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# Who Controls Intellectual Property?

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At an institution such as MIT, where learning and research are inextricably intertwined and where professional recognition is requisite to academic survival, developing a framework for issues concerning intellectual property is a Rubicon awaiting most members of the junior faculty. Designation of authorship is probably the most common port of embarkation. A publication, proposal, presentation, or patent application may launch your raft. Incentives, prior art, control over distribution means, and sponsor interests are pockets of white water, likely to be traversed between shore and shore.

My journey began last spring, six months after my promotion from Lecturer to Assistant Professor. Although I will still be perplexed from time to time, I do not ever again want to confront the question of authorship - "whose work is this?" - head-on as I did when I first decided to co-author a paper with a graduate student.

To step back for a minute. As lecturer/researcher, I was first party to my own research. While MIT clearly owned what I was working on and several students helped me to develop software, there was no question about primary authorship. When I signed on as faculty, rather then being a sideshow to a graduate program, my research became the central focus around which all my other activities revolved. Several projects emerged from one. Rather than participating in the very focused hands-on nitty-gritty of making (e.g. a film or a computer program), a function to which I was accustomed, I began to explore a range of issues with different students who were now my research assistants.

Today, my camera - which we can equate in some ways to a word processor - waits patiently for those ever rarer moments of action when I ascertain that something is going on which I can explore through a lens. Meanwhile a very talented freshman UROP is charged with the task of making a movie from some of my rushes;

this allows her to learn all about our editing gear and challenges her storytelling ability. Happily, credits in the movie industry are plentiful and clear, and she gains the distinguished credit of editor.

The difference between my life as lecturer and as junior faculty member is not just that I am desktop bound. I also have more information and more influence than I used to, and I have a different relationship to the community of the Institute. Information funnels past me on a wide range of topics - personal, technological, literary, philosophical. Frequently I am asked to make presentations about the current state of the art. For the first time last spring I asked a graduate student to co-author a paper with me about a current research project. Although I believe in the joint authorship of this project, my initial shock and confusion upon reading a paper which did not read at all like those I write can not be ignored. Who was the author? With this question, I unexpectedly opened a Pandora's box of philosophical, practical, legal, and financial concerns which surround disclosure of intellectual property. In developing a strategy for distributing the work I began to discuss some of these issues with other members of the faculty and so became exposed to the diversity of style with which individual faculty disclose and distribute work.

Who owns ideas? What is a given idea worth? How do we attribute authorship when a particular articulation - an abstraction, algorithm, or design - emerges from a general idea, theory, or program goal? What are the ethics of collaborative authorship? How can we effectively fuse proof of concept with incentives for entrepreneurial pursuits? From a somewhat different but relevant perspective, what is the relationship between education, research and invention?

What I discovered on my journey was that the faculty - individually and collectively - are arbiters of intellectual property policy; in this role we wield considerable influence over the ethics and incentives which will shape invention in tomorrow's society. On the surface MIT owns all tangible property developed either 1) under research contracts or 2) with significant use of MIT facilities. However, it is up to the faculty member or principal investigator on a project to disclose technological invention and attribute authorship. This allows the faculty member a fair amount of latitude in determining the preferred strategy for disclosure and distribution.

Frequently students play a central role in implementing a research concept. In order to draw out the commitment necessary for project success, we need to provide students with certain incentives. Sometimes the incentive is a job as in a research assistantship or a UROP. Recognition and citation can also be viewed as incentives. However, the strongest incentive may rest with our ability to provide a framework in which students can think and develop inventive solutions to project stumbling blocks. Part of my role in any project, therefore, is to keep open a communication channel which is resilient enough to encourage structural and methodological discussion and also allow for exchange about sometimes emotional concerns regarding recognition and incentives on a particular project. With each successive project, my look-ahead agent becomes more honed. Simultaneously, my conviction that the methodology and ethics we apply in recognizing and disclosing new ideas are viewed as models for future ventures is reinforced by conversations with past and present students.

Since my initiation into the intricacies of property rights as I see them and as the Institute sees them, I have been approached as a sounding board by several students who were feeling uncomfortable about some aspects of their rights relative to the Institute and/or in relation to their advisor. This has led me to explore a more universal perspective on ownership.

Basically, we have two strategic models for ownership of intellectual property. On the one hand we have an employer/employee model in which the employer owns all tangible property in perpetuity and uses the legal mechanism of licensing as a means for distributing (usually with economic gain) the property. At the other extreme we have a collegial model: the case of sole author can be viewed as a special case of a partnership of two or more authors; decisions about dissemination and profits are made by the isolated individual or by the partnership. These two approaches frequently piggyback on each other as when two members of an institution co-author an invention.

In the course of setting a policy, the issue of fairness is likely to arise particularly in cases where there is a single author but other beneficiaries including sponsors must be given certain privileges. Swings of the policy pendulum - from less patriarchal to more patriarchal - will inevitably generate controversy. Most arguable perhaps is how the general policy affects incentives. On the one

hand, the incentives must encourage student and faculty authors to give their all to invent at MIT today, even while they may dream about their role in the world tomorrow; on the other hand, the incentives must attract sponsors to the Institute, without whom we jeopardize the future of the community and the collective quest for knowledge.