of all MCRI projects, their relatively small number (11 out of the total 49 projects funded) means that they may not fully capture all the aspects of the program.

Second, the performance assessment relied partly on self-reports from project directors, investigators and students, which may have resulted in some positive bias about the success of the initiatives. However, care was taken to ensure that the participants understood that the case study was part of an assessment of the program's performance as a whole and not of their individual performance, and they were encouraged to be frank about what they had learned that might be of value to future investigators. Although as much factual information on research productivity as possible was obtained through verifiable sources such as websites, it is likely that not all of these sources are completely up to date, and that as a result program performance has been under-estimated. In addition, the participating researchers could not have accessed the performance framework when conducting their research, and so may not have been recording the data called for by the framework, especially if it was not required by SSHRCs reporting requirements.

Finally, and most important, during the course of the case studies it become apparent that even for the MCRIs funded almost ten years ago, results were still in the process of being published and would likely continue to be for several years, or in some cases, indefinitely. This means again that the portrait painted here of the overall performance of these MCRIs will be underestimated.

3. RESULTS ACHIEVED

3.1 Project Scopes

All MCRI's

Table 4 provides a summary of the number of MCRI projects funded in each year of the program, the total amounts awarded, as well as the geographical distribution of the MCRI project directors. Between 1993 and 2003 inclusively, the 49 MCRI projects received a total of 64.83$M from SSHRC. No MCRIs have been conducted where the project director is in an Atlantic institution[8], with 32 going to Québec and Ontario universities and 17 to the Prairies and BC.

Table 4: Projects and funds spent, per year and by region[9]

Project characteristics	Funding year											Total
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
No. of projects	4	3	5	1	4	6	7	6	5	4	4	49
Region												
West	1	1	1	0	1	3	3	1	2	3	1	17
Central	3	2	4	1	3	3	4	5	3	1	3	32
East	0	0	0	0	0	0	0	0	0	0	0	0
Total payments ($M)	.78	1.7	3.5	2.1	4.4	5.2	7.1	9.3	9.2	10.8	10.7	64.83

The funded MCRIs represent a broad range of disciplines: the project directors, co-investigators and collaborators came from a total of 32 main disciplines and 220 subdisciplines as listed on their application forms. Table 5 shows the frequencies of the three main disciplines listed for the funded projects' applications, as well as the first main discipline choices listed by each applicant, co-applicant and collaborator on the MCRI application forms (the latter for those disciplines with more than 10 researchers involved). The diversity of research areas addressed may be seen in examining the complete list of funded MCRIs, shown in Appendix 1.

Table 5 shows that while there is strong involvement of researchers in MCRIs from several fields, notably economics, political science and linguistics, the funded projects were most likely to be found in political science, linguistics, interdisciplinary studies, and history. In the internal SSHRC interviews, concern was expressed that the success rate for the MCRI program is too low, that committee judgments have been too conservative, and that some disciplines and domains have been consequently been structurally excluded.

[8] One MCRI was awarded to a project director in an Atlantic institution, but the project director moved to another region shortly after the grant was awarded.

[9] Source: AMIS database.

Table 5: Frequency of main discipline representation in successful MCRI projects

Discipline	No. of researchers[1]	No. of projects[2]
Economics	120	5
Political Science	114	14
Linguistics	110	14
Sociology	76	8
Law	62	5
Psychology	60	5
History	55	11
Management, Business, Administrative studies	48	1
Québec literature	41	6
Geography	38	5
Education	36	8
Anthropology	31	7
Industrial relations	23	2
Archival science	22	2
French literature	21	2
Fine arts	20	5
Urban and regional studies, environmental studies	19	3
Archaeology	17	6
English literature	15	3
Interdisciplinary studies	13	12
Communications, media arts	12	2
Biological sciences	12	3
Criminology	<10	1
Demography	<10	1
Library and information science	<10	3
Modern languages and other literature	<10	3
Natural sciences and engineering	<10	1
Other	<10	13
Religious studies	<10	1
Social work	<10	2

[1] The first main discipline choices listed by each applicant, co-applicant and collaborator on the MCRI application forms

[2] The three main disciplines listed on the funded projects' applications.

Table 6 shows the number of investigators (applicants, co-applicants and collaborators) and institutions involved in the entire set of 49 successful MCRI's using data extracted from the AMIS database.

Table 6: Team members (applicants, co-applicants and collaborators) and institutions involved in successful MCRIs at the time of application

	Total no.	Range per project	Mean per project
Team members[10]	1,069	4 to 76	24.0
Canadian	726 (68%)	2 to 68	13.5
Foreign (%)	343 (32%)	0 to 32	7.6
Institutions and organizations	312	1 to 41	13.2
Canadian	82	1 to 29	5.2
Foreign	230	0 to 23	6.4

In total, 1,069 individual researchers were involved as applicants, co-applicants and collaborators in the successful MCRIs. Of these, 32% were from outside Canada. On the average, each MCRI involved collaboration among 13.2 research institutions and organizations.

[10] This is the total number of individual investigators: 6 were members of three funded MCRI teams, and 93 were members of two teams.

Case studies

The MCRIs selected for the case studies varied in the numbers of researchers and institutions involved, as well as their geographical and temporal focus. Table 7 shows the number of team members (investigators, co-investigators and collaborators) participating in each case, as well as the number of research institutions and organizations. The number of team members ranged from a low of four to a high of 59; as might be expected, this had very different implications for the nature of the collaborative relationships. The number of institutions involved also ranged accordingly, as in most cases these projects did not involve a high concentration of researchers within institutions, but rather enlisted the expertise of specific individuals no matter their location.

Table 7: No. of team members and institutions and organizations involved in case studies, as provided at the time of case study interviews[11]

	No. of team members	No. of foreign team members	No. of institutions/ organizations
Case 1	21	18	18
Case 2[1]	35	32	30
Case 3	19	5	12
Case 4	59	50	37
Case 5	28	2	14
Case 6	12	8	15
Case 7	9	1	6
Case 8	19	0	3
Case 9	11	6	7
Case 10	4	0	2
Case 11	43	13	21

[1]In this case, the figures represent sub-project coordinators. A total of 378 team members (345 foreign) from 189 institutions contributed to the outputs of this MCRI.

3.2 Outputs and Outcomes

3.2.1 Research

Case study findings

Production of integrative research findings generated through conduct of collaborative research and whose innovations would not have been produced otherwise

The case studies examined the success of the MCRIs in conducting the proposed collaborative, integrative research projects. All the cases had or would have fully executed their programs (three of those funded in 2000 were in the last stages of the work), in some cases going beyond the initial proposals. The timeliness of the work varied: while most of the cases had completed the planned work within less than one year of the planned finish date, one had taken several years longer (Case 2). Need for extension of the original timelines seemed to depend in part on external factors such as changes in a publisher, but also on internal factors such as unforeseen complexities in analyzing a dataset, or, in the most extreme case, of decisions to increase the scope of the project considerably so as to address the questions more adequately. Two of the cases (Cases 4 and 10) had however, produced their main research findings in a somewhat shorter time than had been originally planned. This was attributed to very effective project organization, as well as a successful prior history of collaboration.

[11] These numbers differ from those given in Table 6 because it is based on actual investigators' contributions to the project. Table 6 is based on projected contributions at the time of application.

Intellectual scope and complexity

These grants resulted in work that was considerably broader in intellectual scope and complexity than would have been produced otherwise. The impacts of the MCRI grant on the nature of the research conducted was evident in four main ways:

- First, the integration of multiple disciplines in the research teams broadened the scope of thinking and the intellectual complexity of the questions addressed, so that many more factors were considered simultaneously than would have been in a less interdisciplinary approach. For example, in Case 3, a legal perspective was brought into an area that had previously only been examined from health and social science perspectives; in Case 7, physical and social disciplines were integrated to allow for a more comprehensive understanding of all the factors involved in adaptations to changing eco-systems.
- Second, the MCRIs through the collaborative interdisciplinary work, was seen as having produced a higher level of critical scrutiny of the research being conducted. In some cases, the researchers felt that this had allowed better quality research to proceed more expeditiously, and with fewer dead ends; in other cases, it was seen as having raised the bar on the level of quality and complexity of the questions addressed by these and other researchers in the field.

> "This has forced a level of conversation that no one group in the world would have been able to do. It has improved the standard of scholarship – there is upward pressure on research quality because of it." (Case 11)

- Third, the longer time period of the MCRI grant permitted the teams to evolve their research agendas over time, integrating results of earlier phases into subsequently more sophisticated questioning. In Case 5, for example, results of first waves of studies undertaken with large databases were further explored in subsequent generations of studies.
- Finally, in several cases the main benefit of the MCRI grant was that its scope enabled a comparative approach that would not have been possible with a smaller budget and timeframe: comparisons between regions, countries, cities, eras, genres, political regimes, cultures, etc. The analytic possibilities engendered by these comparisons allowed the researchers to see beyond their usual borders, shed pre-conceptions and narrow perspectives, and work towards a more complete comprehension of the issues under study. This also had the effect of pushing scholarly standards among the collaborators, and within their circles: it would no longer be as acceptable to conduct studies on one language, one literary genre, one city, one type of industry, and so on. The MCRI grants' contribution to comparative approaches was especially important in projects where the focus led naturally to international comparisons, as the inclusion of international collaborators facilitated a comparative approach.

Interdisciplinarity

The extent of interdisciplinarity among the investigators involved in the grants was generally high, although it tended to be confined within either social sciences or humanities. Only in rare cases were there very unusual or previously unheard of disciplinary combinations - in Case 3, where law, environment, health and social sciences were brought to a problem that each had examined separately before, and in Case 4, which involved a never-before-combined range of disciplines including the humanities, the arts, and social sciences. One case (Case 6) developed strong interdisciplinary linkages within fields in engineering, which had impacts on the range of ideas and methods adopted by the engineering researchers and students. Some MCRIs involved multiple disciplines but from within a fairly narrow range of affiliated social sciences (e.g., Case 1, in cognitive sciences; Case 8, in sociology and political science.) Other MCRIs emerged from research domains that were already heavily interdisciplinary (notably in transportation research and environmental studies/sustainable development); the researchers in these areas felt that the existing interdisciplinarity facilitated their MCRI work but that its interdisciplinarity was not attributable to the MCRI. One case (Case 10) involved researchers from a single discipline but used a multidisciplinary Advisory Board to bring input from other disciplines; they felt that this had been a successful approach.

Integration of multiple research strands

> "Integration is still a challenge, but all members have a common vision. We're limited by our methodological ideologies. But the shared vision is a starting point and has allowed us to communicate well" (Case 6).

The integration of multiple research strands was accomplished to varying degrees and in varying ways among these case studies[12]. Although all the cases began their research program within an overall framework or paradigm, in all but one case (Case 10) the research activities were divided into separate groups or strands, with different groups of researchers taking on responsibility for these. This was of course necessitated by the scope and complexity of the questions being addressed, but the researchers recognized (sometimes with prompting from SSHRC at the midterm review) that they should consciously aim to avoid an "anthology" approach, where each group would contribute their chapter to an overall work. There were therefore several different types of divisions of labour, and several approaches to integration. In four cases (Cases 2, 8, 9, and 11), the groupings were geographically (and therefore, in one case (9), culturally) based, while in the six others the divisions reflected components of the research question. In those cases, the teams within each division also tended to be interdisciplinary, although somewhat less so than the overall group. The MCRI teams then used various mechanisms to ensure that the research themes and results would be integrated into a comprehensive whole; these are discussed in section 3.2.2.

The case selection process used the ratings made of the midterm review committees' assessments of the level of complexity, leading to interdisciplinarity, so as to result in projects that varied on this dimension at the midterm. Of the two cases where concerns were expressed about this issue at the midterm, the researchers involved in one of these mentioned that they had faced challenges in this area and had hoped for a higher degree of integration, with reference to one particular disciplinary group within their project. The other case had, however, achieved an extraordinary high level of integration in its work processes. In two other cases, the team principals or collaborators felt that their expectations for integration and synthesis had been higher than was realized, and were actively developing mechanisms to correct this in subsequent grant applications.

Timely production of high-quality research publications, with co-authorship and venues representing the collaborative nature of the research

Although all the MCRIs had fully executed their research programs, the extent to which this work has so far been turned into scholarly publications varied. Table 8 shows the number of scholarly publications resulting from the case study MCRIs (based on the latest available information)[13]. The cases are arranged chronologically, so as to assess any potential recency effects. Extreme prudence is required when interpreting these numbers, as first of all, dissemination conventions vary greatly among the disciplines represented in the MCRIs, with some placing more emphasis on books and chapters, and others on journal articles. Second, these cannot reflect the differences in prestige or impact of the publications within a category. One case (Case 10), for example, has published fewer articles but in the very best international journals. Finally, because these projects often benefit from complementary funds from other sources, the extent to which each publication can be directly attributed only to MCRI funding is generally a very difficult question to answer. One case (Case 6) provided quantitative estimates of the proportion of funding of each research outputs attributed to the MCRI as opposed to other funding sources, (in their case, 60% of the total), but this was an exception.

Nevertheless, it is clear that the publication performance of these case MCRI projects varies greatly, from six to 90 journal articles and zero to seven books. Six of the MCRIs have published books showcasing their work, and four have or will publish special journal supplement issues featuring the MCRI project results. Those at the lower end of the productivity spectrum (Cases 9 and 10) differed as to their reasons

[12] The literature on collaborative and interdisciplinary research present several models integration and collaboration, including those adopted by the MCRI program, but there is no single comprehensive definition of either term; e.g., Katz, J, Martin, S (1997) What is research collaboration? Research Policy, 26(1), 1-18; Sanz-Menéndez, L., Bordons, M, Zulueta, M (2001) Interdisciplinarity as a multidimensional concept: its measure in three different research areas, Research Evaluation, 10(1), 47 – 58; Thuc Uyen Nguyen Thi ; Lahatte, A. (2003) . Measuring and assessing relative disciplinary openness in university research units. Research Evaluation, 12(1), 29 – 37.

[13] See section 2.2.5. These numbers are certainly underestimates of the final production level of these projects, as most will continue to publish for the next two to three years, and some expect that they will keep publishing on this work until they retire.

for this: in one (Case 9), it is because the main analyses of very large sets of empirical studies are not yet complete, and only very preliminary findings have been released so far. In another case (Case 10), the major work on this particular grant was a book; but the team will combine the data from this MCRI project with a large number of prior studies and with data collected through an international collaboration over probably the next decade. The main researchers involved in one case (Case 8) were not satisfied with the team's productivity, and recognized that several factors could be corrected to ensure a better outcome in future work. In this case, one of the contributing factors (others are discussed below, in terms of mechanisms for collaboration), was the turnover among the post-doctoral fellows who had managed vary large components of the research program; one interviewee felt that it was likely that some of this research would never be written up for publication.

Table 8: Number of research outputs[1] and co-authorship patterns of case study MCRIs

	No. of journal article/papers	No. of books/chapters	No. of conference presentations	Percent of articles/chapters with more than one author[2]
Case 1	1 special issue 52 articles	1 book 4 chapters	82	70%
Case 2	--	4 volume-book 3 volumes to come	22	8%
Case 3	1 special issue 53 articles	32 chapters 7 books	67 presentations 26 posters	51%
Case 4	61 articles	8 chapters 1 book	108	13%
Case 5	1 special issue 75 articles	25 chapters	137	77%
Case 6	90 articles	30 chapters	246	90%
Case 7	65 articles 1 special issue to come	--	264	75%
Case 8	26 articles	12 chapters 2 books	41	50%
Case 9	6 articles	1 book (3 volumes) 1 book to come	17	50%
Case 10	7 articles	1 book 1 book to come 3 chapters	4	100%
Case 11	71 articles	5 books 1 book to come	95	48%

[1]These outputs were summarized from information available on the project websites and provided by project directors at the time of the case study interviews, with supplementary updates provided later if these were available. The final data were then validated by the project directors and in one case to existing SSHRC information. It is important to note that more recent MCRIs will have had less time to see research outputs to fruition; given this, the cases are arranged in chronological order in the table to facilitate interpretation. Finally, it should be noted that care was taken to avoid double-counting when outputs were listed in more than one source.

[2] Please note that data on international co-authors is presented in section 3.3, Table 12, p. 42.

In the internal interviews with SSHRC staff, some questions were raised about the research productivity within MCRIs, with one interviewee wondering whether per dollar productivity was not higher in smaller, less collaborative grants. In general, SSHRC managers were unable to comment on the range of outputs and scholarly contributions for the MCRIs, as they do not yet have access to results data.

Co-authorship

Table 8 also shows the proportion of each team's main outputs (journal article and book chapters) that were co-authored. While the use of co-authorship as an indicator of collaboration has been criticized, and co-authorship trends vary across disciplines[14], this indicator is often used to measure the extent of research collaboration[15] . Among the case studies, the differences in co-authorship rates is quite striking – from 8% to 100%. At the low end, the seven major volumes comprising the outputs of this MCRI had several hundred chapters almost entirely authored by single scholars. In this case (Case 2), each author was asked to adopt the overall unifying framework in their submission, with an editorial team undertaking bilateral negotiations with each author to ensure compatibility, and in some cases requesting major rewrites. In a few of the multi-authored chapters, the editorial team had required single-authored submission to be integrated, or had carried out the integration themselves. At the high end, the relatively small research team has intentionally adopted a process of co-writing of all manuscripts, working intensely together through drafts. Most groups however have produced a mix of single-authored and multiple authored publications – sometimes with a clearly articulated pattern and strategy. First, as will be seen later, almost all of these MCRIs have strongly encouraged publications by students, and integrated students into the writing of some co-authored papers. Many papers with two authors tend to be the publication of these or dissertation work co-authored by the students and main supervisor. Beyond this however, some MCRI teams deliberately aimed for a balance between disciplinary and interdisciplinary publications so as to ensure that team members remain competitive within their disciplines and home departments. Some teams (for example, Case 3) have planned to produce a certain number of integrative pieces from the MCRI, but also encourage investigators to publish disciplinary work, in part because they have found interdisciplinary work harder to publish.

Scholarly impact, increased potential for intellectual advance and national and international recognition

Although this dimension of research performance is difficult to evaluate in the relatively short term and through self-reports, the case studies suggested that scholarly impact and international recognition of the MCRI research on the respective fields of inquiry was seen at least to some extent in all cases, and quite spectacularly in several. The amount of impact was naturally partially dependent on the extent of dissemination, so the full scholarly impacts of projects which had not yet completed their main dissemination activities could not be assessed. Nevertheless, as all the case projects had been involved in national and international conferences as well as some level of publication, it was possible for them to gauge the impacts of their work. For three of the MCRI cases (Cases 1, 4 and 10), it can be unequivocally stated that they are the recognized world leaders in their areas, garnering enormous international attention, influencing the direction of research in their domains in very important ways, and being looked to as a key source of current and future intellectual leadership. This stature is evident for example, in Case 1, where the group's first international conference resulted in an invitation to produce a special issue of the major journal in the area, with subsequent publication of three more special issues in which the projects directors' introductory chapter on the state of the art and future directions, having great significance in the field. This MCRI is credited with creating a new subdiscipline, with its own international conference and soon-to-be own journal. In Case 10, the methodology developed by the team is on its way to becoming an international standard, with several other countries having adopted what is known worldwide as the "Canadian design". Other indicators of the scholarly importance of these MCRI's work is found in the space they are allocated in major international conferences; for example, in the most recent conference in Case 4's domain, three full sessions were devoted to the project, and it is credited as having been the

[14] Larivière. V., Lebel,J.,Lemelin, P. Collaborative research in the social sciences and humanities: a bibliometric analysis of practices, Observatoire des sciences et des technologies, 2004.

[15] Laudel, G. (2002) What do we measure by co-authorships? Research Evaluation, 11(1), 3-15. Moreover, co-authorships should be assessed against a background trend over time, especially in the social sciences, toward increased co-authorship: Kyvik, S (2003) Changing trends in publishing behavior among university faculty, 1980-2000. Scientometrics 58(10) 35-48;. Persson, O., Glanzell, W., Danell, R. (2004) Inflationary bibliometric values: the role of scientific collaboration and the need for relative indicators in evaluation studies. Scientometrics, 60(3), 421-342.

impetus for the creation of a new PhD program at the host university. This MCRI is recognized worldwide as leading the field in this area. Case 2 has also had significant international influence, as several major international projects now underway can clearly be considered intellectual heirs to this team's original work. For most of the others, with the possible exception of two cases with more narrow regional focus (Cases 7 and 8), their work occupies an important intellectual space in their field, and has attracted international attention, as evidenced by invited presentations, requests for collaboration and applications from international students and post-doctoral fellows.

> "Without the MCRI, this level of integration would not have happened. The MCRI allowed us to have a much more extensive collaboration. It allowed greater range and complexity" (Case 4)

In several of the cases, the MCRI program made a critical contribution without which, the project would not have been able to realize these advances, even when additional funds had been obtained from other sources. For example, while Case 4 benefited from resources contributed by all the participating countries and institutions (up to 75% of the total program costs), the MCRI program is seen having provided the critical enabling grant, allowing other organizations worldwide to contribute to the established initiative. In the researchers' opinion, no other granting program in the world would have funded this work with sufficient scope and flexibility to allow it to flourish so vigorously. In Case 2, many of the participating international scholars would not have had the opportunity to contribute their specific expertise to the scrutiny of the multi-nation, multi-disciplinary community. The MCRI funds contributed only a fraction of the total cost, but the investigators now regard the MCRI as essentially seed money for a global research wave that is now evolving quickly with support from research institutions in several regions of the world.

Increased capacity to address broad, critical issues of intellectual, social, economic and and/or cultural significance

One of the most important results of the MCRIs has been their impact on capacity to address issues of intellectual, social, economic and and/or cultural significance. These issues ranged from basic processes of democracy and strengthening of the social fabric, to evidence-based, economic development, to responsible environmental stewardship and sustainable development. In some cases, the MCRI's link to the policy actors was very direct, and nurtured as part of the research operations; while in others it was more of a theoretical nature. (The mechanisms used to influence policy, programs or opinion related to issues of intellectual, social, economic and and/or cultural significance are discussed in Section 3.3.4, under non-traditional dissemination). Eight of the nine case studies in the social sciences expected to or have produced findings that are of immediate relevance to intellectual, social, economic and and/or cultural significance issues or policies, in Canada or elsewhere in the world. One of the cases (Case 1) involved very basic research, with no immediate applications to issues of broad intellectual, social, economic and and/or cultural significance. However, the eventual link to programs and services was always clear in the minds of the project team, and a second MCRI awarded to this group is now exploring the application potential of their first MCRI research. This also reflects the evolution in the MCRI program objectives over time.

Although neither of the two cases in the humanities had an explicit aim of directly addressing broad, critical issues of intellectual, social, economic and and/or cultural significance, both were concerned with improving the human condition and could show how their work could have important policy relevance – one in the political sphere (Case 2), and the other in environmental policy (Case 7).

Over and above these impacts, a perhaps even more important result of these MCRIs is that they have succeeded not in addressing, solving or resolving issues of intellectual, social, economic and and/or cultural significance, but in **raising new questions** about them. Their most critical role for Canadian society may fundamentally be one of enabling more and better questions[16] -- leading the way in stretching

[16] As one scholar has put it: "*Any good contribution to inquiry raises more questions than it answers, raising our ignorance to a higher level.*" Emmeche, 2000. Transdisciplinarity, theory-zapping and the growth of knowledge. Semiotica, 131 (3/4) 217-228, p. 221.

how we as a society frame and conceive of social, cultural and economic problems -- but not necessarily about finding the answers, or translating them into solutions to social problems.

There are two implications of this impact. On the one hand, this means that the research endeavours supported through the MCRI program will continue to increase capacity to address social issues; on the other, more pragmatic hand, it means that these projects will never have exhausted their supply of research questions, and so will continue to have need for large-scale funding support. As might be expected, this issue was on the minds of many of the case studies' researchers, especially those that were already working on or applying for their second MCRI.

3.2.2 Collaboration and partnership

All MCRIs

The AMIS database showed that MCRI project directors were involved in an average of 4.3 successful SSHRC grants (not including Letters of Intent funds) between 1992 and 2004, not including their MCRI grant. Of these, just over half (52%) were as principal investigators, and 44% were as co-investigators or collaborators. This suggests both a high level of research activity and some degree of participation in collaborative research among those scholars who become successful MCRI project directors.

Case study findings

Impetus for collaboration

As suggested earlier, several of the MCRI teams were made up of researchers who had collaborated previously, either as an entire group, or through networks of linked subgroups. For the three cases that were involved in a second MCRI, their current successful collaboration was obviously founded on that experience; interestingly, two of these groups had conducted fairly large-scale research collaboration prior to their first MCRI (Cases 4 and 10). For some of the others, a nucleus of interdisciplinary collaborators had worked together prior to applying for the MCRI (Cases 2, 3, 6 and 11), and some additional investigators had been integrated because of the needed contribution of their work to the research questions. This was also true for international collaborations: in no case did the MCRI teams report having included international members because they perceived the program as having an international requirement. In two of the cases (Cases 7 and 8), arguably those with the least successful collaborations, the project team had had little prior experience working together. In one of these, the impetus for the MCRI came from the university administration, and the grant requirements in turn led the search for collaborators to provide needed expertise. This meant that the development of cohesive working relationships based on mutual respect in interdisciplinary understanding took quite some time, until well into the second year of the project, and affinities never developed between some researchers. In the second case, the project director solicited participation in the grant on the basis of reputation and expertise, with only a few pre-existing collaborative experiences among the team members. In this case, there was little direct collaboration among some members of the investigator team, with some of those named on the grant proposal contributing very little to the research activities. In a final case, there was very little direct interaction or communication among the participating scholars – all were linked to the overall project through invitation and bilateral discussions with the project principals, and not among each other.

Mechanisms and processes for creating relationships, and fostering collaboration and integration

The case studies examined how successfully these MCRI projects had achieved the desired high levels of collaboration and partnership, and the mechanisms and processes that were used. Several striking similarities were apparent across all or many of the cases studies, as well as several differences and alternatives.

First, it was clear that early and repeated **face-to-face meetings, conferences and seminars** among the project's investigators (and students) were critical in establishing and maintaining a successful collaborative foundation. These meetings provided the environment necessary for open debate and in-depth discussion. Especially in the early phases, they were also usually, perhaps necessarily, painful, difficult and challenging: Researchers spoke of the "collision" and "tectonic shock" of ideas that occurred at these sessions, often in informal, dinnertime or evening discussions. Among the most painful but rewarding experiences for many team members, was an unforeseen realization that some of their most basic concepts, terminology and methodological precepts were not shared by collaborators from other disciplines, and that they had been using the same terms without recognizing the conceptual gulf that separated them (e.g., "file" – Case 4; "subsistence" – Case 3). The case study informants were unanimous that the realizations they gained about other disciplinary perspectives could only have happened in this type of interaction.

> "Our first meetings were like a tectonic shock. Many of our most basic concepts had different meanings, linked to different disciplines. It took hours and hours for us to understand each other, to be able raise questions." (Case 3)

The frequency of these face-to-face meetings, conferences and seminars varied according to the nature of the project and the extent to which it involved international collaborations. Most often, an annual meeting of all researchers, in conjunction with an annual project conference, was complemented by meetings of smaller groups once or twice more per year, often piggy-backed onto national or international conferences that the researchers were attending. In the few cases where the main investigator group or subgroups were in relatively close geographic proximity (e.g., Cases 5 and 10), researchers would meet face-to-face more frequently, sometimes monthly. These meetings sometimes took the form of regular seminars at which work in progress and students' work were showcased.

A striking commonality among the case studies in their accounts of developing successful collaborative relationships was summed up in a word that almost all the researchers interviewed used at least once: "respect". The capacity to be open to the insights potentially made available through interdisciplinary research seemed to derive from a **mutual respect for the other disciplines and their researchers**, so that collaborators would be willing to collectively suspend their own paradigms and open their minds to other ways of seeing problems and doing research[17]. Whether this is a personality dimension – meaning that not all senior researchers would be equally well-disposed to successful interdisciplinarity (indeed, a few of the co-investigators on at least two of the MCRI (Cases 2 and 8) were never really integrated into the research because they seemed to lack this capacity) – or an acquired maturity - was not apparent from the case studies. It was very clear, however, that students and younger scholars benefited enormously from the intellectual openness and mutual respect that the MCRIs modeled.

As mentioned above, most of the case study projects divided the research program into sections, under the responsibility of group leaders or coordinators. They then used several types of **mechanisms to foster integration** across the sections of the research program, some of which seemed particularly effective:

- All of the MCRI cases under study began their research programs with a common framework provided in their proposal; and this was the main tool for structuring the collaborations. However, as already mentioned, in some cases the framework was the direct product of prior collaborative work and meetings among the co-investigators, which seemed to ensure more effective collaboration and greater rapidity in developing a common language and understanding of the research issues;
- Four of the MCRIs (Cases 3,4,9 and 11) invested initial energy into further developing a **common conceptual framework or template** that was then used to structure a common set of tools and methods (questionnaires, case study templates) to be applied in all the program components in their empirical work. It was during the development of these frameworks and tools that the deepest and

> "Using a common conceptual framework allowed everyone to situate their work in the overall project. It was very useful tool." (Case 9)

[17] The development of a new appreciation for the contribution of other disciplines and of a common platform of understanding is cited by Kessel et al (2003) as a central feature of successful collaborative research processes, along with a "ready willingness to trust and respect other disciplines" (p. 387). Kessel, F., Rosenfield, P., Anderson, N. (2003) Expanding the boundaries of health and social science: Case studies in interdisciplinary innovation. Oxford.

most explosive exchanges among disciplines occurred (see above). The data were then collected by subgroups or smaller teams, in specific geographical areas, industry sectors, etc., and analyzed according to the common overall framework;

- To achieve high levels of integrativeness, some of the MCRIs devoted particular attention to ensuring that **team members would be able to access, read and discuss ongoing work** from all other team members, and keep abreast of new developments and insights as they unfolded in all subgroups. The MCRIs used various ways of orchestrating this complex flow of information:
    - In most cases (Cases 1, 2, 3, 4, 8, 9, 11) the projects' annual or biannual meetings or conferences were used as the primary occasions to present works-in- progress and receive feedback from other team members. Researchers and students involved in these conferences especially appreciated the opportunity for informal exchange and debate that accompanied these sessions; meetings that were too much like formal conferences were not as satisfactory.
    - In one MCRI, the team held the only full meeting of all members and visits to all the project's sites at the end of the funding period. In retrospect, the project director felt that having held this meeting earlier would have facilitated the collaborative processes he felt had been in some ways less than adequate;
    - Another mechanism (used in Cases 4, 5, and 11) was the circulation of draft papers or working papers among subgroup members and their publication on the project website for access by all participating researchers and students.
    - Several of the case studies used the project website as a communication tool among the participating researchers. In the most successful case (Case 4) (cited in its mid-term review as having potential challenges around the issue of integration), the project website had listserv and webconference components and was used to proactively keep all participants abreast of progress in all the research arms, to ensure coherence and consistency. The working spaces were open to researchers from all groups, and the technical platform used the lowest common denominator across countries to further accessibility. The web tools were also used to provide ongoing feedback across and within research teams, and as mechanisms for communicating expectations and using peer pressure to ensure constantly high levels of productivity from all team members. For example, through website postings the investigators were told prior to meetings what documents they were to bring, which they were expected to have read, and which they were expected to produce. The website usage was also monitored (although this was not popular with the researchers). In a less successful situation (Case 8), a communications website for researchers was developed but little used.
    - Four of the MCRIs (Cases 4, 5, 8 and 11) produced electronic or paper project newsletters that informed their co-investigators, collaborators and partners of research activities and results. Case 11 also produced a biweekly electronic publication that has generated as many as 9000 requests for documents in the first hour of being released.
    - One MCRI (Case 3) (cited in its mid-term review for its exemplary integrative processes), built the integration of research program components into the projected design by having the final program component focus on integration. Each of the three main investigators, previously responsible for a thematic area, was charged with integrating all of the findings across all of the thematic areas for a particular geographic region.

Finally, as can been seen in the findings on research outputs, many of the MCRIs used the production of an **integrative final work** as a tool for ensuring that the research program's strands had been woven into a comprehensive whole. These works – books and special journal issues – varied in the extent to which they were completely collective productions (for example, Case 10, which was entirely co-written) versus anthologized contributions (e.g, Case 2, in which most contributors would not have read the other authors' contributions prior to the final publication), with most cases falling somewhere in between – chapters or papers incorporating extensive feedback and input from other team members.

Increased collaboration within and across all components of the research questions

As a result of the above mechanisms, these MCRI projects resulted in increased collaboration in the conduct of the research, in some cases among researchers who would not have collaborated before, but in others, among researchers who were, would have and will continue to work together. In general, the participating researchers were highly satisfied with the collaboration experience in the MCRI, feeling that it had benefited their work as well as advancing the collaborative research agenda in ways that would not have happened through other types of structures. The international researchers interviewed were very satisfied with their participation in the MCRI, and had benefited from the opportunity to work with the Canadian and other international researchers. All three of them noted that no granting mechanism in their own countries would have allowed them to undertake this kind of broad international collaboration, either because of lack of funds in that area or because of restrictions or priorities places on types on international collaboration.

Difficulties in collaboration were rarely experienced, and tended to be resolved successfully through **discussion and joint problem-solving** – enabled by the high degree of mutual respect among team members. The main decision-making mechanism depended on the size of the core investigator team, with larger teams usually delegating operational decision-making to a smaller executive group (e.g., Cases 2 and 6).

In general, the potential for difficulties was lowered to the extent that **expectations for contributions and performance were clear**. In two cases, the projects had developed formal statements of expectations, although through two different mechanisms. In Case 11, contracts were signed between each of the co-investigators and the project, specifying the expected research productions, timelines and financial commitments. These were seen as invaluable in ensuring that the research program would move on as scheduled and that all participants would meet their commitments to the project. Case 4 developed and adopted an Organizational Policy, covering project memberships, organizational structure and accountability, decision-making processes, policies and procedures for authorship, collaboration, data management, use of funds, ethics and intellectual property. This policy document was considered an important blueprint for transparent project management and communications and clear communication of expectations, and a tool for reconciling common and individual interests.

Mechanisms for ensuring productivity

Mechanisms for ensuring productivity (the timely production of promised manuscripts) also varied. Case 11, as mentioned above, used formal contracts. In other cases, expectations were based on the investigators' commitments as outlined in the proposal, and in some cases it was a challenge to ensure those were met. Case 5 used a typical approach, where coordinators used persistent urging and invoking of a sense of obligation to ensure that manuscripts were produced. In addition, the natural peer pressure that drives academics worked through the annual project meetings. Several researchers noted that they produced what they were expected to produce for those meetings because it gave them a public deadline. In one case where articles and chapters had not been forthcoming even though the research had been conducted, and productivity was less than satisfactory to the project director, there had been little directiveness or communication of expectations for productivity. Moreover, this project showed signs that some of its researchers had a more self-interested than MCRI-interested mentality: key informants outside the main unit stated that their participation did not enrich them sufficiently – either with students or research funds – as to permit them to deflect energy from their existing research into collaborative papers with the MCRI team members.

In two cases, **pressures facing younger faculty** caught up in concerns over tenure acted to the detriment of the MCRI research. In one case (Case 4), a highly valuable young academic who had completed her PHD with the program, withdrew from the research in order to engage in more independent research and single-authored publications, so as improve her outlook at the time of tenure review. Her experience, expertise and dedication to the field were thus lost to the team. In another case (Case 11), younger researchers declined to publish in the major research output of the program, an edited book, because it would not have sufficiently high status in tenure, promotion and merit review.

Active partnerships and links with stakeholders. Following the program's definitions, partners were defined as organizations participating in the research, and stakeholders were defined as individuals or groups likely to benefit from the results of the research. In many cases, the projects studied did not make a clear distinction between these, as partnerships with non-university organizations tended to be used as vehicles for ensuring links to stakeholders.

All but two of the case studies had active links with partners and stakeholders; these cases (1 and 2) were both from the very early phase of the MCRI and reflect the program orientations at that time. The number of partner organizations in the remaining case study projects ranged from 1 (Case 7) to 23 (Case 11).

The more recent MCRIs used **several mechanisms for building partnerships and links** with stakeholders:

- First, several projects **involved government agencies or departments as direct partners** in the project, where the partner organizations provided additional project funds (Cases 6, 7, 8, 10 and 11) and were involved in defining or shaping the research questions. The research teams met with these partners regularly to discuss progress and research results;
- Some partnerships provided access to data that is not publicly available (Case 5, Case 6, Case 11). Statistics Canada was an important partner for two of these projects.
- Other partners provided considerable **in-kind resources** through the participation of senior agency research staff as members of the project working groups (e.g. Case 4, Case 9).
- The MCRIs that had annual meetings **invited their partner organizations as well as representatives of other stakeholder groups** to attend. One MCRI organized special "Policy Day" sessions (Case 11) for stakeholders and partners organizations, focussing on implications of the research questions, methods and results for the partners.

Representatives of partner organizations interviewed noted that the **benefits of these collaborations were very important to their organizations**, at several levels: helping them address concrete problems; developing a higher level of awareness among staff of underlying issues related to those problems, and sensitizing staff to the potential contributions of research more generally. An unforeseen benefit, mentioned by two of the cases, was that the project provided a forum for the project partners to interact with each other on neutral territory, which they did not otherwise have (Cases 6 and 11).

Role of Advisory Committees

Reflecting the evolution of the MCRI program guidelines, more recent MCRIs had established project **Advisory Committees** (Cases 3, 6, 8, 9, 10, 11). Most of these committees (all but that of Case 10, which was composed entirely of researchers) contained representatives of stakeholders groups. These included: federal departments and agencies (from in and outside Canada), provincial ministries, private sector organizations, universities, regional and municipal governments, private foundations, researchers and community groups. The Advisory Committees usually met annually, on the occasion of the MCRI project's annual meeting. They provided input, and in some cases (e.g., Case 3, Case 11), critical feedback on project documents and tools that helped shaped project orientations.

3.2.3 Training and mentoring

All MCRIs

The AMIS database does not contain information on the number of students integrated into MCRI projects[18] but it does enable examination of expenditures on salaries and benefits to students. Table 9 shows the annual total expenditures on salaries and benefits to students (undergraduates and postgraduates) and to postdoctoral researchers by the MCRI program, and the proportion this represents of the total payments made to MCRIs in that year (using the totals from Table 4) .

[18] The final research report form asks for this information, and will be available for future evaluations.

Table 9: Expenditures on student and postdoctoral researcher salaries and benefits, all MCRIs[1]

Expenditures (000$)	Funding year[2]									
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Student salaries and benefits							1,296.8	782.1	1,517.2	669.8
Undergraduate salaries and benefits	74.1	217.0	11.2	29.4	105.2	100.9	361.8	242.6	22.1	42.8
Postgraduate salaries and benefits	52.2	172.8	186.6	511.8	486.5	669.5	1,152.5	995.3	586.6	271.9
Postdoctoral salaries and benefits	48.5	80.3	50.3	140.8	95.8	187.6	305.9	381.5	358.6	122.4
Total	174.8	470.0	248.2	682.0	687.3	958.0	1,821.5	2,491.5	2,484.5	1,106.9
Percent of total payments	10.2	13.4	11.8	15.5	13.2	13.5	19.5	27.1	23.0	10.3

[1]These data are taken from the AMIS databases and reflect the host universities' allocation of grant expenses to the budget lines reflected as salaries and benefits for undergraduates, postgraduates, postdoctoral researchers, and students.

[2]Although the program began in 1993, no expenditures were made on student or postdoctoral researchers salaries and benefits in 1993. The late fall award date for the MCRI program means that almost all expenditures begin in the subsequent year.

These data seem to reflect fluctuations in the proportion of MCRI funds spent on student salaries and benefits. In addition, the proportion of funds spent on students in MCRIs appears to be lower that that in the Standard Research Grants Program, with averages in 1998 of 13.8% for the MCRIs and 28.7% in the SRGs. However, an internal analysis of the AMIS expenditure data for training has shown them to be somewhat unreliable[19]. They should therefore be interpreted with caution.

Case study findings

Students', postdoctoral researchers' and young researchers' acquisition of unique training and mentoring experiences, and career development opportunities in a collaborative, interdisciplinary, international research environment

All of the MCRI projects involved students, either through integrating their academic program and/or thesis work into the MCRI, or by hiring them as research assistants, or both. Table 10 shows the number of students and postdoctoral researchers involved in each of the case studies, by level where possible, including both types of participation. In most cases, the students involved were as varied in their disciplinary backgrounds as the investigators they worked for and with, and were enrolled in more than one of the collaborating institutions.

Cases 1, 3, 4, 6 and 9 involved international students that are included in the project totals. Cases 1, 2 and 7 also involved additional collaboration with international students, but the researchers interviewed did not have a record of the total numbers as they were not remunerated through the grant.

[19] Simard, F. (2003) Indirect support for training in SSHRC's Standard Research Grants Program: quantitative aspects. This study of the 1998 cohort (grants spent between 1998 and 2002) of the SRG program using the AMIS databasefound that there was a large discrepancy between the amount requested for students and the amount actually spent, but that there was no clear explanation for this. The problem probably also exists in the AMIS data for the MCRI, which would mean that the figures in Table 9 are likely underestimates of actual training expenditures.

Table 10: Number of students and postdoctoral researchers participating in case study MCRIs

	Postdoctoral researchers	PhD	MA, MSc, or MBA	Undergraduate
Case 1	3	18	13	1
Case 2	--	15	--	3
Case 3	1	10	12	2
Case 4	1	56 [20]		--
Case 5	5	65		--
Case 6	9	22	37	4
Case 7	--	13	45	202
Case 8	3	37		--
Case 9	2	7	12	11
Case 10		32		
Case 11	3	21	21	3
Total	18	337		30

Success of the learning component

The learning component of the MCRI is one of its most successful, as the training and mentoring experiences acquired by these students were remarkable in many ways. The MCRI projects made conscious efforts to integrate students into the research program, providing them with opportunities to participate in the research team meetings, annual conferences and seminars. In all the cases studied, students were involved in all stages of the research, through research design, implementation and management, and analysis and dissemination.

> "It was a really great experience for me, very rewarding. I wasn't just involved in the analyses – I got an overview of the entire research process" (Student, Case 10).

The students interviewed had found their MCRI experiences **highly enriching**, and were very appreciative of having been fully integrated into dynamic groups of researchers and students with common research interests, particularly of being asked to contribute their ideas and of the opportunity to be involved in presentations and publications. The student environment had been active and stimulating, with a collegial and supportive atmosphere contributing to mutual learning and exposure to multiple disciplinary and methodological perspectives. Through comparison to other students enrolled in the same departments, the students were aware that they had had a rare opportunity to be involved in a very high profile research endeavour at the cutting edge of their discipline. The SSHRC staff interviewed corroborated this observation, having witnessed the enthusiasm and high quality of the MCRI students during mid-term site visit presentations.

The researchers also found the students' contributions to be enriching: several of the investigator teams noted that the students had made very **important intellectual contributions** to the research program, in one case resulting in significant re-orientation of a research component (Case 8).

Over and above their intellectual growth, students also acquired important **organizational and research skills,** through participation in and observation of rigorous, well-organized research processes, careful study planning and execution, and thoughtful and strategic approaches to dissemination. For example, one student (Case 10) stated that he and his fellow students had benefited enormously from observing and learning how to mount and manage a large-scale program. This had been helpful outside the arena of his degree, for example in developing time and productivity management strategies and skills. Those students involved in projects that were highly engaged with project partners (e.g., Cases 4, 8, and 11) acquired experience in the conduct of research at the science-policy interface.

[20] Some projects were not able to supply the number of students by level.

The MCRI students were very involved in preparing **presentations and publications**, giving them an opportunity to develop their skills in these areas. In all of the MCRIs that held annual conferences, students were encouraged to present papers. Several of the students noted that this had been an excellent opportunity to present their work in a low-threat environment and to receive constructive feedback from a wide circle of colleagues. This was felt to have increased the quality of their documents, as well as enriching their thinking.

Mechanisms used to foster student integration and development

Several mechanisms were used to foster student integration and development. In one case (Case 6), the project created a Post-doc/Student Caucus, whose role was to coordinate student-led exchanges and seminars, and to provide critical input into the direction of the research program. This group organized three major events: a tutorial workshop with sessions given by leading academics, a cross-project workshop, and an invited colloquium. Another case saw (with the collaboration of other research groups) the participation of its doctoral students in an annual International PhD Seminar involving students from nine countries, and other opportunities to share their work through collaborations and exchanges. Other MCRIs organized special student sessions at the annual workshops and conferences (e.g., Cases 4 and 11) or ensured that students were involved in the conference organization as well as presenting papers (Case 1, Case 8).

> "When I became a PhD student I was immediately introduced to the MCRI group and become aware of the larger community. As students we became aware of a broader set of expertise than just our own supervisors'" (student, Case 6).

In several MCRI's systematic processes were used to ensure that the students would have the **opportunity to work with researchers from multiple fields**, by assigning students to work on specific pieces of field work with other researchers (Case 7, Case 11) and, in one case, from multiple institutions (Case 6), or by involving them in interdisciplinary project teams (Cases 3, 4, 5, 6 and 9). Through their participation, and especially though the interaction with other graduate students and researchers, the students were exposed to a much larger array of disciplines than they would have been in their regular programs or than did students in their programs who were not involved in the MCRI. The students benefited from the exposure to the interdisciplinary research activities, and valued the opportunities to see how research was conducted not just in other disciplines, but also in other settings and by other professors. According to the investigators interviewed, students' intellectual growth through the MCRI tended to be very impressive, as they were challenged to question their existing ideas and re-examine basic precepts in new ways.

> "It was the exposure to graduate students in other disciplines, through the seminars, that I found most helpful. We were all interested to learn different perspectives, engage in different dialogues; bringing viewpoints that could expand our own work" (Student, Case 8)

For the participating students, collaboration and interaction with students from other disciplines was particularly valuable. These interactions provided many **informal opportunities** for students to learn each other's concepts and approaches. In addition, three of the MCRIs (Cases 6, 8 and 10) organized more formal methodology workshops for students from their multiple disciplines; these were seen as very valuable to future career development. Interactions among the students were greatly facilitated by having adequate office space for them, in close proximity to one another and to the investigator team. Unfortunately, not all of the participating institutions were able to supply adequate space. Also, one case study suggested that a critical mass of investigators and students in the same location is required for these benefits to occur; in this case (Case 8), the few students at locations other than the main university felt isolated and unsupported.

Creation of interdisciplinary and/or international linkages involving students and postdoctoral fellows

Students and postdoctoral researchers participating in these MCRIs almost invariably developed multiple linkages and contacts, many of them international and interdisciplinary. Some of these contacts have led to long-term collaborative relationships and collegial supports, where former students are continuing collaborations outside the MCRI, either among themselves or with researchers they met through the

project. Four of the MCRIs (Cases 1, 3, 5, 6) have integrated former PhD students and post-doctoral fellows as investigators in their ongoing work; these young researchers appreciate the opportunity to develop their particular interests within the overall framework as well as the intellectual and financial support they have received from the MCRI team.

Impacts on career paths

Positive impacts. The impact of the MCRI experience on students' career paths has been and will continue to be important. Students saw their experience as invaluable in helping them move into academic positions (with the exception of specific cases), and noted that this type of experience would not have been available outside the MCRI. In addition, the students and post-doctoral fellows involved in the program felt that their participation was generating a multitude of contacts that would be helpful in later career development and research activity. Many of the graduates of these programs have gone on to academic or teaching positions at Canadian and international institutions. One example is Case 5, where eight of the students and post-docs have moved into tenure- track academic positions, while seven have taken research positions within government agencies in Canada and abroad. Most of these students will continue working in this area, and will continue their collaboration with members of the research team. This has increased the critical mass of Canadian researchers working in this area. In another case (Case 4), the program's graduates are sought after worldwide by major institutions and organizations because of their exposure to the MCRI. Overall, the intellectual growth gained in this interdisciplinary context, as well as the students' extensive participation in publications and presentations was seen as having helped some students obtain important scholarships for future graduate and post-graduate work, as well as academic positions.

Negative impacts. Although students' experiences in the MCRIs were generally positive, four of the 11 case studies provided some evidence that such participation can pose threats to students' career trajectories[21]. In two MCRIs (Cases 3 and 8), highly capable post-doctoral fellows trained in the interdisciplinary environment of the MCRI were unable to find academic positions, in part because they were less attractive to disciplinary departments than other candidates who could more easily contribute to mainstream teaching and research, and in part because of their atypical publication records. In two cases, students were unable to reconcile the requirements or the traditional orientations of their home departments with their MCRI-based research programs. In another example, (Case 8), a promising and productive PhD student took a hiatus from the program, becoming sufficiently disenchanted with the notion of interdisciplinarity as to write a position paper positing a fundamental conflict between the bounding of interdisciplinary research questions and the requirements of graduate degree programs. In another case (Case 1), a student's dissertation proposal was judged unacceptable by her department because it moved too far from the traditional theoretical approach toward a new, interdisciplinary, application-relevant approach. She was forced to change programs, having lost the time and energy spent in the proposal development to start anew. A similar situation was described with an international PhD student in Case 2, whose departmental supervisor would not accept the student's work because it was outside the norms of current thinking.

3.2.4 Dissemination

Case study findings

Plans, approaches and vehicles for dynamic, innovative dissemination

The dissemination of these case studies' research findings through traditional academic channels has already been described in Section 3.2.1. The two earliest MCRIs have mainly been concerned with these traditional channels (Cases 1 and 2). All the other cases studied have developed **mechanisms and tools to reach broader audiences**. All of these cases had websites that were used to disseminate information

[21] Existing university cultures often present systemic barriers to interdisciplinarity (Feller, I (2002) New organizations, old cultures: strategy and implementation of interdisciplinary programs. Research Evaluation. 11 (2), 109- 116.; Kessel et at 2003). Expectations of enhanced interdisciplinarity must take these into account, i.e, the MCRI's capacity to overcome these systemic barriers is limited.

about the project, personnel, research and results. As already mentioned, four of the MCRIs (Cases 4, 5, 8 and 11) also produced electronic or paper project newsletters that were disseminated to their broad circle of stakeholders. Some of the MCRIs systematically sought media attention, with regular publication of articles in major and local newspapers (Cases 3, 7, 9 and 10). In one case (Case 3), three professional documentary films have showcased the project research. In another, one of the research products has been adapted for school children and in part of permanent exhibit at a science museum. One MCRI has held open houses for community members, providing educational material at these occasions (Case 7). Other vehicles developed included computer programs and models (Cases 6 and 8), multimedia (video and CD) tools and educational materials (Case 8), literature summaries and bibliographies (Case 8) and databases (Cases 6 and 10). Three MCRIs (Cases 3, 4 and 11) have authored publications for practitioner and professional journals.

SSHRC staff interviewed felt that the MCRIs, especially in the humanities, have been more successful in disseminating their work through scholarly than non-scholarly channels, although recognizing the efforts that have been made. It was felt that the non-traditional means developed in these projects were not necessarily highly original.

Linkages with stakeholders and partners

Linkages with stakeholders and partners were also used as channels for dissemination, with the MCRI teams holding workshops, training sessions and seminars addressed to stakeholder audiences (Cases 3, 4, 5, 6, 8, 10 and 11). Project partners interviewed found these sessions to be very valuable, as they helped focus the research results on issues that were important to their organizations. Some partner organizations have disseminated the research activities and results through their internal communication channels (Cases 3, 5, 10).

One of the MCRIs (Case 8) questioned the relevance of the notion of dissemination, as the project uses a co-production model: the researchers and partners are engaged in a continuous joint process of knowledge creation and dialogue.

Reach to traditional and new stakeholder audiences (capitalizing on the outcomes of MCRI-funded research)

> "We put policy requests on the table [at a meeting with a Minister] and I think action will be taken" (foreign researcher, Case 9).

Reach to traditional academic audiences has already been discussed under research outputs. Because the levels of productivity have been variable, the corresponding capacity to reach national and international academic audiences has been variable. Research to stakeholder audiences and impact of the research on policy-makers, partners, and the general public has also been variable, in part because the dissemination phases of these research projects are not yet complete. However, in five cases, the work had already been seen as having a **direct impact on social policy**, where government agencies (in Canada, the UK, China, Finland and other countries) and international tribunals have used or been influenced by the findings (Cases 3, 4, 5, 9, and 10). Two of the projects see their work as having resulted in improvements to civil society by giving a greater voice to disenfranchised or marginalized populations, and provided evidence where these groups, as a result of their involvement with the MCRI project, have begun to organize and take on more empowered social roles (Cases 3 and 9). In one case, however (Case 2) the traditional nature of the research works produced and their great cost meant, according to the researchers interviewed, that many of the relevant policy stakeholders, as well as the project collaborators, would not be able to have access to the final product.

Publication pressures in the interdisciplinary context

While these MCRIs were actively pursuing non-traditional dissemination vehicles, they were also dealing with pressure to maintain high levels of traditional disciplinary publication. We have already noted the cases where younger researchers declined to participate in either the research (Case 4) or the publications (Case 11), out of concern for their academic productivity profiles. One successful strategy for coping with these pressures has also already been mentioned, in Case 3 where the need for both interdisciplinary

and solo, disciplinary publication was acknowledged and supported. Another example of coping with the need for balance between traditional and non-traditional dissemination was found in Cases 8 and 11, where team members have received so many requests for presentations and workshops to stakeholders that they have started to manage these requests more strategically. To some extent, the advantages for dissemination to stakeholders of including non-academic researchers (working in institutional settings) as partners were countered by the reality that the publication pressure is not as great on these researchers, leaving a good deal of the burden to those in academic roles (Case 4).

3.2.5 Potential contributing factors

Project management challenges

Given the size and complexity of these projects, involving a large number of researchers and institutions, there were **relatively few major problems** with project management. Clearly, some of the MCRI project directors are gifted managers (those of Cases 4 and 6 were particularly praised by their colleagues), and were able to effectively deal with challenges as they came up. (These two projects also had succeeded in obtaining relatively major financial support from other sources, which was probably an indicator of both their effectiveness as managers and helpful in reducing management constraints.) The SSHRC staff interviewed also noted that some project directors were more able than others.

The scope of one project (Case 2) grew considerably from that expected, and this coupled with unforeseen cost escalations, led to a budgetary problem that took some time to address.

All but one of the case studies saw the **role of a project manager as indispensable** to the successful execution of the project, especially for organizing meetings and ensuring flow of information among members of national and international research teams. SSHRC staff fully support this, and try to encourage MCRIs to hire a manager. The one project (Case 10) that did not have a project manager was opposed to it on the grounds that it deflected funds from student stipends, but acknowledged that the small size of their group made administration by the project director feasible. Several cases had difficulty finding and hiring a capable project manager, in part due to institutional hiring policies which caused long delays and the referral of inappropriate candidates.

Institutional support

The support provided to these projects by their home institutions varied. In most cases, the project directors were quite satisfied with the support and resources offered – especially with teaching release funds – but in two cases (Cases 8 and 9), the university was not able to provide the promised resources in terms of space and secretarial staff time. In one case, only three of the five participating institutions contributed resources (Case 7). The SSHRC staff interviewed basically echoed these findings, noting that almost all of these issues were resolved directly by the team, with SSHRC intervention in only rare cases.

Two of the cases reported that they felt their institutions were less able to manage large-scale social science research projects than those in other domains. SSHRC staff also mentioned this, noting that the dominant culture in university research offices is that of the natural and medical sciences.

Nearly all the case studies reported some relatively minor challenges with institutional policies and procedures for accounting, human resources or ethics review. A common problem was slow accounting departments, who were unable to provide project managers with information needed to properly manage their budget. However, few problems were experienced in transferring funds among institutions, even to international institutions.

These differences among institutions were not clearly linked to particular institutions or provinces, and experiences varied among faculties within the same institution. Generally, it seemed that administrative problems were more common in larger institutions.

Funds from other sources

Both the case study data and AMIS database extraction suggest that some MCRI researchers had access to considerable additional resources concurrently with their MCRI, either from SSHRC funds or from external sources.

All MCRIs: SSHRC funds. The AMIS database was used to extract information on the number, size and type of grants held by MCRI project directors, concurrently with the MCRI grant (awarded within five years of the MCRI award). On the average, each project director was awarded SSHRC funds, as either applicant, co-applicant or collaborator, of an average total of $226,806 over and above their MCRI funds during the MCRI funding period (range from 0 to 5.06M$). These funds were awarded from the Standard Research Grants program, the Presidential Fund for Innovation and Development, the Post-doctoral Fellowships Program, the Exploring Social Cohesion in a Globalizing Era Program, the Community-University Research Alliances Program, Research Development Initiatives, Essential Skills, INE- The Canada Project, INE Collaborative Research Initiatives, Health Institutes Design Grants, and Society, Culture and the Health of Canadians. An average of $7,870 per director was also awarded in aid to workshops and conferences.

All MCRIs: External Sources. The AMIS database contains information on the revenues anticipated by each MCRI according to its sources. These data must be interpreted cautiously, for two reasons: first, the case study data revealed that not all anticipated contributions had actually occurred, and second, only 27% of the anticipated contribution sources had been committed at the time of application. Nonetheless, these data show that 48 of the 49 funded MCRIs anticipated revenues from external sources, for a total external contribution of $95.5 million between 1994 and 2004, about one and half time times the 64.83$M spent by SSHRC in the same period. On the average, each funded MCRI anticipated revenues of 1.9M$. Of this, 50% was to be in cash contributions, with the other half to be contributed in various forms of in-kind resources. Table 11 shows the anticipated revenues by the year of MCRI award and type of contribution.

Table 11: Anticipated revenues by year of MCRI award

	Anticipated revenues (M$)										
	1993	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Cash	1.7	2.5	3.5	.14	3.9	13.0	--	13.6	5.7	8.4	2.0
Other form	--	--	--	--	--	--	11.5	17.0	7.3	1.3	4.0
Total	**1.7**	**2.5**	**3.5**	**.14**	**3.9**	**13.0**	**11.5**	**30.6**	**13.0**	**9.7**	**6.0**
Average per MCRI	.41	.84	.70	.14	.97	2.2	1.7	5.1	2.6	2.4	1.5

About 45% of the anticipated revenues (total of $42.6M) were to come from administering or sponsoring institutions, with the other 55% coming from partner organizations. Other than other Canadian universities, these partner organizations included 20 foreign universities and agencies, 13 federal government departments and agencies and 14 provincial departments and agencies, as well as various national associations and research organizations and individual service institutions such as hospitals.

Case study findings. All of the case study MCRIs received additional project funds from sources other than SSHRC, for either direct support to the project and for resources such as students that were of benefit to the project. Other than funds from other SSHRC programs, these included in-kind and stipend support to students from foreign universities and institutions, direct support from federal and provincial agencies and institutions, the National Centres of Excellence Program, the Canada Research Chairs Program, the Canada Foundation for Innovation Program, and a private foundation. For those projects that had recorded to total contributions from other sources, these ranged from $125,000 to $4.5M. Others estimated that the total contribution form other sources had been from 30% to 75% of the total project funds.

Support from SSHRC

SSHRC's management mechanisms and supports were generally seen as effective by MCRI project participants as well as SSHRC staff. However, concerns were expressed by some researchers about the timing of the milestone report, as it would from their point of view best coincide with the development of a common conceptual framework and workplan. This would happen within the first year, but not necessarily the first few months (see below on adaptation of funding flow). Other teams raised issues about the mid-term review process, feeling that the review committees did not have adequate understanding of their projects or familiarity with their research contexts. The SSHRC personnel felt that both the well-structured review processes, with multiple follow-up points, and the assignment of specific program officers to MCRIs as beneficial in ensuring effective communications. The disciplinary expertise of the project officers was cited by one MCRI as having been an improvement over a previous situation.

3.3 Contributions of International Collaboration

International collaboration has been a key feature of the MCRI program since its inception in 1993, and was a distinct program objective until 2000. At that time, this objective was rolled into the overall broad collaboration objective. Two year later, in 2002-03, access of funds to foreign researchers became allowable under MCRI guidelines. Given a perception of increasing uptake of international collaboration among MCRIs and concern that the research community believes that international collaboration is still an explicit program objective, the Performance Report aimed to gain insights on the extent and nature of international collaboration in the MCRI program, and determine if barriers exist to international collaboration, and if SSHRC could better support or facilitate international collaboration in the MCRI program.

Nature of and mechanisms for international collaboration

All MCRIs

Thirty-three of the 49 (67%) MCRI projects funded between 1993 and 2003 had international co-investigators or collaborators. These involved 372 researchers from a total of 37 countries in all continents. Table 12 shows the number of international team members (co-investigators and collaborators) involved in MCRIs by year.

Table 12: No. of foreign and Canadian team members in funded MCRIs

	Funding year										
	1993	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
No. of foreign team members	4	4	36	0	38	38	31	31	68	67	55
No. of Canadian team members	33	31	79	4	45	83	120	90	112	86	119

This table indicates that the total number of both foreign and Canadian researchers involved in successful MCRI applications has increased over time. The proportion of foreign researchers has ranged between 0% in 1996 to a peak of 46% in 1997.

The greatest number of foreign collaborators are found in the US (124 of 372, 33%), followed by France (33 of 372), the United Kingdom (32 of 372), Australia (26 of 372) and China (21 of 372). MCRI projects have involved researchers from a total of 37 countries in all continents.

Case studies

Almost all of the case studies (10 of 11) involved international collaboration, to a greater or lesser extent. In four cases (Cases 1, 2, 4, and 8), the work was very international, with significant amounts, even the majority, of data collection and other research activity being carried out outside Canada. In other cases, foreign researchers were involved in specific projects within the MCRI, and collaborated by contributing work conducted in their countries (Cases 3, 5, 6, and 11). In one case (Case 10), Canadian researchers participated in an international coordinating team for a multi-county effort; and in another (Case 7), a foreign researcher and students came to Canada to conduct fieldwork.

The mechanisms used to integrate international researchers varied according to the nature of the research. In some cases, the comparative approach meant that researchers from different geographical and cultural settings were using a common template so as to be able to compare findings (Cases 2, 3, 4, 9, and 11). In others, (Cases 3, 4 and 7) researchers were integrated according to their specific expertise, which had little to do with their location. In all cases, face-to-face meetings were considered indispensable for developing relationships and common understanding. As for the MCRI teams in general, research team meetings and conferences were thus a critical facilitator of international collaboration. In one case (Case 1), the opportunity to visit the foreign research sites and jointly carry out research tasks was seen as an important contribution to the progress of the research.

Impetus for international collaboration

In no case did the MCRI teams report having included international members because they perceived the program as having an international requirement; the international researchers were invited to participate either because they had previously collaborated with the Canada investigators, or because of their expertise in their area, as known through their published work. The international researchers interviewed had all previously conducted research with, and/or sat on committees with (of scholarly associations, for example), their Canadian colleagues.

Contributions to project outputs

In all of the cases, foreign team members contributed at least to some extent to the MCRI's overall outputs through publications and conference presentations. Greater involvement in the outputs was linked to higher levels of interaction among all team members, and in particular with opportunities for foreign and Canadian team members to meet regularly and discuss research progress and findings. Table 13 shows the number of publications recorded by each case study with foreign collaborators or students as authors.

Table 13: No. of publications with foreign team members as authors[1]

	Total no. of articles, books and book chapters	No. of foreign team members	No. of publications with foreign co-authors
Case 1	58	18	4
Case 2	127[1]	32	118
Case 3	93	5	15
Case 4	70	50	12
Case 5	101	2	1
Case 6	120	8	13
Case 7	66	1	13
Case 9	10	6	6
Case 11	77	13	37

[1]This table counts only publications authored or co-authored by team members listed in the application or other project documents. Publications with foreign researchers not on these lists or with foreign students were not counted, as it was difficult to identify their status vis-à-vis the project.

[2]This total includes the individual chapters in the volumes.

Impact on international researchers

> "The most important benefit of the grant for me has been the creation of this community of scholars. We had the resources to build this community and move forward through difficult times, I wish more grants were like this" (foreign researcher, Case 2)

The four foreign researchers interviewed were all delighted with their collaboration, and had benefited professionally from being involved in the research. For one of these, in a less-developed country, the collaboration had given access to a supportive mentoring network, both in Canada and other countries, and enabled her to publish in venues that she would not have otherwise been able to attain. For two others, this MCRI was an important piece of their research activity during the years of the project, and enabled them to become exposed to a wealth of new ideas and people. Two of these researchers mentioned that such collaboration would not have been supportable through the granting programs in their own countries, as this broad, multi-national collaboration is not considered eligible for support in their research domains. Although other funds had been contributed to their projects, all felt that the MCRI had made the critical enabling foundation.

Barriers to international collaboration

In the case study interviews, both foreign and Canadian researchers were asked about possible barriers to international collaboration and if there were ways that SSHRC could facilitate reducing the barriers. Overall, very few barriers were identified, and most of those had more to do with institutional policies than with SSHRC. SSHRC-related policies included a seeming lack of clarity of how foreign research assistants and students could be supported through the MCRI and inflexibilities in budget line allocations, especially for the costs associate with hosting foreign visitors and reciprocating on hospitality. One project director felt that it would be helpful for SSHRC to maintain an international directory of foreign researchers, so as to facilitate the development of new collaborations.

At the institutional level, it was noted that universities would not advance research funds to foreign collaborators, so those researchers would have to outlay their own resources for office supplies, travel costs for students doing data collection etc, and then be reimbursed by the universities. No particular problems were noted in transferring funds internationally, although no administrators of foreign institutions were interviewed.

Overall contribution

Overall, it seems clear that international collaboration in the MCRI program is fulfilling its intended role, by allowing Canadian researchers to integrate the most qualified colleagues into their projects, whether they are located in Canada or elsewhere in the world. The collaborations have benefited both the Canadians and the international researchers, and in the views of both Canadian and foreign researchers, the MCRI program provides a rare opportunity to advance knowledge through international collaboration. As noted above, one of the main advantages of the MCRI program is that its scope allows adoption of comparative perspectives through integration of research groups no matter their location; this allows for greater breadth and depth in the research questions addressed. It seems that, particularly in the humanities, the MCRI program is quite unique in the world in providing the opportunity and support to international collaboration on this scale.

3.4 Role of the MCRI Program in SSHRC's Portfolio and Transformation

The key informant interviews with SSHRC staff addressed the issue of the role of the MCRI program within SSHRC's overall portfolio, and its likely future given the ongoing transformation process.

Those interviewed felt that the MCRI or an equivalent program continues to have an important place in SSHRC's portfolio. However, there is a feeling that that adjustments might be needed to other programs, so as to create an intermediary step between Standard Research Grants (SRGs) and MCRIs both for researchers not senior enough to take on an MCRI, and for smaller-scale collaborative projects that cannot be conducted within the parameters of the SRGs. At the same time, the organization is developing its clusters program, reaffirming its commitment to collaborative research. Some of those interviewed see the future of MCRI as at one end of the cluster continuum, while others see it remaining as a distinct entity. Overall, more flexible funding mechanisms might ensure greater innovation within the program.

4. OVERALL ANALYSIS: CHARACTERISTICS OF SUCCESSFUL PROJECTS AND BEST PRACTICES

This section synthesizes and integrates findings from all the data sources, using the overall framework for analysis of program results. These analyses address the following questions:

- What are the characteristics of successful projects funded under the MCRI program, as seen through the lens of the overall Performance Framework?
- What are the best practices and lessons learned from successful projects funded under the MCRI program, and from the MCRI program in general?

4.1 Successful Collaborative Research

MCRI projects that were successful in terms of the research they produced – especially in executing the planned research program with a high level of collaboration and integration, and a strong publication record -- shared several characteristics:

- First, **prior successful collaboration** seems to be a key predictor of collaborative success in an MCRI project; in this assessment, lack of this experience was associated with less than satisfactory collaboration, or collaboration that took a long time to develop.
    - A main best practice implication of this is that applicants should be encouraged to include only researchers with whom they know they will be able to collaborate successfully, and with whom the project proposal has been developed through a genuinely collaborative process. Smaller-scale collaborations may provide an initial proving ground before taking on the larger-scale MCRI.
- Second, successful MCRIs operated from a **shared conceptual and methodological framework** that was developed collectively early in the project's funding period through intensive face-to-face discussion, argument, challenge and negotiation. This framework served as a basis to guide the production of the research results over the coming years.
    - Best practices for future MCRIs would ensure that an initial meeting of the entire research team would occur in the very first months of the project, and that sufficient time at that meeting be allotted for informal discussion and exploration of interdisciplinary differences.
- Third, and probably most important in terms of ensuring that the project stayed on schedule and that all participating investigators produced the research outputs they had committed to, was the **communication of clear expectations** about what was to be produced by whom and by when, and the use of specific tactics to ensure ongoing commitment.
    - Best practices in terms of these tactics involved a) a fairly high level of directiveness from the project director, b) the use of contracts to formalize expectations, and/or c) the use of natural peer pressure to stimulate production. A lesson learned was that despite all the best intentions of participating investigators, ensuring productivity required some vigilance and occasionally intervention on the part of the project director.
- There are specific **practices that encourage more rather than less integration and synthesis** across disciplines and research themes. To go beyond an anthology approach that perhaps characterized the early years of the MCRI program, the scholars involved must become engaged in a constant process of reading and critiquing each other's work, and being informed about developments that could affect their own thinking.
    - Annual conferences and frequent meetings of the research teams are clearly an invaluable tool for achieving integration and synthesis, and best practices would ensure that a) such meetings are part of all MCRI program budgets, and b) all team members including Canadian and foreign students, would be able to participate in these.

- A best practice observed in the case studies was the deliberate inclusion of an integration phase in the research program, where investigators took on new responsibilities for integration of research findings across different areas than they had worked in up until that point (Case 3).
- Other best practices could involve the proactive use of the project website as in Case 4, and strong roles for group leaders and section coordinators, in interacting not only with their group but with the leaders of other groups as well.
- A high level of collective engagement in research outputs has the additional benefit of improving product quality, making it more readily publishable.

- Although it is difficult to draw conclusions about what factors might support achievement of intellectual advance, it seems that those projects that achieved the **greatest international stature and recognition** (Cases 1, 4 and 10) were not necessarily the most interdisciplinary, but perhaps those with the greatest attention to ensuring constant overarching integration and openness to scrutiny, regardless of their level of interdisciplinarity. Nonetheless, involving multiple disciplines may be helpful to achieving advances because it brings more and different minds to bear on the problem.
  - Best practices in these highly regarded projects were a very high level of ongoing interaction among the team members – accomplished effectively despite researchers being located in many countries around the world – about the research as it was being conducted (as opposed to after it had been conducted), inviting discussion and criticism[22].
  - Interestingly, these three projects (as did some others) also made fairly major adjustments to their research programs in the course of their MCRI, taking on new projects, investigators and challenges when these came up – evidence of a great deal of intellectual energy as well as the capacity to mobilize resources.
- Rather than aiming for the collective production of all research outputs, successful MCRI projects seemed to maintain a **balance between disciplinary and interdisciplinary publications**, navigating between these two worlds so as to ensure continued competence and status in both.
  - Best practices would involve identifying the core integrative and/or interdisciplinary research output that will be collectively authored, as well as discipline–driven outputs, and ensuring that expectations to investigators are clear as to the relative balance desired between them.
  - This may be especially important for younger scholars and PhD students, who may face additional challenges if they become fully engaged in interdisciplinary work.
- Finally, the administrative and organizational realities of the project environments suggest that an **adaptation of the funding flow** of MCRIs would be helpful. Because it may realistically take up to a year to hire a competent project manager – a key ingredient for success – the first year of the project should concentrate on holding the initial whole-team meeting and developing a common framework, with little planned expenditure for the coordinator's salary or for student support. At the other end of the project cycle, lessons learned through these case studies also suggest strongly that the dissemination phase can be expected to extend for several years beyond the end of the grant. If key personnel such as post-doctoral researchers leave the project at the immediate end of the funding period, some research results may remain unanalysed or unpublished. A decreasing amount of funds permitting a longer dissemination phase would help ensure that the productivity of the grants is maximized.

[22] This is supported by a study showing that the degree of network connectedness (measured by the amount of interaction among team members) was shown to facilitate mobilization of determinants of productivity, including strong leadership and recruitment and motivation of talented researchers: Rey-Rocha J., Martín-Sempere M, Garzón, (2002) Research productivity of scientists in consolidated vs. non-consolidated teams: The case of Spanish university geologists. Scientometrics, 55(1), 137-156

4.2 Successful Training and Mentoring

Training and mentoring of students, post-doctoral fellows and young researchers is clearly a highly successful dimension of MCRI projects, and there were many examples of best practices.

- Training and mentoring in the MCRIs was most successful when **students had a real and valued role in the research program**, participating in key research meetings among investigators and collaborators, being involved in all research activities and operations from planning to dissemination, in an atmosphere characterized by respect for other disciplinary perspectives, intellectual openness, and strong mutual support among researchers and students.
    - Best practices for fostering successful student training and mentoring, adopted in all of the cases studied, were to fully involve students as valued contributors to the research program, whether as students completing degree requirements, or as research assistants (students find both types of experiences intellectually rewarding). The mechanisms for this can vary, but should always include participation of students in research meetings.
- Students' intellectual growth was most visibly strengthened when they had **opportunities to develop and share their own ideas and work in a climate of constructive criticism**, with mechanisms and resources to support student-led activities, supporting the development of leadership and collegial relations among students.
    - Best practices for supporting the growth of students included the creation of a student/post-doc Caucus, with its own resources, management structure and program of activities (as in Case 6); the creation of special student-focussed forums at annual research teams meetings and conferences; and resources and encouragement for students to present their work in the low-threat, supportive environment of the MCRI team regular research meetings and conferences.
- These case studies suggested that students gained enormously from **interdisciplinary involvement** through the MCRI. Exposure to students from other disciplines was just as important, in different ways, than exposure to professors from other disciplines; moreover, exposure to other research environments, whether or not they involved other disciplines, was in itself valuable to student development.
    - Best practices seen in the MCRI case studies to ensure that students would derive maximum benefit from being involved in a large-scale interdisciplinary research programs, included 1) systematic assignment of students to supervisors of different disciplines, especially during field work or data collection (even for short periods); 2) nurturing of opportunities for students from different disciplines and settings to interact regularly and informally. Regular interdisciplinary seminars with student presentations were one effective mechanism, and 3) organization of formal inter-institutional movement of students across the different settings for the research team[23].
- Some **physical and structural arrangements support students' opportunities for growth**. Interaction and exchange are fostered when students can physically work in adequate office space, in close proximity to each other and to the research team. Also, a critical mass of students and researchers at each participating location ensures that students feel integrated and are not isolated from the MCRI research team.
    - The ideal physical and structural arrangements for graduate students in MCRI programs would see an adequate laboratory or office complex with all students grouped together, and where participating students from other universities could also have access to space and support resources so as to benefit from extended work periods with the entire group.

[23] Kessel et al (2003) found that the availability of training opportunities that allowed students to move across disciplinary boundaries was a key factor in facilitating the capacity of innovative, intellectual risk-takes to successfully pursue interdisciplinary research careers.

- If possible, MCRI co-investigators should ensure that each project site involves sufficient numbers of students – 10 being about the ideal, according to a student interviewed – so as to create a sense of community and support within the local site.

4.3 Successful Dissemination

4.3.1 Dissemination in the scholarly community

As has been suggested above, successful dissemination in the MCRI's scholarly community through high rates of publication and conference presentations was associated with some specific management practices, including clear communication of expectations about productivity. Another factor that impeded productivity included involvement of a relatively large number of non-academic researchers in the projects, because their less intense publication pressure will leave relatively greater burden on the shoulders of the academic researchers. It should also be noted that for many of these MCRI's, the nature of the research program may not lend itself to early or frequent publications, and that expectations must be tailored to fit the specific situation.

SSHRC has clearly communicated to the MCRIs its interest in seeing the teams produce a major integrative work, synthesizing findings and implications of the entire complex, multidisciplinary and multi-facetted research program. While this is a clearly desirable output, the case studies reinforce that it must have **sufficient academic stature** to interest those researchers concerned with building their individual peer-reviewed publication record.

- Best practices for scholarly dissemination would include those already mentioned in section 4.2.1, as well as ensuring that the MCRI produces at least one major integrative research output such as a special journal issue or peer-reviewed book or monograph.

4.3.2 Dissemination involving and reaching partners and stakeholders

The success of the MCRI projects in increasing capacity to address broad, critical issues of intellectual, social, economic and and/or cultural significance was in part dependent on their aims, with this becoming more of a focus of the MCRI program as a whole over the course of the 10-year period. Several characteristics were shared by the most successful projects in this domain:

- While all the MCRIs saw a link between their work and such issues, some had built more **direct connections to stakeholders and partners**. Those MCRIs that had the greatest impact on policy, programs, or discourse had the most direct involvement with stakeholders, either by engaging them directly in the research team or by including them in a project Advisory Committee that closely monitors the research progress.
    - Best practices for ensuring increased capacity to address important issues would then include ensuring stakeholder involvement either through partnerships within the research program, or though an project Advisory Committee that would be asked to meet and exchange information regularly.
- Employing a **wide variety of dissemination vehicles** ensured the greatest possible knowledge mobilization. Projects that were successful in reaching policy and decision-makers engaged them through proactive outreach, i.e., proposing presentations and meetings in their settings; through invitations to partners and stakeholders to participate in the regular activities of the research groups such as conferences and seminars; and through communication tools including websites and electronic newsletters. Projects that reached public audiences invested in the development of accessible education materials, provision of opportunities for the public to visit and meet the research team, and through media communications such as newspaper and radio coverage.
    - Best practices in this area could include any and all of the dissemination strategies mentioned above, as well as many others that may yet be developed by MCRI project teams. However, it seems clear that more active strategies gather more attention than more passive strategies, and that relationships with stakeholder audiences can take some

time and effort to create and mature. Ideally, MCRI projects would be able to develop an effective and appropriate balance between traditional and non-traditional dissemination through development of systematic communication plans.

Table 14 summarizes the characteristics of successful projects and best practices.

Table 14: Summary of successful MCRI project characteristics and best practices

Characteristics of successful projects	Best practices identified in case studies
Successful collaborative research	
Prior successful collaboration	Inclusion only of researchers with certainty of collaboration success
Shared conceptual and methodological framework developed collectively early in the project's funding period	Initial meeting of the entire research team in first months of the project Time for informal discussion and exploration of interdisciplinary differences
Communication of clear expectations for productivity	Directiveness from the project director Contracts to formalize expectations Peer pressure to stimulate production.
Encouragement of integration and synthesis through constant engagement of all members with all aspects of the research program	Annual conferences and frequent meetings including all team members (researchers and students) Inclusion of an integration phase Proactive use of the project website
High level of ongoing interaction among the team members ensuring constant overarching integration and openness to scrutiny	Frequent group communication using multiple, open channels
Balance between disciplinary and interdisciplinary publications	Identification of both core integrative and discipline–driven outputs Ensure adequate balance for PhD students and junior faculty
Adaptation of funding flow to organizational realities	Staggered project funding, with slower start-up while project coordinator is hired, and some funds maintained past year five for ongoing dissemination
Successful training and mentoring	
Real and valued role for students in the research program	Participation of students in key research meetings Student involvement in all research activities and operations Atmosphere characterized by respect for other disciplinary perspectives, intellectual openness, and strong mutual support among researchers and students
Provision of opportunities for students to develop and share their work in at climate of constructive criticism	Creation of a student/post-doc Caucus Special student-focussed forums at annual research teams meetings and conferences Resources and encouragement for students to present their work at MCRI team regular research meetings and conferences.
Interdisciplinary and inter-institutional involvement	Systematic assignment of students to supervisors of different disciplines Nurturing of opportunities for students from different disciplines and settings to interact regularly and informally Regular interdisciplinary seminars with student presentations Organization of formal inter-institutional movement of students across the different settings
Physical and structural arrangements that support students' opportunities for growth	Adequate office space with all students grouped together Each project site involving sufficient numbers of students to create a sense of community and support
Successful dissemination	
Production of a major integrative work, synthesizing findings and implications	Production of least one major integrative research output such as a special journal issue or peer-reviewed book or monograph
Direct involvement with stakeholders	Ensuring stakeholder involvement through partnerships within the research program Stakeholders part of the project Advisory Committee
Employment of a wide variety of dissemination vehicles	Proactive outreach to reach policy and decision-makers: proposing presentations and meetings; invitations to participate in regular research sharing activities; communication tools including websites and electronic newsletters Reach to the public: development of accessible education materials, provision of opportunities for the public to visit and meet the research team; media communications such as newspaper and radio coverage

5. SUMMARY AND CONCLUSIONS

This Performance Assessment has aimed to provide accountability evidence about the MCRI program according to the dimensions of performance considered the most critical by internal and external stakeholders, as identified in the program RMAF. This assessment, conducted through document review, secondary database analyses, and case studies, has several limitations, not the least of which is that it almost certainly underestimates the overall program performance for the 1993-2003 period because many research results from the MCRIs are yet to be produced.

Program strengths

Nonetheless, it seems clear that the MCRI program has realized the goals that SSHRC has set for it, supporting leading edge research with true potential for intellectual breakthrough that addresses broad and critical issues of intellectual, social, economic and cultural significance through broadly based collaborative research as the central mode of research activity. The program has particular strengths in several areas: foremost, in **teaching and mentoring**, where future generations of social sciences and humanities scholars have been and are being prepared to conduct research of a high level of intellectual complexity and are gaining experience in transcending disciplinary boundaries and in using their work to address broad, critical issues of intellectual, social, economic and/or cultural significance. The program has also been directly responsible for helping several groups of Canadian researchers propel themselves to the **worldwide center of leading-edge research** activity in their research domains; without the MCRI program, these advances would not likely have occurred. The MCRI program has also contributed to **improved programs, services and policies benefiting Canadians.**

Program challenges

Some challenges have also been identified in this performance assessment. There are **clear differences in research productivity** among the supported teams, and indications that lower levels of productivity could be improved through adoption of best practices. There are wide differences in co-authorship practices in the MCRIs studied, **raising questions about the integrativeness of the research outcomes.** There is some evidence that **SSHRC's vision has exceeded the capacity of traditional university environments to adapt to changing modes of research**, with the result that MCRI participants are sometimes caught in frustrating and discouraging situations. Of particular concern were the findings in four of 11 case studies that participation in collaborative, interdisciplinary research can **pose threats to students' career trajectories**, and that some **potentially valuable contributions to MCRI research outputs have been lost** because of pressures on younger faculty. Finally, the tensions between responsiveness to stakeholders and maintaining high levels of scholarly productivity requires the project's researchers and scholars to develop and maintain a **complex balance between competing demands**. Sharing of best practices within SSHRC's research community could perhaps help MCRI teams address these challenges more readily. Moreover, many of the best practices identified would apply to other SSHRC programs, where collaborative interdisciplinary research and teaching and mentoring are carried out on smaller scales.

Conclusion

Overall, this assessment provides evidence that the MCRI program has performed strongly as a tool for SSHRC to support the leading edge of its research community. Many of the issues addressed through the funded projects would not be addressed either in Canada or elsewhere in the world without the MCRI program, and it has provided critical support to highly successful advanced scholarship in the social sciences and humanities.

APPENDICES

Appendix 1: Funded MCRI's, 1993-2003

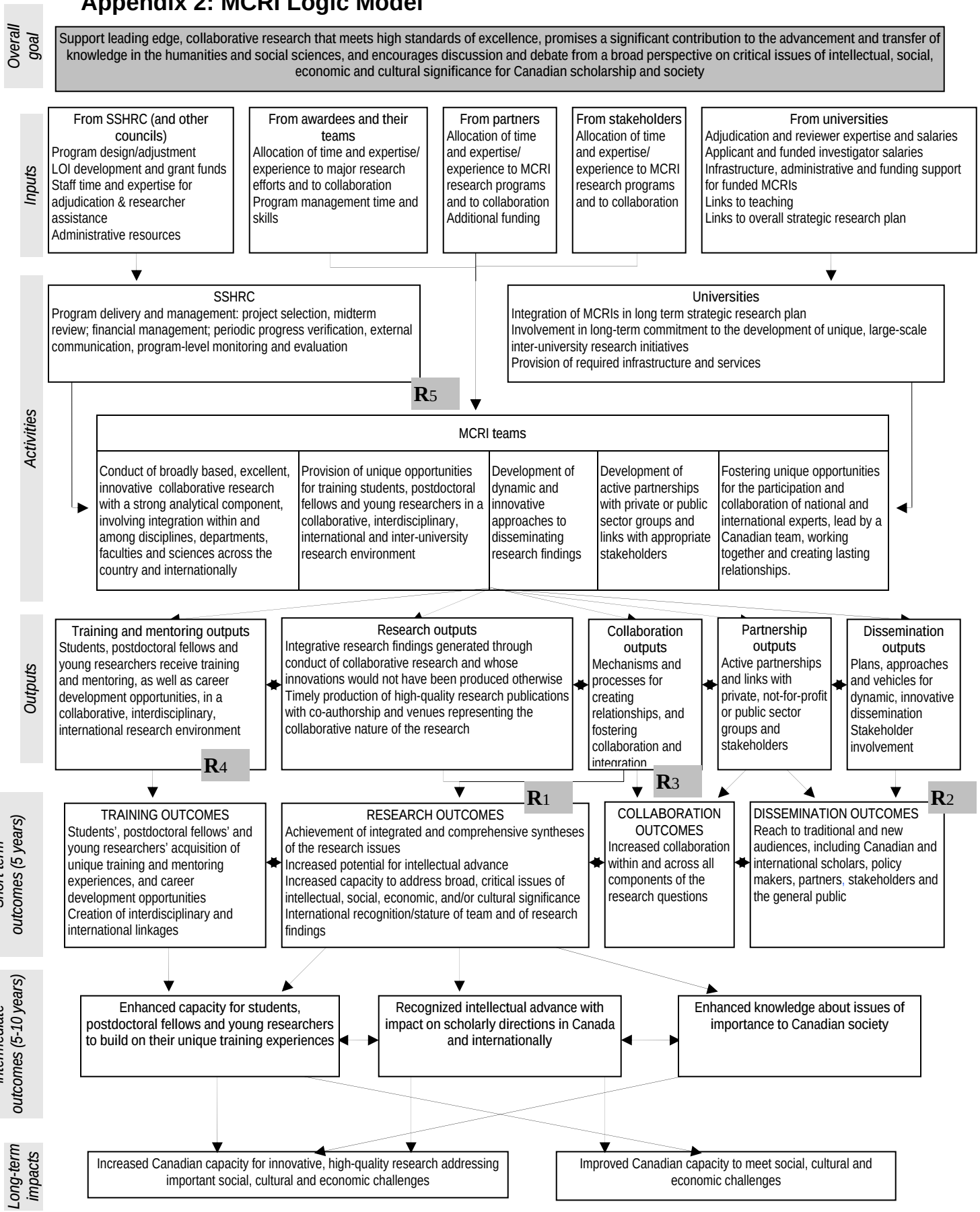
(in alphabetical order of project director)

Director	Application Title	Administering Organization
Amit, Raphael H.	Entrepreneurship research alliance: a collaborative effort to create and disseminate knowledge about the success and failure of new ventures in Canada	The University of British Columbia
Blais, André	The 1997 Canadian election study	Université de Montréal
Blais, André	Making sense of the vote: the 2000 Canadian election project	Université de Montréal
Blum, Alan	The culture of cities	York University
Brander, James A.	Entrepreneurship Research Alliance II: A collaborative effort to create and disseminate knowledge about firm growth in North America	The University of British Columbia
Clements, Patricia D.	An integrated print and electronic history of women's writing in the British Isles	University of Alberta
Coleman, William D.	Globalization and autonomy	McMaster University
Di Sciullo, Anne-Marie	Les asymétries et leur traitement par les systèmes de performance	Université du Québec à Montréal
Di Sciullo, Anne-Marie	Grand travail concerté sur les asymétries d'interfaces et le traitement cognitif	Université du Québec à Montréal
Diaz, Harry P.	Institutional adaptations to climate change: comparative study of dryland river basins in Canada and Chile	University of Regina
Duhaime, Gérard	Sustainable development in the Arctic-Conditions for food security	Université Laval
Duranti, Luciana	The long-term preservation of authentic electronic records	The University of British Columbia
Duranti, Luciana	International research on permanent authentic records in electronic systems (InterPARES): experiential, interactive and dynamic records	The University of British Columbia
Fast, Janet E.	Hidden costs/invisible contributions: the marginalization of dependent adults	University of Alberta
Fleming, Patricia L.	A history of the book in Canada/Histoire du livre et de l'imprimé au Canada	University of Toronto
Garnier, Catherine-Michèle	La chaîne des médicaments	Université du Québec à Montréal
Goelman, Hillel	The CHILD project: consortium for health, intervention, learning and development	The University of British Columbia
Jarema Arvanitakis, Gonia	A cross-linguistic study of the architecture of the (mental) lexicon: issue of representation and access	Université de Montréal
Johnson, Robert E.	Politics and society under Stalin: a Canadian-Russian collaborative research project	University of Toronto
Jones, Stephen	Labour market institutions and outcomes: a cross-national analysis	McMaster University
Keillor, Elaine	Research for electronically produced volumes in the Canadian musical heritage series, and educational and research tools	Carleton University
Keillor, Elaine	Contexts for Canadian Music / New Resources in Canadian Music	Carleton University

Director	Application Title	Administering Organization
Kesselman, Jonathan R.	Equality, security and community: explaining and improving the distribution of well-being in Canada	The University of British Columbia
Laxer, Gordon D.	Neo-liberal globalism and its challengers: sustainability in the semi-periphery	University of Alberta
Lee-Gosselin, Martin E.H.	Access to activities and services in urban Canada: behavioural processes that condition equity and sustainability	Université Laval
Libben, Gary	Words in the mind, words in the brain	University of Alberta
Lovejoy, Paul E.	The development of an African diaspora: the slave trade of the Nigerian hinterland, 1650-1900	York University
Major, Jean-Louis	Corpus d'éditions critiques	University of Ottawa
Moghissi, Haideh	Diaspora, Islam and gender: a comparative study of four displaced communities	York University
Murray, Gregor	Rethinking institutions for work and employment in the global era / Repenser les institutions du travail et de l'emploi à l'ère de la mondialisation	Université de Montréal
Nicholson, Beverley A.	Changing opportunities and challenges: human-environmental interaction on the Canadian Prairies Ecozone	Brandon University
Ommer, Rosemary E.	Coasts under stress: the impact of social and environmental restructuring on environmental and human health in Canada	University of Victoria
Ouellet, Pierre	Le Soi et l'Autre : l'énonciation de l'identité dans les contextes interculturels	Université du Québec à Montréal
Potter, Pitman B.	Asia-Pacific program of cross-cultural and comparative research in disputes resolution	The University of British Columbia
Roberts, Roda P.	Bilingual Canadian dictionary project	University of Ottawa
Roberts, Roda P.	Comparative lexicography of French and English in Canada	University of Ottawa
Robinson, John B.	Reconciling ecological carrying capacity and human well-being: exploring alternative futures for the Georgia Basin	The University of British Columbia
Sager, Eric W.	The Canadian families project	University of Victoria
Saint-Jacques, Denis	Histoire littéraire du Québec, 1895-1947	Université Laval
Saint-Jacques, Denis	La vie littéraire au Québec (1895-1952)	Université Laval
Spencer, Byron G.	Socio-economic dimensions of an aging population, a program of research	McMaster University
Tardif, Maurice G.	L'évolution actuelle du personnel de l'enseignement préscolaire, primaire et secondaire au Canada	Université de Montréal
Tremblay, Richard E.	Etude longitudinale et expérimentale du développement des enfants de la naissance à l'adolescence	Université de Montréal
Tremblay, Richard E.	Le développement des difficultés d'adaptation sociale au cours de l'enfance : études longitudinales et expérimentales concertées	Université de Montréal
Valdes, Mario J.	Rethinking literary history--comparatively	University of Toronto
Wagner, Marie-France	Le spectacle du pouvoir : les entrées solennelles des rois dans les villes françaises au XVIe siècle	Concordia University
Weber, Andrzej W.	Hunter-gatherer culture change and continuity in the Middle Holocene of the Cis-Baikal, Siberia	University of Alberta
Wolfe, David A.	Innovation systems and economic development: the role of local and regional clusters in Canada	University of Toronto
Young, Robert A.	Multilevel governance and public policy in Canadian municipalities	The University of Western Ontario

R= risk

Appendix 2: MCRI Logic Model



Appendix 3: Performance Dimensions, Indicators and Data Sources

Performance dimension	File review	Data extractions	Case study interviews	Key informant interviews
1. Collaboration and partnership				
1.1 Mechanisms and processes for creating relationships, and fostering collaboration and integration	X		X	
1.2 Active partnerships and links with stakeholders	X		X	
1.3 Increased collaboration within and across all components of the research questions			X	X
2. Research				
2.1 Production of integrative research findings generated through conduct of collaborative research and whose innovations would not have been produced otherwise			X	X
2.2 Timely production of high-quality research publications, with co-authorship and venues representing the collaborative nature of the research	X			
2.3 Increased potential for intellectual advance			X	X
2.4 Increased capacity to address broad, critical issues of intellectual, social, economic, and/or cultural significance			X	X
2.5 Canadian and international recognition/stature of team and of research findings	X		X	X
3. Training and mentoring				
3.1 Students', postdoctoral fellows' and young researchers' acquisition of unique training and mentoring experiences, and career development opportunities in a collaborative, interdisciplinary, international research environment	X		X	
3.2 Creation of interdisciplinary and international linkages involving students and postdoctoral fellows			X	
4. Dissemination				
4.1 Plans, approaches and vehicles for dynamic, innovative dissemination	X		X	
4.2 Stakeholder involvement in dissemination	X		X	
4.3 Reach to traditional and new stakeholder audiences (capitalizing on the outcomes of MCRI-funded research)	X		X	
5. Risk Management				
5.1 Project management adequacy			X	X
6. Issues raised by Adjudication Committees				
6.1 Institutional support	X		X	
6.2 Team size	X	X		
6.3 Contributions of international collaboration	X	X	X	

Appendix 4: Advisory Committee Members

Janet Halliwell, Executive Vice-President

Douglas Peers, Acting Vice-President, Programs

Yves Mougeot, Director, Research and Dissemination Grants (until November 2004)

Carole-Anne Murphy, Director, Research and Dissemination Grants (after November 2004)

France Landriault, Director, Corporate Performance and Evaluation

Katharine Benzekri, Assistant Director, Research and Dissemination Grants

Jean-François Fortin, Program Officer, Research and Dissemination Grants

Sylvie Paquette, Senior Policy Analyst, Corporate Policy and Planning

Robert Lalande, Senior Performance and Evaluation Officer, Corporate Performance and Evaluation

Courtney Amo, Performance and Evaluation Officer, Corporate Performance and Evaluation