University Research Data: A Coasian Approach to Determining Rights

by

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Abstract

There is a problem with determining rights to research data created or compiled in science research labs at Canadian universities. Unlike many copyright and patent issues that arise on university campuses, the law is unsettled with respect to rights to research data. This is primarily due to two factors: the uncertain legal status as to facts, which would include research data, and the differences in norms and academic traditions that exist. Some universities have implemented polices in an attempt to resolve the issue. However, the policy response has been confusing and inadequate.

This thesis considers a new theoretical approach to the problem. The Coase Theorem is analyzed to determine what lessons can be applied to a university environment. The conclusion is that from the three main parties who would normally have claims to rights in research data – a professor, graduate student(s), or the university itself, the default rule should be to assign the initial ownership rights to the professor with a right of use to the graduate student(s), for research and publication required as part of her degree/program. The acquisition of additional rights would be the subject of negotiations between the parties.
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Chapter 1 - Introduction

Discoveries made during the course of research are the foundation of intellectual property rights that are of value. As such, it has been argued that a proper system for the identification, protection, and management of intellectual property rights is an essential part of any research program. Notwithstanding the foregoing, the current status of Canadian law as to who “owns” research data created or compiled in science research labs at Canadian universities, is unclear. By failing to assign ownership of research data created at universities, Canadian law creates uncertainty and therefore inefficiency. Some universities have responded to this uncertainty by creating policies with respect to research data ownership. However, in many cases, the policies do not remedy the problem or provide helpful guidance. A new approach is required.

This is a very current issue. The Canadian Association of University Teachers (“CAUT”) has recently issued advisory notices to its members raising issues of copyright, and ownership and authorship questions surrounding collaborative

2 Ibid. However, for much of history, academic research was done without strict ownership rules, but operated as an open access system.
3 Intellectual property rights can be divided up in a number of different ways. It is a relatively flexible commodity that can accommodate many sophisticated types of commercial arrangement. The right to use intellectual property rights is distinct from the question of ownership. Ownership in the context of Intellectual Property law is about exclusive rights in certain types of information. For the purposes of this paper, “ownership” means the right to use research data and the right to exclude others from the use of research data. For further discussion of the issue see Denton supra note 1, and Anderson, infra note 37 at 421 – 422.
4 See, for example, the policies at the University of Regina, the University of Calgary, and McMaster University quoted herein in chapter 4.1.
academic work.5 The Canadian Association of Graduate Students (“CAGS”) have also identified intellectual property issues as an area of concern, and have assisted in helping students protect their interests.6

This thesis is policy oriented and is of practical interest. The various stakeholders need rights to the data to publish papers, or in the case of a graduate student, her thesis. Parties may also need rights of use to conduct further research. It may also be necessary to prohibit others from using the data, to ensure benefit to one of the parties. Therefore, the main question that arises for the purpose of this paper is who should have what rights in the data that is produced in a research lab (typically the lab is not identified separately from the researchers)?

The paper reviews the issue of rights with respect to research data, in the context of the Coase theorem7, to determine what can be learned and applied to a university environment. While there are relevant criticisms and limitations to the Coase theorem, the conclusion is that default ownership can and should be granted to the professor with a right granted to the graduate student to use the data for research and publication for the purposes necessary to complete her degree/program requirements. Any additional rights to the data would be the subject of negotiations between the parties.

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5 Canadian Association of University Teachers, Intellectual Property Advisory, Nos. 1 and 2 (July 2008).
6 Canadian Association for Graduate Students, A Guide to Intellectual Property for Graduate Students and Postdoctoral Scholars, online: <http://www.cags.ca>.
7 Ronald Coase, “The Problem of Social Cost,” Journal of Law and Economics, October, 1960. This article is a centerpiece to the modern law and economics movement. It is one of the most cited articles in economic and legal literature as a result of a proposition that has come to be known as the “Coase theorem.”
1.2 Purpose

The purpose of this thesis is to consider the Coase theorem, in the context of the different claims and rights to research data. The goal is to determine what the Coase theorem can teach interested parties about the question at issue.

1.3 Scope

The study is limited to the issue of ownership rights arising with respect to research data created or compiled in science labs at Canadian universities. As long as someone may claim ownership, it is important to determine who that person is. The analysis is limited to the allocation of rights between the different collaborators (professor, graduate student, and the university) rather than as between them and the public or other third parties. This distinction is important because it removes the debate about open science, for the purposes of this paper.

1.4 Outline

This paper is organized into parts. The first part provides an overview of related intellectual property issues at universities and considers the reasons for the problems associated with determining rights with respect to research data. The approach to the problem by universities in both Canada and the United States is also presented. The focus is on the research conducted in science research labs. Generally speaking, there are three parties who may have a legitimate claim to rights in the research data – professors/faculty (hereinafter “professor”), who
operate the lab, graduate student(s), who work with the professor as part of her academic requirements towards a master/doctorate, or the university itself. Lab technicians are employees of the university and for the purposes of this paper, it is assumed that intellectual property rights belong to the employer.\textsuperscript{8} External funding agencies and companies are excluded from this discussion because there are generally contractual arrangements that define rights, when these parties are involved. These contracts may not define all rights, but do generally outline who has the right to use the data and who has the right to exclude others from its use. The paper argues that while copyright and patent issues with respect to university research are somewhat settled, the debate over data raises many questions. The paper argues that the current regimes, including university policies and methods to govern data are insufficient and do not remedy the problem.

The second part of the paper analyzes what the application of the Coase theorem can illustrate about potential remedies to the issue. The paper reviews whether there are impediments for efficient negotiation between the parties. As well, the criticisms and limitations of the application of the Coase theorem are addressed to determine what affect they may have on this matter.

The paper concludes that default ownership can and should be granted to the professor with a limited right of use granted to the graduate student.

\textsuperscript{8} See for example the rule of “works” contained in the Copyright Act, R.S.C. 1985, c. C-46, s. 13(3).
Part I - Intellectual Property and Research Data

Chapter 2 - Intellectual Property Issues at Universities

Canadian universities that conduct research often encounter difficult questions regarding intellectual property issues. Questions arise as to who owns copyright in works of authorship, who, if anyone, owns research data, who is entitled to be the author of collaborative university research, or who benefits from significant discoveries. Disputes can arise within the university between professors, between professors and students, and between professors and the university. These issues may become more prominent as universities receive greater funding and continue to encourage and promote collaborative research. The parties to any collaborative research project may all have interests in the intellectual property aspects of the results. These interests might conflict and it is essential for the harmonious conduct of the research, and the future relationship between the parties, that agreement define the respective rights and obligations of the parties.

In terms of research data, disputes can arise when a researcher attempts to publish

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9 See, for example, Dolmage v. Erskine (2003), 23 C.P.R. (4th) 495 (Ont. S.C.J.) (Professor alleged other faculty members and the university infringed copyright by reproducing a business case study developed by him).
11 See, for example, University of British Columbia v. University of British Columbia Faculty Association (2004), 125 L.A.C. (4th) 1 (B.C. Arbitration Board) (allegations that university negotiated directly with professors and not the union, as required).
12 For example, Memorial University of Newfoundland has increased research funding from $37m in 1999 to over $100m today. Source: online: Memorial University, <https://www.mun.ca>.
13 The 2009 Federal Budget (Canada) provides for an increase of $87.5m over three years for graduate research scholarships at both the master and doctorate levels. Source: NSERC, Strategic Review and Budget 2009, online: <https://www.nserc-crsng.gc.ca>.
14 Denton, supra note 1 at 20/7.
15 Ibid.
data or to prevent others from publishing or otherwise using data.\textsuperscript{16} Further complications arise when a researcher attempts to take the data to another institution, whether it is in relation to new employment or for further educational opportunities.

Issues with respect to copyright ownership of works produced by professors or students, while still subject to dispute in some instances, are generally less controversial than the issue of rights with respect to research data. The reason is that the law is more settled in this area. The \textit{Copyright Act}\textsuperscript{17} provides that where the author of a work was in the employment of an employer and the work was made in the course of employment, the employer (in the absence of agreement to the contrary), is the first owner of the copyright.\textsuperscript{18} However, it is common in universities to have an exception to this rule and for agreements to exist between the faculty and the university providing copyright to professors, in works produced by the professor.\textsuperscript{19}

Another commonly accepted principle is that the author and first owner of any paper, dissertation, or other work prepared in school courses and degree programs

\textsuperscript{16} Notes from meetings and discussions with Richard Ellis, (September – May 2007). Mr. Ellis was the former university librarian at Memorial University of Newfoundland (Memorial). He was responsible for an extensive review of the Intellectual Property regime at Memorial, including reviewing policies at various institutions, and drafting policy for Memorial.

\textsuperscript{17} \textit{Copyright Act, supra note 8.}

\textsuperscript{18} Ibid, ss.13(3)

\textsuperscript{19} See for example, Article 27, Collective Agreement Between Memorial University of Newfoundland and Memorial University of Newfoundland Faculty Association (December 31, 2007 – August 31, 2009), online: <http://www.mun.ca/munfa/ca200709.htm>. 
is the author of the work, i.e., the student preparing the paper, dissertation, etc.\textsuperscript{20} Documents, whether prepared for internal or external purposes whether in draft or final form, whether in print or in digital form, are protected by copyright. In fact, each draft of a document may be separately protected by copyright. This includes papers and dissertations, and other school assignments completed by students as part of their course or degree work.\textsuperscript{21}

There can be modifications of this in practice, an example of which can be found at the University of Manitoba.\textsuperscript{22} Students at the University of Manitoba have sole copyright ownership over their document that is submitted as a requirement of an academic program. However, the physical document submitted by the student to the University of Manitoba becomes the property of the University. Upon completion and approval of the thesis or practicum by the examining committee, the student completes a copyright license form. This form grants the University a license to reproduce the student’s thesis, or parts of it, for academic purposes based on certain terms and conditions.\textsuperscript{23}

The principles surrounding copyright have been under some attack in the United States. Increasingly, some public universities in the United States are trying to claim copyright of professional work-product in a drive to tap new sources of

\textsuperscript{20} Lesley Ellen Harris, \textit{Canadian Copyright Law}, 3\textsuperscript{rd} ed. (McGraw-Hill Ryerson Limited, 2001) at 88.

\textsuperscript{21} Ibid. at 59.

\textsuperscript{22} University of Manitoba, \textit{Thesis/Practicum Information and Guidelines}, online: University of Manitoba: Faculty of Graduate Studies <http://umanitoba.ca/faculties/graduate_studies/thesis/guidelines.html>.

\textsuperscript{23} Ibid.
Beginning in the 1990s, the University of California began to convert the personal rights of professorial authors into institutional resources. This is accomplished by assigning the copyrights to the academic institutions by contract. The terms of employment for the professorship are tied to the execution of the copyright assignment provision. To date, this trend has not been apparent in Canada.

The Patent Act governs inventions. The Patent Act provides faculty, students, and staff with the potential for an initial ownership claim. It does this by granting ownership to the “inventor” even if the innovation arises from an employment relationship. This differs from copyright where the initial ownership is the employer’s. Universities often have clear policies or agreements with faculty associations that address ownership of patents.

Copyrights and patents are two areas of intellectual property where issues may arise between faculty, students, and the university. The combination of legislation, case law, and internal university policies and agreements at most institutions make these issues settled and relatively understandable to the parties involved.

Research data poses different challenges than other issues with respect to copyright and patents that commonly exist at universities. Issues surrounding rights to

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25 Ibid. at 2.
27 Supra note 5 at 2.
28 Supra note 19.
research data are particularly contentious. Science as we know and practice it today cannot exist without data. A fundamental component of many research investigations is the creation and use of data. Research data is essential in the work of researchers and parties are protective and assertive with respect to their interests. Questions surrounding ownership and rights to research data do not, at present, have easy answers.

Many problems arising in the context of university research have their source in a mutual misunderstanding as to the legal rights that will govern the creation and use of research results. In my view, this can be attributed to two reasons: first, data, in its purest form, is not protected by existing intellectual property legislation. Data does not constitute an invention to be patented or an expression of an idea which can be copyrighted. This flows from the legal status of facts. There are cases which simply indicate that facts are not copyrightable. There may be uncertainty as to what constitutes a fact, but there is no uncertainty that facts are not protected.

Whether data acquires protection depends on the use that is made of the data. There could be copyright in a compilation of facts. What is less clear is whether one

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29 Notes from meetings and discussions with Dr. Rodney Russell, Assistant Professor, Faculty of Medicine, Memorial, (September – May 2007). Dr. Russell has completed post-doctorate work at the National Institute of Health and has worked on the issue of rights to research data.
30 Bob H. Sotiriadis, Recent case law in IP relating to university research (Canadian Association of University Solicitors Conference 2008, Quebec City, September 19, 2008) [unpublished].
31 See the references at University of Alberta, Intellectual Property Guidelines, 2004, online: University of Alberta <http://www.ualberta.ca>.
32 See for example, Feist Publications, Inc. v. Rural Tel. Service Co. (1991), 499 US 340 (USSC); See also Kilvington Bros. Ltd. v. Goldberg et al. (1957), 8 D.L.R. (2d) 768 (Ont. HC).
33 Ariel Katz, Intellectual Property Lecture Notes (Faculty of Law, University of Toronto, September 16, 2008).
can freely copy the facts themselves from another’s original compilation.\textsuperscript{34} Although the status is unclear, one position that has been argued is that data collected in the course of employment would generally be the property of the employer, subject to an agreement to the contrary.\textsuperscript{35} In the broader sense, this would be logical as it is the basis of any capitalist mode of production. This is supported by the rule that copyright would belong to the employer absent any agreement to the contrary.\textsuperscript{36} Of course, the wrinkle, in terms of graduate students, is that the student is not usually an employee of the university and therefore is not bound by any rule of employment law that gives ownership to the employer.\textsuperscript{37}

The second reason relates to the academic norms and traditions. Most writing in law and economics, like Coase, implies that disputants look solely to formal legal rules to determine their entitlements.\textsuperscript{38} This is not always the case and parties can look to informal norms to determine their entitlements.\textsuperscript{39} This is because it is costly to carry out legal research and engage in legal proceedings, and a rational actor may apply informal norms, not law, in a situation. Norms are likely to be especially

\textsuperscript{34} In the US, the answer would appear to be yes (per \textit{Feist supra} note 32) and in Canada the answer also seems to be yes (per \textit{CCH Canadian Limited v. Law Society of Upper Canada}, [2004] 1 S.C.R. 339).

\textsuperscript{35} Internal Memorial University Memorandum from Richard Ellis, Librarian to Dr. Christopher Loomis, Vice-President (Research), (October 31, 2007) re: Data Retention/Data Ownership.

\textsuperscript{36} \textit{Copyright Act}, \textit{supra} note 8 at ss. 13(3).

\textsuperscript{37} Mark Anderson, \textit{Technology Transfer Law, Practice and Precedents}, 2nd ed. (United Kingdom: Butterworths, 2003) at 103. See also Denton Wilde text \textit{Supra} note 1 at 20/5, where it states: “In higher educational institutions students are not employees of the institution and their participation in research programmes should be contractually regulated.”

\textsuperscript{38} Robert C. Ellickson, \textit{Of Coase and Cattle: Dispute Resolution Among Neighbours in Shasta County} (1985-1986), 38 Stan. L. Rev. 623 at 685. Ellickson looked at the issue of how residents in Shasta County, California resolved disputes by looking to informal norms to determine their entitlements in animal trespass situations.

\textsuperscript{39} \textit{Ibid.}
influential when disputants share a continuing relationship.\textsuperscript{40} In academia, the question of interest in data raises issues addressed by academic norms and traditions. Unfortunately, the academic norms and traditions have disparate approaches. As will be discussed, the approach in the life and physical sciences differs from that in the humanities and social sciences. The nature of research in the life and physical sciences has lead to academic norms that give potentially more parties proprietary claims to research data.\textsuperscript{41}

The issue remains unsettled in that norms and academic traditions play a role, without a clear consensus as to how they apply.

There are other matters that magnify the problem. For example, the academic environment is highly competitive and this competition is magnified by power differentials within research teams.\textsuperscript{42} These divisions – whether between faculty and students, junior and senior faculty, or contract researchers and tenured faculty – need to be understood and addressed by team members.\textsuperscript{43} Without clear legal guidance, parties may not want to be seen as allowing other parties to use or even “steal” their data. Another problem may arise as a result of the difficulty in properly legally qualifying the relationship between the university and its researchers.\textsuperscript{44}

\textsuperscript{40} MacNeil, \textit{The Many Futures of Contracts} (1974), 47 S. Cal. L. Rev. 691 at 715.
\textsuperscript{41} \textit{Supra} note 35.
\textsuperscript{42} \textit{Supra} note 5 at 2.
\textsuperscript{43} \textit{Ibid}.
\textsuperscript{44} \textit{Supra} note 30.
Chapter 3 - Research Data

3.1 What is Research Data?

The first question to address is what is considered research data is for the purposes of this paper. Canadian university policies do not appear to contain definitions of data. The Canadian Tri-Council\textsuperscript{45} also does not provide a definition of data. The most useful examples of the definition of data come from universities in the United States that may not be considered as prestigious as others. For example, at the University of Massachusetts (Amherst)\textsuperscript{46}:

Data shall be construed as all recorded information, regardless of medium, and all actual samples or examples, that were created or gathered and that could serve to influence or support a research finding or conclusion. Data does not include such items as research papers cited by the researcher, preliminary notes or paper drafts, reviews, or related communications, or items that are already the property of others. This definition is intended to characterize current research norms, not to modify them.

The University of Pittsburgh\textsuperscript{47} defines data as follows:

\begin{quote}
Definition of Data

Data means recorded information, regardless of form or the media on which it may be recorded. The term includes computer software (computer programs, computer databases, and documentation thereof), and records of scientific or technical nature. The term does not include information incidental to award administration, such as financial, administrative, cost
\end{quote}

\textsuperscript{45} The Tri-Council is comprised of the three major granting/funding councils in Canada (SSHRC: The Social Science and Humanities Research Council; NSERC: The National Sciences and Engineering Research Council; and CIHR: Canadian Institutes of Health Research, formerly MRC: The Medical Research Council).
\textsuperscript{46} University of Massachusetts (Amherst), "Special Report of the Research Council concerning the Policy on Data Ownership, Retention, and Access, (presented at the 654\textsuperscript{th} Regular Meeting of the Faculty Senate), May 18, 2006, Sen. Doc. No. 06-047.
\textsuperscript{47} University of Pittsburgh, Guidelines on Data Retention and Access, Pittsburgh, PA: University of Pittsburgh, 1997.
or pricing, or management information. In practice, scientific data include both intangible data (statistics, findings, conclusions, etc.) and tangible data. Tangible data include, but are not limited to notebooks, printouts, computer disks, photographs, slides, negatives, films, scans, images, autoradiograms, electrophysiological recordings, gels, blots, spectra, samples, specimens, IRB consent forms, and other materials that are relevant to the research project.

The above examples are sufficiently broad to give a guideline for what constitutes data. Taking from these definitions for the purposes of this paper, “data” is to include recorded information, samples, examples, and the results of research, as one would commonly expect to arise from work conducted in a university science research lab. This definition includes the material that any person could easily comprehend to be included in the understanding of data. The key is the results that arise from the research, as this contains the potential value and would be at the heart of any potential dispute.

### 3.2 Why the science fields?

The focus of this paper is on the issue of research data in the physical and life sciences disciplines. Principles and policies may be consistent across a university, but practices rarely are. Given the considerable variations in research practices that exist in the academic environment, the translation of principles into practice is not uniform across all academic disciplines. The role of supervisors varies in

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49 *Supra* note 35.
different fields of study, and could potentially impact the respective interests of the parties with respect to any intellectual property rights.\textsuperscript{50}

Generally speaking, in most humanities and social sciences departments, it is expected that students will receive guidance from their supervisors, but generate their own ideas, collect their own data (where applicable), do their own research, and seek out their own financial support.\textsuperscript{51} The supervisor acts as a mentor and resource person but is rarely a full collaborator.\textsuperscript{52} Scholars pursue their research work independently.\textsuperscript{53} In such cases, it is arguably appropriate that the student will have the primary interest in any intellectual property rights produced by her research.

However, in other fields such as the physical and life sciences, graduate students normally join an established research group to work collaboratively with her supervisor, other students, postdoctoral fellows, technicians, and other university employees.\textsuperscript{54} Under this model, the supervisor has provided ideas that guide the research of the group\textsuperscript{55} and the resources to conduct the research activities may have been provided by the supervisor, the university, or an external funding agency. The allocation of intellectual property rights is more complicated in such situations.

\textsuperscript{50} Ibid.
\textsuperscript{51} University of Alberta, supra note 31 at 9.
\textsuperscript{52} Ibid.
\textsuperscript{53} University of Toronto, supra note 48.
\textsuperscript{54} Ibid.
\textsuperscript{55} University of Alberta, supra note 31.
The result has been that parties seem to indicate that discussion of the norms, before research begins, is the best approach. For example at the University of Toronto (Mississauga), the policy states:

For practical reasons this guide cannot delve into the customs or practices across the full range of disciplines at UofTM. As such, all faculty, students and staff are encouraged to observe, discuss and question the research norms in their field of study. UofTM's Research Office welcomes such enquiries and discussion.

As well, conventions relating to the interests of parties to graduate student theses and other collaborative projects vary from discipline to discipline and it has been argued that at a minimum, each research group should publish its conventions and potential supervisors should discuss with graduate students, the appropriate conventions for the discipline. CAGS advises its members to work with the supervisor to establish at the outset what the conventions of authorship will be applied to the working relationship, and to refer to the particular universities’ guidelines on the topic. It is clear that graduate students cannot automatically expect exclusive ownership of data gathered for research projects performed under the auspices of a given institution. One recommendation that has been suggested is to make an agreement with the supervisor that makes clear the ownership and access rights. As will be discussed, there is a potential problem with this approach due to the perception of inequality of bargaining power.

56 Supra note 48.
57 Supra note 35.
58 Supra note 6.
59 Supra note 6 at 9.
There is another argument that in the academic tradition, data belongs to the researcher, or researchers, and it is notable that policies that attempt to deal with disputes between members of collaborative research enterprises do not generally assume that the institution is a partner with an ownership stake.\textsuperscript{60}

The United States Department of Health and Human Services (Office of Research Integrity)\textsuperscript{61} puts the issue bluntly:

Well before any data are collected, ownership issues and the responsibilities that come with them need to be carefully worked out. Before undertaking any work, make sure you can answer the following questions:

**Who owns the data I am collecting?...If you do not have firm answers for each of these questions, preferably in writing when financial interests are involved, you are not ready to begin your research.** [Emphasis added]

Consequently, there is greater uncertainty within research conducted in the science disciplines, and is therefore the focus of this paper.

\textsuperscript{60} *Supra* note 35.

Chapter 4 – Policy Response

4.1 The Approach of Universities in Canada

The Tri-Council holds institutions responsible for specific policy statements concerning data. The Tri-Council framework for reviewing institutional policies in the area of research integrity includes provision that “to comply with the general principles in the Tri-Council policy on Integrity in research and scholarship and to provide guidance for researchers, the institution that receives council funding must adopt…A policy on data recording, ownership, and retention.”

Canadian courts have also addressed the issue. For example, the Court in *Fardad* acknowledged problems surrounding ownership rights and stressed the importance of having policy statements or other means to deal with relationships and ownership issues of IP rights.

Some universities have responded to the problem by enacting policies. However, many universities in Canada have not adopted university wide policies or statements regarding data ownership. Moreover, such policies are often not helpful in providing practical guidance. Some examples are provided:

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The University of Toronto\textsuperscript{64} has a general policy which states:

If research is being conducted by a team, all members of the project team, especially graduate students, should discuss and document intellectual property issues with the project’s principal investigator before beginning work on the project. The project's principal investigator should be in a position to document for all participants any restrictions relating to the ownership, publication and use of any data or results. Ideally, the research conditions for everyone involved should be outlined in a letter from the principal investigator before team members become engaged.

At the University of Regina\textsuperscript{65}, the policy states:

Who owns the data in the thesis?

There is no simple answer to this question and again the circumstances need to be examined. Indeed, the notion of ownership is not necessarily applicable to all information and data. If the student generated and compiled the data and was not employed to do so, then the student may claim ownership, to the extent that data can be owned. However, it could be that all, or part, of the data in the thesis may belong to another party, or be co-owned by the supervisor, or another researcher. Anyone who has made a substantive contribution in generating the data, or to the research or experimental design used in producing the data, may have rights to the data. A student may include data that are owned by others if permission to do so has been received from the owner(s), or if the data have previously been published (appropriate attribution is, of course, required). Use of such data does not affect the student’s ownership of copyright in his/her thesis. It is important to remember that copyright protects the published material (in whatever form), not the data or ideas contained in the written work. [Emphasis added]

At McMaster University\textsuperscript{66}, the policy states:

**RESEARCH DATA**

As with computer software, the University recognizes that research is conducted and data are acquired in two different fashions. When the data are

\textsuperscript{64} University of Toronto, \textit{supra} note 48.

\textsuperscript{65} University of Regina, \textit{An Overview of Intellectual Property Policy: Relevance For Graduate Students}, online: University of Regina <http://www.uregina.ca/gradstudies/publications/ip_grad.shtml>.

\textsuperscript{66} McMaster University, \textit{Ownership of Student Work}, online: McMaster University <http://www.mcmaster.ca/senate/academic/ownstwrk.htm>.
acquired as part of a joint or collaborative effort, such as one relying on the equipment within a laboratory, they are not solely the property of the student, although some of the data may ultimately appear in tables or appendices in a completed thesis. As a general rule, such data are the joint property of the student and the research supervisor, either of whom has the right to make them available to other individuals as well. Both student and supervisor are responsible for insuring that proper acknowledgement of the contributions of the student, supervisor, and other members of the research team is made when the data are released in any form.

When the data are acquired through the student's individual effort, and without the use of University laboratories or funding, then they are usually the property of the student making that effort. However, exceptions may occur when the student collects data using research instruments including interview schedules and questionnaires developed wholly or in part by the research supervisor or by some other person or agency. In such instances the right to ownership and/or use of the data may be shared among the parties involved. Given the range of possible alternatives it is not possible to set absolute guidelines in advance covering all such situations. Consequently, it is recommended that students and supervisors make clear agreements in advance concerning the ownership and use of data collected in this fashion. Ownership of data may also be affected by the terms of a research contract that has supported the work.

Finally, at the University of Calgary\textsuperscript{67}, the policy states:

Who owns the data in my thesis?

\textbf{The ownership of data is a complex matter.} Indeed, the notion of ownership is not necessarily applicable to all information and data. To the extent that data can be owned, if you generated and compiled the data and were not in the employ of someone else to do the work, you will be the owner. However, it is possible that all or part of the data used in your thesis may belong to someone else or be co-owned by your supervisor or another researcher. Another who has made substantive contribution not generating the data or to the research or experimental design used in producing the data may have rights in the data. Provided that you have the permission of the owner, you may include such data in your thesis and still be able to copyright the thesis. Remember, copyright protects the writing, not necessarily the data or ideas contained in the thesis. [Emphasis added]

\textsuperscript{67} University of Calgary, \textit{An Interpretation of the University of Calgary’s Intellectual Property Policy for Graduate Students}, (June 6, 2005), online: University of Calgary <http://www.ucalgary.ca/grad/files/custom/ip_grad.pdf>.
4.1.1 Enforceability of University Policies

As is evident, some of the policies do not provide complete answers or guidance to the issue of rights to data. There is a potential further problem when considering the enforceability of university policies. There are very few Canadian cases dealing with intellectual property policies. Those existing are determinative of little more than the fact that such policies pose a myriad of issues. For example, in O’Brien v. University of Guelph, the defendant university had brought a motion for summary judgment upon the plaintiff’s allegations of his ownership of the university’s patent and the university’s negligence in the commercialization of an invention for the diagnosis of porcine malignant hypothermia. The university relied upon its invention policy, evidence of the plaintiff’s knowledge of that policy, certain (unspecified) agreements confirming ownership and control by the university, and the common law with respect to inventions by an employee. The motion for summary judgment was dismissed. Clarke, J. concluded that there were triable issues in respect of the University of Guelph’s legislative authority to “expropriate” the personal property of the professor, consideration, the applicability of the common law doctrines, as well as undue influence and unconscionable bargaining.

Courts treat these policies as contracts and hold them to the standards of contract law. A university intellectual property policy is not without more, an enforceable

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70 Supra note 68; See also Balayanyk v. University of Toronto (1999), 1 C.P.R. (4th) 300 (Ont. S.C.J.).
document. Absent an express term in a faculty member’s contract of employment incorporating such a policy, a university seeking to rely on its intellectual policy must fit itself within the relatively narrow confines of the doctrine of implied terms.\textsuperscript{71}

### 4.2 The US Approach

Some universities in the United States have an approach that is different, as highlighted by the following examples.

The approach at UMass\textsuperscript{72}, is as follows:

The Amherst campus of the University of Massachusetts is the owner or joint owner of all data that is created or collected by its employees or contractors, except when the creation or collection of such data is governed by a written agreement or contract to the contrary, approved in writing by the Vice Provost for Research.

The University of Pittsburgh policy states:

**Data Ownership and Access to Data**

Both the principal investigator and the University have responsibilities, and hence, rights concerning access to, use of, and maintenance of original research data. Research data belongs to the University of Pittsburgh, which can be held accountable for the integrity of the data even after the researchers have left the University. [Emphasis added]

\textsuperscript{71} Supra note 68 at FN 49.

\textsuperscript{72} THE POLICY ON DATA OWNERSHIP, RETENTION, AND ACCESS AT THE UNIVERSITY OF MASSACHUSETTS AMHERST, Presented at the 654\textsuperscript{th} Regular Meeting of the Faculty Senate, May 18, 2006.
These examples appear to be the prevailing US approach and provide clear understanding that data belongs to the institution.\textsuperscript{73} This is not the approach at most, if not all, Canadian universities.

### 4.3 Other Proposed Solutions

Other suggestions have been made to remedy the problem. One approach for the best practices is to recognize that ownership of original research data is held jointly by all collaborators, and to designate one individual as the custodial agent of the materials for all contributors. Joint ownership would include graduate students.\textsuperscript{74} Other recommendations to avoid problems include ensuring a proper structure surrounding the disclosure of results; having mandatory intellectual property policies; maintaining clear and unequivocal documentation; and ongoing education for all parties.\textsuperscript{75}

Ellis has argued that given the problems associated with institutional policies, parties are seeking effective alternatives. He indicates that there was consideration within Canada for a national repository of data. This idea was never implemented, but he suggests could be considered again, if better solutions are not found.\textsuperscript{76}

Universities often style themselves as communities that consist of many individuals with various relationships to each other but a common goal: creating and sharing

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\textsuperscript{73} Other examples that vest ownership in the university include the policy at the University of Kentucky, Data Ownership and Retention Policy online: <http://www.research.uky.edu/ori/data.htm> and the University of Illinois online: <http://www.ansci.uiuc.edu/academics/graduate/handbook/student_research.cfm>.

\textsuperscript{74} Supra note 30.

\textsuperscript{75} Supra note 30.

\textsuperscript{76} Supra note 35.
knowledge to the benefit of each other and society.\textsuperscript{77} The current Canadian policy environment is insufficient in that it leaves too much uncertainty, which arguably can act as a bar to the creation and sharing of knowledge.

\textsuperscript{77}\textit{Supra} note 35.
Chapter 5 – The Coase Theorem

There are numerous issues surrounding rights to research data. An adequate solution to the problem is not currently in place. Another approach is necessary. The next part of this paper is to propose an alternative approach to the problem and to analyze how the Coase theorem applies to this situation. The goal is to determine what the application of the Coase theorem may show to assess whether it is beneficial to assign default ownership to one party or another.

The Coase theorem does not suffer as much from economic objection, but from qualification, defining limits, tensions, etc. As this thesis is policy oriented and is of practical interest, the focus weighs more on relevant non-economic objections. A university is not a place where one can dismiss what non-economists like to think. As such, the focus is on the limitations of the Coase theorem relevant to a university environment.

5.1 What is the Coase Theorem?

The theorem, attributed to Ronald Coase, describes the economic efficiency of an economic allocation or outcome in the presence of externalities. The exact definition of the Coase theorem remains unsettled as the theorem is abstracted

from Ronald Coase’s paper, but not stated in it.\textsuperscript{79} One summary of the Coase theorem is as follows: in the absence of transaction costs, the initial assignment of a property right is irrelevant to efficiency. If a property right is assigned to anyone other than the party who values it most, that party will purchase the right from whoever has it, creating the efficient outcome.\textsuperscript{80} This counterintuitive insight – that the initial imposition of legal entitlement is irrelevant because the parties will eventually reach the same result – is Coase’s invariance thesis.

The Coase theorem also stands for the corollary that when transaction costs exist, the initial allocation does matter. In the presence of transaction costs, the initial allocation of property rights does matter, and the subsequent negotiation between the parties may not occur, or some efficient transfers may be impeded in such a manner to preclude an agreement.\textsuperscript{81}

The Coase theorem argues that as long as property rights are clearly defined, the market will allocate resources in an efficient way. According to Coase, many disputes over resources stem from the fact that no one owns them. These disputes could be resolved if the resources were divided up as private property. Assigning property rights greatly enhances the ability to resolve disputes over the use and abuse of resources.\textsuperscript{82} Regardless of who owns the property rights, individuals will

\textsuperscript{80} Coase, \textit{supra} note 7.
\textsuperscript{81} See Steven Landsburg, \textit{Price Theory & Applications}, (2005), S.W.6\textsuperscript{th} ed., 447-450.
\textsuperscript{82} The Long FAQ on Liberalism, \textit{A critique of the Chicago School of Economics: Ronald Coase and the Coase Theorem}, at 2.

Obstacles to bargaining or poorly defined property rights can also prevent Coasian bargaining.

The essential point of the Coase theorem is that clearly defined property rights triggers bargaining, which leads to an outcome consistent with efficient allocation of the resource.\footnote{Tommy Johannson, \textit{Jamican Deforestation and Bauxite Mining: Applying the Coase Theorem} (Master’s Thesis, Lulea University of Technology, Economics Department 2003) [unpublished] at 10.} The problem with respect to research data is that the property rights are not clearly defined, as there is the issue of the legal status of facts. However, a central idea of the Coase theorem is that regardless of the specific content of law, people tend to structure their affairs to their mutual advantage.\footnote{Ellickson, \textit{supra} note 38 at 686.} Therefore, the approach here is to apply the Coase theorem to see what its application can teach us about the question in issue of whether property rights could be assigned, by way of contract or university policy, to one of the parties. The useful concept to keep in mind is that property rights are actually a bundle of many different rights.\footnote{See discussion of ownership and rights \textit{Supra} note 3.} This is important because Coase argues that parties should be able to sell “sticks” from this “bundle” – for example selling a factory the right to pollute air.\footnote{\textit{Supra} note 82 at 3.}

### 5.2 Transaction Costs

A key component of the Coase theorem is the absence or presence of transaction costs. Transaction costs refer to the cost of providing for some good or service

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\footnote{84 Tommy Johannson, \textit{Jamican Deforestation and Bauxite Mining: Applying the Coase Theorem} (Master’s Thesis, Lulea University of Technology, Economics Department 2003) [unpublished] at 10.}
\footnote{85 Ellickson, \textit{supra} note 38 at 686.}
\footnote{86 See discussion of ownership and rights \textit{Supra} note 3.}
\footnote{87 \textit{Supra} note 82 at 3.}
through the market rather than having it provided from within the firm.

Transaction costs include such things as the costs involved in negotiating an agreement.\textsuperscript{88} In order to carry out a market transaction it is necessary to discover who it is that one wishes to deal with, to conduct negotiations leading up to a bargain, to draw up the contract, to undertake the inspection needed to make sure that the terms of the contract are being observed, and so on.\textsuperscript{89}

Types of transaction costs are:

- search and information costs
- bargaining and decision costs
- policing and enforcement costs

The Coase theorem contends that without taking into account transaction costs it is impossible to understand properly the working of the economic system and have a sound basis for establishing economic policy.\textsuperscript{90} The problem is that transaction costs when dealing with intellectual property issues can be significant.\textsuperscript{91}

An example of the issue of transaction costs when dealing with intellectual property rights can be seen in the context of the fair use doctrine in copyright law. The issue is whether users of copyrighted work should have a right to reproduce small portions of the work in works of their own-as when a reviewer of quotes a few

\textsuperscript{88} \textit{Supra} note 82 at 6.
\textsuperscript{89} Thayer Watkins, \textit{The Transaction Cost Approach to the Theory of the Firm} (San Jose State University, Economics Department) at 1.\textsuperscript{90} \textit{Ibid.} \textsuperscript{91} See a discussion of the issue of transaction costs in intellectual property licensing agreements at Mark A. Lemley, \textit{Economics of Improvements in Intellectual Property Law} (1996-1997), 75 Tex. L. Rev. 989.
sentences from a copyrighted book – or whether the copyright holder should have a right to prevent such use of the copyrighted work. In such cases, transaction costs are irremediably high because it is obviously very costly for everyone wanting to quote from a copyrighted work to locate the owner of the copyright and negotiate for the right to do so. The value of the right to quote from the work is almost always much less than the cost of transacting to acquire it.  

5.3 Limitations of the Coase theorem

Several criticisms/limitations of the Coase theorem have been raised. It has been argued that there are so many flaws that the theorem is interesting for its own sake but as a policy proposal, is “dead in the water.” The paper will consider these criticisms/limitations in terms of the question at issue.

Transaction costs are a significant issue in that it is impossible to satisfy the zero transaction cost assumption in the real world. Coase himself admits that a world of zero transaction costs is a “very unrealistic assumption.” He further concedes that “once transaction costs are taken into account, many of the measures will not be undertaken because making the contractual arrangements...would cost more than the gain they make possible.” If costs of bringing the parties together, organizing the parties, and performing the bargaining itself, for any party are higher than the

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93 Supra note 82 at 4.
94 Coase, supra note 8 at 175.
95 Ibid.
expected benefits to either party, that party will not participate in the negotiations.\textsuperscript{96} Therefore, the experimental and empirical tests go to issues of relevance and applicability, rather than to correctness.\textsuperscript{97}

Other issues, whether they are application limitations or refinements of the Coase theorem, that will be addressed include the potential issue of whether the resource in question can be divided or demarcated, whether there is potential for threat making, and is there a risk of “free riders”. As a separate matter, I look at the extent of the problem of inequality of bargaining power, to determine whether any modifications of the analysis are necessary as a result of that question.

5.4 Previous research

The Coase theorem is one of the main components of the law and economics movement. It has therefore been one of the most cited ideas in economic and legal literature.

The research indicates that the Coase theorem has not been previously applied to the issue of university research data. This is where the thesis differs from earlier studies.

Other research did not appear relevant to this thesis, short of providing examples of various applications.

\textsuperscript{96} Supra note 84 at 11.
Instances where the Coase theorem has been employed include the Hylan et al (1996)\textsuperscript{98} study which reviewed the movement of pitchers between major league baseball teams before and after free agency. The evidence showed that there was much more movement between teams when there was no free agency. As a result, the authors rejected the invariance thesis (the invariance proposition is the assertion that no matter who is given property rights, the outcomes will be identical)\textsuperscript{99} of the Coase theorem.

Another example from major league baseball came from Cymrot (2002)\textsuperscript{100} in which he uses the Coase theorem in examining whether it is supported by migration patterns in professional baseball. He demonstrates that by using the Coase theorem, free agency is “irrelevant to the question of competitive balance.”\textsuperscript{101}

Other studies have used the Coase theorem as an economic tool to explain the rationale of horizontal mining\textsuperscript{102} and in the analysis of Jamaican deforestation and bauxite mining.\textsuperscript{103}

\textsuperscript{99} \textit{Supra} note 82.
\textsuperscript{101} \textit{Ibid} at 602.
\textsuperscript{103} \textit{Supra} note 84.
Chapter 6 – Application of the Coase Theorem to the Issue of Research Data

6.1 Key Assumptions

There are several assumptions employed in conducting this analysis. They are as follows:

- All parties are interested in maximizing their rights and other potential interests with respect to research data.
- Notwithstanding the previous point, the parties may be content with a license to use the results, leaving ownership vested in another party.\(^{104}\)
- Professors are often represented by faculty associations who negotiate collective agreements on behalf of all faculty/professors in the university.
- Faculty associations and unions have equal bargaining power with universities when negotiating collective agreements.
- A professor’s research is an essential component of the evaluation when a professor is being considered and reviewed for promotion or tenure.
- Graduate students apply to universities, but professors have the choice whether to work with a particular graduate student.

\(^{104}\) For a further discussion see Supra note 1 at 20/12.
• Graduate students work on research projects at universities.\textsuperscript{105} It is assumed that they must conduct research as part of their degree requirements.

• Graduate students work with one professor in a particular area of research for the term of the Masters, Phd. or post-doc., whatever the case may be.

• Competition for graduate student positions is significant. There are considerably less positions than there are potential graduate students. There may be competition for the most talented graduate students. However, it is assumed that any competition to attract the most talented graduate students will not significantly impact the conditions for graduate students generally.

• There is an inequality of bargaining power between graduate students and professors, as well as between graduate students and the university.

• Graduate students are not represented by a union. In circumstances where an association represents graduate students at a particular university, there remains inequalities of bargaining power (as referenced in the previous point).

\textsuperscript{105} Anderson, \textit{supra} note 37 at 103.
6.2 Parties

There are three parties who have potential claims to research data and thus could be part of contract negotiations – the professor (who may be represented by a faculty association or union), the graduate student(s), and the university. Lab technicians or other university employees working in the lab are part of the university and will not be considered separately from the university. The reason is that the employment status of these parties would help dictate the determination of an intellectual property interest. For example, the university, as employer would generally have ownership rights to any “works” produced by them.\textsuperscript{106} While professors are employees as well, the nature of the employment is different than others.

External companies or funding agencies generally have agreements as part of the funding arrangement which deals with ownership issues. These agreements may not always cover all issues of rights to the data, but normally deal with issues of rights of use and access, and the ability to exclude others from use. These parties are therefore excluded from this analysis. The interesting point with respect to these third party funding agencies is that the Coase theorem actually works for them. There are agreements which govern the relationship between the parties. It proves that it does not matter to whom the initial party right is assigned; the parties negotiate an agreement to govern the respective interests in the data. This

\textsuperscript{106} \textit{Supra} note 8.
goes to prove that the Coase theorem is a relevant consideration for the question at issue.

One other potential group of claimants could be subjects who participated in any research involving humans. This is a considerable issue and worth referencing but is ultimately beyond the scope of the thesis.

There are no other third parties who would have an interest in or be part of the transaction, or that would be affected by the choice of a particular regime. The focus is therefore on the issue of rights between the collaborators and does not include potential third party interests.

6.3 Transaction costs

6.3.1 Search and Information Costs

One of the primary transaction costs are the search costs of identifying parties, which can result in an obstacle to efficient bargaining.\(^{107}\) For example, if a party has to spend resources in identifying and locating potential parties to a transaction, then this will result in transaction costs. In such situations, there will be limits on bargaining.\(^{108}\)

There are not significant search costs in this case. All parties to the transaction are known to the other parties. Everyone is effectively in the same lab. There is the

\(^{107}\) Supra note 84 at 11.
professor operating the lab, the graduate student(s), and the university staff (ie. technicians) working in the lab. The parties therefore know who they need to negotiate with for rights to the data.

The information costs to the transaction would be greater than the search costs in that the parties need to know what rights if any, they may have as compared to the other parties. For efficient bargaining to occur, the parties would need to understand the relative positions of all parties, and what rights entail and the consequences of different options. Research would be required that would result in costs being incurred, which may involve legal opinions or independent research by the parties. This has the potential to be significant as legal rules are costly to learn and enforce.109

A complicating factor in determining the value of rights is that the value of the data may be unknown. Whether there is potential commercial viability will be a factor in determining negotiating positions of the parties. Another consideration is the uncertainty in attempting to predict whether another party actually wants the data. For example, the graduate student may decide that she will be moving to a different research area after she leaves the lab and thus have no continued use for the data.

The counterargument is that the university and faculty association are relatively sophisticated parties with access to resources to obtain information in a cost effective manner. Graduate students are not as organized or well funded as the

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109 Ellickson, supra note 38 at 628.
other parties but by definition, are educated people who would have the ability to obtain the necessary information to at least obtain an understanding of the issue.

There would therefore appear to be limited search costs but there may be significant information costs that can impact bargaining.

### 6.3.2 Bargaining and Decision Costs

There are two ways to look at the issue of bargaining and decision costs. The first is that the costs would be low. The parties are negotiating over a fairly narrow issue—rights to data. This is not a particularly complex matter and it is really a matter of negotiating the compensation to be paid for the rights to use the data. There would need to be provision for the graduate student to have the right to use the data as part of her thesis. There should be no problems in having this practice continue, as this is generally the case as it exists today. Otherwise, the issues to be negotiated are rights and compensation.

The second approach is more complex. It is arguably not a simple issue. In the Coase world, two parties may be expected to agree if there is a surplus to be gained from the agreement. The value of the surplus is what will be divided during the negotiation.  

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110 Lemley, *supra* note 91 at 1055-1056.
the gains are. If there is uncertainty over the value of the gains, the parties could be prevented from agreeing to an efficient transaction.\textsuperscript{111}

Part of the problem that was briefly mentioned in the previous section is determining how to evaluate the value of the data, and possible future uses of it. There would be a difference between data that has a commercially viable use and data that resulted from a failed experiment. Even then, data can have value if resulting from a failed experiment. The point is there are numerous possible outcomes in attempting to value data. Having the parties bargain when there are unknowns can result in potentially costly negotiations and difficulty concluding issues.

Furthermore, the likelihood of incomplete information gives arguably little reason to believe that the Coase theorem is correct when specified in a noncooperative bargaining context.\textsuperscript{112} Much of the approach of the Coase theorem presumes that contemplated agreements can be reached because it is in the joint interests of the parties to do so. Of course, parties do not always behave in a manner that can be predicted. People do things for various reasons; including things that do not objectively appear to be rational or in the best interests of that person. The failure to contemplate what is rational for a group may not be rational for an individual is clearly a problem in the bargaining context.\textsuperscript{113}

\textsuperscript{111} Ibid.
\textsuperscript{112} Medema, supra note 97.
\textsuperscript{113} Ibid.
This is a well known concern and is not limited to this analysis. Objections to the rational actor model in law and economics are almost as old as the field itself.\textsuperscript{114} People suffer from certain biases, such as over optimism, and self serving conceptions of fairness.\textsuperscript{115}

It is difficult to predict how the parties will conduct themselves in this instance. Given the competitive nature of the academic environment,\textsuperscript{116} it is not certain that the parties will act in a rational manner. Professors may be unwilling to even negotiate with the university due to the perception that the data is their own and there is no way the university has any right to it, without paying an exorbitant cost. Graduate students may be less inclined to negotiate when they fear that their academic futures may be at risk if they are not provided with helpful references from the professor. The result of such conduct is that negotiations can be costly because parties may act strategically.\textsuperscript{117} Such strategic behaviour can prevent an efficient agreement.\textsuperscript{118}

It is not unreasonable to conclude that the parties will seek to hold (or relinquish) whatever rights to data they can, even if it may not be the logical or rational

\begin{flushright}
\textsuperscript{115} \textit{ibid.} at 1545.
\textsuperscript{116} \textit{Supra} note 5.
\textsuperscript{117} See Cooter, Marks, and Mnookin, \textit{Bargaining in the Shadow of the Law; A Testable Model of Strategic Behaviour} (1982), 11 J. Legal Stud. 225. As stated at 242, “The obstacle to agreement is the strategic nature of bargaining, not the cost of communicating.”
\textsuperscript{118} See discussion by Lemley, \textit{supra} note 91 at 1058-1059.
\end{flushright}
approach.\textsuperscript{119} The result is that there may be significant bargaining and decision costs associated with the negotiation.

6.3.3 Policing and Enforcement Costs

It is questionable whether the policing costs would be significant. Science research results in publications in scientific journals and presentations at conferences. Professors try to have papers appear in reputable journals, as the goal of many professors is to publish as much as possible. Scientists in the field attend these conferences and read these journals, and build upon the existing scientific literature. As a result, if a person’s data or results were published, or were part of another’s publication, then presumably the person would recognize their data, or at a minimum, see from the published results that there is enough to warrant further investigation. The nature of science mandates that a professor’s results are out there for all to see. Thus, policing costs may not be significant as evidence that another party is using a professor’s data or results would arguably be readily available from the published literature.

In terms of enforcement, the most common approach would be to sue an infringing party. Litigation can be costly both in terms of the monetary expenditure and the time involved. It is reasonable that this could pose a monetary barrier for graduate students seeking to enforce their rights. While the university and professors may

\begin{footnote}{\textsuperscript{119} See Lemley article, \textit{supra} note 91 at 1060, for a discussion on the problem of idiosyncratic behaviour. For example, a party may choose not to deal with another party for any number of obscure reasons. This is a problem that will limit efficient bargaining.}

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not have the same financial pressures as graduate students, difficult decisions would need to be made by all parties in terms of the cost and time involved in commencing litigation. This is complicated by the fact that there is really no certainty in the outcome of the litigation, given the unclear legal status of the question at issue.

However, it is my opinion that the academic research fields contain sufficient mechanisms that can work to minimize enforcement costs. In terms of professors, complaints can be made at no cost to the complainant, which will result in university investigations that could lead to discipline. Similarly, graduate students can be punished by the university, which can result in sanctions that include dismissal from their graduate program. Universities may encounter accreditation issues, depending on the nature of its conduct. These are all harsh remedies.

There is arguably a greater penalty – the claims of plagiarism and academic integrity. Academia is a self-governing society where there is a free exchange of ideas and open debate regarding teaching, curriculum, and research. As such, there is a critical need for integrity.120 Academic careers are substantially based on reputation. Reputations can be ruined and careers lost by claims questioning academic integrity.121 It has very serious career consequences to be accused of having plagiarized work or “stolen” results of another. Respectable researchers and academics would not risk their reputation and careers on using data that they have

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121 *Ibid.* at 337.
no right to use. Therefore, the most effective enforcement mechanism is the simple claim that someone has taken the work of another. A plagiarism claim that has minimal enforcement costs can have powerful consequences. It is worth noting that in the context of the professor-student relationship, the power imbalance makes it unlikely that the student will complain.

There are policing and enforcement costs, but these may not be as significant as some of the other transactions costs discussed. The mechanisms that are uniquely available to academia provide remedies to a party without the need to incur significant costs.

6.4 The default rule of initial allocation

There are transaction costs that will likely impact bargaining. As a result, the initial allocation of rights does matter. In determining the insights that the Coase theorem can provide to the issue of research data, the next question becomes how to initially allocate property rights. The goal would be to search for a rule that maximizes efficiency. It is again important to recognize the different rights that can come with the data. The right to use is one significant right as well as the right to exclude others from the use of the data. Professors may have a legitimate need to continue to use data, but should they be entitled to exclude graduate students or even the university from using it too?
The initial allocation, which can be changed by the parties, is only a default rule. Coase discusses this in terms of a corrective transaction.\textsuperscript{122} Changing a default requires information, awareness, and understanding of the situation, as well as being able to evaluate it.\textsuperscript{123} This is where the issue of transaction costs comes into play. Transaction costs are likely present and cannot be ignored.

One view from the Coase theorem is that property rights should initially be assigned to the party gaining the most utility from them. The problem with this approach is that it is difficult to tell ex ante the most valued use of a resource. This is magnified in the matter at issue in that the value of the data may not be known. There may prove to be no difference in value of data but it is not unreasonable to conclude that commercially viable data may have more value than data resulting from a failed experiment.

A similar potential approach would be to have the default rule imitate the parties’ anticipated behavior and thus save negotiation costs. The rule should be designed to what the parties would have agreed upon.\textsuperscript{124}

One likely scenario is that the professor would negotiate for the ownership rights to the data. Professors arguably have the greatest need for the data. Their research results in data and they would be severely limited if they were unable to utilize data. Research is required by professors for publications, which in turn is a

\textsuperscript{122} Supra note 7.
\textsuperscript{124} Ibid. at 32.
requirement for tenure, promotion, etc. As a result, the very employment of professors hinges on their ability to utilize research data.

Neither graduate students nor universities have as great a necessity for the data. Graduate students do require access to the data for the graduate thesis work. Any allocation will need to provide for rights of access and use to ensure graduate students are able to fulfill their program requirements. Otherwise, once graduate students complete their program requirements, they tend to move to jobs or other labs and often work in different areas (someone moving from studying the HIV virus to the Hepatitis C virus for example) than that covered in their graduate work. However, there are circumstances where the graduate student may wish to continue her research based on the data, and will therefore have a necessary claim to its use. In any event, it is reasonable to conclude that their need for the data is less than that of the professor. There is a very strong case for the professor being the party who has the greatest need for the data, and would therefore be most aggressive in seeking to acquire or maintain property rights in the data.

Another consideration is that there is a strong argument that the professor should hold greater rights in the data then that held by the graduate student. This is because the professor selects the graduate student to conduct research and assist in the professor’s research goals. In exchange, a graduate student receives the benefit of working and learning from the professor, and more importantly, receives her degree. It is not correct to say that the professor is simply taking the work of the
graduate student, and the graduate student receives nothing in return. Given the competitive nature of acceptance into graduate programs, the chance to conduct research and earn a degree is the consideration received by the graduate student. Of course, there is an argument objecting to the point as this is exactly why the Coase theorem is inappropriate to decide the issue, as it fails to consider such equity issues.

There are several reasons why the university may require access to the data. The main reason that universities would require data is for the potential revenue arising from the commercialization of the data. As well, universities may want to keep data to pass along to subsequent researchers to assist the overall research goals of the university. Finally, universities may require ownership so that they can ensure open—access to the data. However, it is my opinion that the actual need for universities to have the data is less than either professors or graduate students. There are valid reasons for the universities to have access to the data, but it is not as vital to universities as the other parties.

Therefore, one approach would be to assign to the professor. If the university or graduate student wanted particular rights, negotiations would follow.

A second option, as described by Birnhack\textsuperscript{125}, would opt for the opposite, counter-intuitive default rule. This is known as the penalty default rule. Such a rule is appropriate when there are information asymmetries between the parties. The

\textsuperscript{125} Supra note 123 at 32.
default rule should favor the less informed party. Thus, if the better informed party wants change the default rule, it must provide information during negotiations which would result in information being known to all parties. This would ensure an informing mechanism to ensure all parties have complete information. As explained by Ayers and Gertner, “Penalty defaults, by definition, give at least one party to the contract an incentive to contract around the default. From an efficiency perspective, penalty default rules can be justified as a way to encourage the production of information.”126

Accepting this rule as the approach that should be implemented would lead to the initial allocation being granted to the graduate student. A graduate student is the one who, as discussed, has the limited access to resources and information. This is not to say that she is completely devoid of information, but simply indicates that on balance, a graduate student would be less informed then either a professor of the university.

The risk with this approach is that, in a context such as this, the chances of a corrective transaction are asymmetric: professors are less likely to change the initial allocation in their favor (because they have the rights and no real need to rid themselves of them) and graduate students are less likely (due to equity issues and costs) to be able to do so. Although the penalty default rule might serve its informative function, this would be of no avail to graduate students. If the default

rule awards the graduate student the initial ownership, the professor or university would insist that the allocation be changed. If the graduate student fails to agree, she may not be admitted to the university or selected to work with the professor. Birnhack\textsuperscript{127} argues that the employer (or professor) has superior bargaining power over the employee (graduate student) due to competition for these positions; the default rule would be flipped. Changing the default rule would raise awareness, but the graduate student will be unable to sustain the allocation in her favour or extract any other benefits. If the default rule were the opposite, awarding initial ownership to the professor, it would be more likely to stay.

A problem, as described Birnhack,\textsuperscript{128} arises in the context of the employer-employee relationship. He concludes that a penalty default rule awarding initial ownership of copyright to the employee would have unnecessary costs of the corrective transactions and additional demoralization costs. Allocating initial right to the employee is likely to be corrected immediately by the employer, but a contrary allocation is likely to stay. His view is that the employee is compensated by receiving a steady salary and ridding herself from the risks associated with making and commercializing the work, as well as enforcing the rights. However, it should be left to the parties to decide whether they are adequately compensated.

This approach would advocate that the initial allocation should be made to the effective employer, who is the university. This approach may be partly relevant to a

\textsuperscript{127} Supra note 123 at 32.
\textsuperscript{128} Supra note 123 at 36.
university environment. In terms of professors and graduate students, there could be an issue, as discussed above, in that the professor would seek the ownership rights from the graduate students to the point where if the graduate student does not agree, she may not have a position with the professor. However, in terms of professors and the university, the issue of unsophisticated parties does not pose a great concern. The university/employer would obviously be considered a sophisticated party. In terms of the professors, there is likely a union or faculty association providing resources and support. The issue is further diminished when one considers the case of tenured faculty. It is extremely difficult to remove or dismiss tenured faculty. There is no reasonable case to make that there is an inequality of bargaining power as between tenured faculty and the university.

As well, the nature of the employment of professors is unique within the environment of research universities. Professors need to conduct research as part of their ability to receive tenure, promotion, etc. The professor is not clear of the risks of whether the research is beneficial to the science community, or whether there is commercial value. Professors need the research to be successful so that they can be successful. Contrast can be drawn with a lab technician who is employed by the university. This person does research and generates data. However, if the research of data is scientifically useless, the lab technician still gets paid and there are no adverse consequences to her. Professors are different in that they bear a greater risk than the employer/university and Birnhack’s conclusion is therefore not
applicable in this case. Based on this, initially assigning the rights to the university is not the optimal approach.

It seems that there are two approaches that are most desirable. The first is that the data be shared equally between the professor and the graduate student, and the second being the professor has initial ownership rights with a right of use to the graduate student for the completion of her thesis work. In terms of shared ownership, the benefit is that both parties would need to consent to or at least be credited with the work prior to it being published by the other party. This prevents a graduate student from taking the data to another lab and publishing the data in a paper, without crediting the professor. It would also protect a graduate student who leaves a lab, from having her work published by the professor, or even a subsequent graduate student in the lab who attempts to add to the data and publish, without appropriate credit being granted.

The potential significant drawback of such an approach is that it could lead to research being diminished. For example, if the graduate student wanted to publish the data, or use the data in further experiments, then the professor would need to agree with this usage. If the professor didn’t agree for whatever reason, then there would be a standstill. Science would potentially not progress, which is not in the best interests of anyone. In light of the potential that parties would need to agree, even long after ceasing working together, and when they are likely in competition,
there exists the probability of too much conflict. While there are certainly advantages to this option, it does not present the most beneficial solution.

The most efficient rule would be to initially assign ownership rights to the professor, but grant the graduate student a right to use the data for research purposes to complete the program requirements. Additional rights for research beyond this (ie if the graduate student wants the data for research in a new job or other degree program) could be negotiated. This would imitate the most likely outcome of negotiations as professors arguably have the greatest need for the data, and in effect, it is essential for them. Graduate students would receive the benefit of use for their most pressing need: research to complete program requirements. The risk applicable to other employment relationships is not relevant in this matter. There is no other party that has the same necessity for the data. On balance, the most convincing arguments are in favour of initial assignment to the professor, with limited rights of use to the graduate student.

6.5 Criticisms/Limitations

The Coase theorem is not without its critics. The paper now considers some of these issues in terms of whether there are limits on the conclusion of the initial allocation of rights.
6.5.1 Threat making

One concern is the possibility of threat making.\textsuperscript{129} This would arise where parties who are not part of the transaction may seek to demand compensation or rights as well. For example, if the property rights where assigned to the graduate student(s) and a professor pays compensation, other previous or related graduate students may seek to demand compensation as well. Similarly, if the property rights were assigned to the professor, then the university may be challenged to compensate other professors who allege their data was expropriated without compensation; failing which the union may file grievances, or professors may withdraw services.

This situation arises where property rights are poorly defined and can be avoided with a careful definition of who is entitled to the property. This is a potential issue as previously stated, the law with respect to the ownership of the facts, or data, is unclear. The remedy is to decide upon an initial application of property rights either by way of contract, university policy, or amendment to existing intellectual property legislation to define the rights with respect to the research data. The parties then negotiate from that point.

6.5.2 Free Riders

Another potential problem can arise if there are “free riders” to the transaction. Some parties, whether it is individual professors or students, may choose not to participate in negotiations as others will be doing the work and all parties would

\textsuperscript{129} \textit{Supra} note 84 at 12.
receive the benefit of the negotiation. Any single individual could withhold her contribution, hoping that everyone else will chip in and she will benefit from their solution anyway. These people would obtain the benefits of the bargain without having to incur costs of bargaining. The free rider problem makes it difficult for groups to act cohesively and effectively to ensure allocation on an efficient basis.\textsuperscript{130}

This would not pose a major problem if there was collective bargaining within the university ie faculty members who are organized and represented by faculty associations. In such a situation, all individuals would be bound by the negotiations and agreement, which would reduce the free rider problem. This is of course is contingent on the issue of the rights to the data being part of the data (which is not always the case.) Even if the issue were part of the negotiations, it may not entirely eliminate the problem because members may not necessarily contribute optimally to the process.

The issue for graduate students is slightly more complicated. If graduate students negotiated separate agreements, a situation could arise where a precedent or standard form template would evolve which would benefit those who played no role in the bargaining. The graduate student(s) who negotiated the first agreements would incur whatever transactions costs exist. Students that follow would be bound by early precedent or at a minimum, have the starting point to begin negotiations. The remedy would be for graduate students to be effectively organized such as professors. However, this is currently not the situation in most cases. Practically

\textsuperscript{130} Supra note 84 at 12.
speaking, it is unclear whether this issue poses a major problem or not. Suffice to say that it is a consideration.

### 6.5.3 Other limitations

The application of the Coase theorem would also be problematic if the resource could not be divided or demarcated into private property, or if the resources within a property are mobile.¹³¹

For example, air cannot be divided. There is no way to separate or divide air into bundles or sticks of rights to be negotiated. Air would therefore fail to meet an important premise of the Coase theorem. In terms of rights with respect to research data, the rights can be divided. Rights can be separated between rights of use and rights to restrict others from use. Within these broad categories, there can be any number of permissible uses or prescribed limits.

Such things as groundwater, the continental water basins, or fish are mobile. Even if you could divide the oceans amongst parties, fish would not respect the boundaries and there would be nothing stopping parties from over-fishing their respective rights. The rights to research data are not mobile and would not fail this premise of the Coase theorem.

¹³¹ Supra note 82 at 4.
6.6 Inequality of bargaining power

One significant problem that critics of Coase contend is that the Coase theorem does not consider the potential for inequality of bargaining power. References have been made throughout the thesis to the issue of inequality of bargaining power. It is an important issue that has relevancy to the relationships of the parties at issue. The question arises as to whether this issue would work in this case to necessitate an amendment to the conclusion with respect to the initial allocation of rights.

Parties come to the negotiating table with differences in bargaining power and unequally bargained agreements could very well result when one party has an advantage over another. A graduate student seeking a position with a supervisor, or a graduate student who has been assigned to a supervisor, would not be in a strong position to negotiate with the supervisor. Granted, professors need graduate students to conduct research and do other work in the lab to ensure the success of the professor’s research. However, when a graduate student applies for a position, she must have a professor with whom to complete work towards a Masters’ degree, doctorate, or post-doctorate work. The professor does have a greater ability to choose from a pool of applicants. There can be significant competition for positions. The potential graduate student is in a vulnerable position to the professor and may be inclined to accept terms dictated by the professor. This, of course, would include provisions that data would remain or revert to the property of the professor. In many cases, if the potential graduate student insists on being granted an initial

\[132\] Supra note 82 at 9.
allocation of the ownership rights, the professor could simply reject the student and move to another applicant.

Once the graduate student is selected, the inequality of bargaining power does not diminish. The graduate student relies on the supervisor for guidance and the supervisor has a significant influence on the success or failure of the student. Graduate students also rely on the supervisor for letters of reference which are essential to an academic career.

In such circumstances, leaving the matter to the parties to decide amongst themselves may preclude equal bargaining. Unequal bargaining power can be a problem from a policy perspective in a university setting. The perception that students or “weaker” parties are being taken advantage of is an issue that needs to be avoided where possible.

In terms of another perspective, writing from England has suggested that universities take extra care not to act in an unfair way to its students. This appears contrary to another English trend which is for universities to include intellectual property provisions in student regulations and making students agree that all intellectual property belong to the university, as a condition of admission to the institution. This simply highlights that the same inequality issues existing between the professor and the graduate student exists between the university and the student.

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133 Anderson, supra note 37 at 103.
134 Ibid.
If the approach of assigning rights to the professor with rights of use to the graduate student for the purposes of completing her degree, the inequality of bargaining power issue is diminished to a degree because the graduate student would be able to get the position and complete the degree, and additional rights may be desired, but are not essential.
Chapter 7 - Conclusion

This paper has attempted to highlight the problems associated with ownership rights to research data created or compiled at Canadian universities. The intellectual property statutory regime does not adequately address the issue, as there is uncertainty with respect to ownership rights to facts. University policies that have been drafted in attempt to remedy the problem have proven to be insufficient and may tend to create uncertainty. As a result, a different approach was necessary to address the issue.

The Coase theorem was considered in terms whether it would be more efficient to assign default ownership to one of the parties involved in creating research data, ie. the professor, graduate student(s), or the university. There are lessons to be learned from the criticisms/limitations of the Coase theorem, which would need to be addressed in a university environment.

The key issue was to determine how to initially allocate rights to the research data. The most efficient default rule is to assign the initial rights of use and right to exclude others from use to the professor. This is subject to a right or license to the graduate student to use the data for purposes completing her thesis only. She would certainly need rights of use to complete her program requirements, while the question of the extent of the right of use beyond this remains open. If either the graduate student or university wants additional rights with respect to the data, negotiations between the parties will occur.
Bibliography

Legislation

Copyright Act, R.S.C. 1985, c. C-46.


Articles


Johannson, Tommy, Jamaican Deforestation and Bauxite Mining: Applying the Coase Theorem (Master’s Thesis, Lulea University of Technology, Economics Department 2003) [unpublished].


**Books**


Jurisprudence


Kilvington Bros. Ltd. v. Goldberg et al. (1957), 8 D.L.R. (2d) 768 (Ont. HC).


University Policies

The Policy on Data Ownership, Retention, and Access at the University of Massachusetts Amherst, Presented at the 654th Regular Meeting of the Faculty Senate, May 18, 2006.


University of Calgary, An Interpretation of the University of Calgary’s Intellectual Property Policy for Graduate Students, (June 6, 2005), online: University of Calgary <http://www.ucalgary.ca/grad/files/custom/ip_grad.pdf>.

University of Manitoba, Thesis/Practicum Information and Guidelines, online: University of Manitoba: Faculty of Graduate Studies http://umanitoba.ca/faculties/graduate_studies/thesis/guidelines.html.

McMaster University, Ownership of Student Work, online: McMaster University <http://www.mcmaster.ca/senate/academic/ownstwrk.htm>.


**Other Materials**


Collective Agreement Between Memorial University of Newfoundland and Memorial University of Newfoundland Faculty Association (December 31, 2007 – August 31, 2009), online: <http://www.mun.ca/munfa/ca200709.htm>.


Internal Memorial University Memorandum from Richard Ellis, Librarian to Dr. Christopher Loomis, Vice-President (Research), (October 31, 2007) re: Data Retention/Data Ownership.


Sotiriadis, Bob H., *Recent case law in IP relating to university research* (Canadian Association of University Solicitors Conference 2008, Quebec City, September 19, 2008) [unpublished].

The Long FAQ on Liberalism, *A critique of the Chicago School of Economics: Ronald Coase and the Coase Theorem*.