

SHARING THE POWER OVER, AND THE RESPONSIBILITY FOR, INFORMATION TECHNOLOGY DECISIONS IN ACADEMIA

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ABSTRACT. Information technology (IT) – hardware, software, and networks – is enormously important in the daily lives of everyone on university campuses. Yet decisions about academic IT are usually made by a small administrative team with almost no faculty input. This can lead to policies and priorities which poorly serve pedagogical and scholarly needs, and is a clear violation of the *AAUP Statement on Government of Colleges and Universities*, hence violating academic freedom. I propose here a different model of shared IT governance in academia and suggest that the first step towards realizing this new model is for faculty to educate itself a little about real IT alternatives.

1. INTRODUCTION

When academics from different fields and institutions get together, their conversations (truthfully, these are frequently *complaints*) often form a kind of table of contents of the issues in which the AAUP is active. Except one: information technology (IT) is one of the most common sources of problems for the professoriat, but improving the extremely problematic state of IT governance on university campuses does not get much attention. This is perhaps because, with the exception of computer scientists¹, IT is not considered central to what we do in our respective disciplines. Yet, I will argue in §2 of this paper, policies, practices, habits, and attitudes towards IT will only get more and more intertwined with what we *all* do, regardless of our discipline in the academy.

In an attempt to rouse the sleeping masses, I will indulge, in §3, in some serious negativity, recalling to the reader's mind just a few of the myriad examples of frustrations which IT and its governance on campus bring into our academic lives. Later, I will argue that, more than being merely annoyed, we should all be moved to action, after we become a bit more familiar with the alternative possibilities which have been passed over – but even ignoring the comparative disadvantage, the current situation is pretty serious.

Next, in §4, I will make some guesses about how the current situation arose. From one point of view, this is entirely unimportant: we must move forward, however we got here. But from another, knowing the causes may help us more effectively bring about change. So also can knowing more of the truth behind these causes, and alternative approaches to these truths, some of which I outline in that section.

In §5 I propose a better approach towards campus IT, building in part on some of the alternatives just mentioned and in part on some new foundations visited in this section: open architectures and free software.

Date: 7 November 2012 [13:00]

A version of this work was presented at the *October 2012 AAUP Shared Governance Conference*

This paper has been submitted to the *AAUP Journal of Academic Freedom*.

¹...and mass comm faculty working in digital media, engineers doing CAD/CAM, statisticians working with real datasets, historians or political scientists accessing digitized archives on other continents... indeed, the list goes on suspiciously long.

Finally, in §6 I suggest some steps we faculty can take in order to improve our campus IT environments, and some structures we can set up to try to preserve any gains we may make.

2. IMPORTANCE AND FUTURE DIRECTION OF IT

On a mundane level like that of quality pencil sharpeners or blackboards, IT is a part of our daily academic lives – often an enormously beneficial part. With computer networks the obstacles to storing, searching, and sharing information – tasks central to the academic project – disappear almost entirely.

But beyond these mundane uses as some sort of super-effective pen and paper, IT systems allow new types of pedagogy: interactive textbooks in math or lab reports in chemistry, statistics classes which work during class time with real data sets, class collaborative texts built as a *wiki*, use of audio and video recording, editing, and playback to enhance students' assignments, *etc., etc.*

One “innovation” which has recently appeared in mathematics departments such as my own is on-line homework in lower-level classes. This is provided by textbook publishers – at not insignificant cost to the students – and gives instant feedback to the students as they do homework problems, also freeing the instructor from all of the tedium of grading extensive homework papers. Since the introductory classes are often taught by contingent faculty who are paid so little for each class they they must teach many sections to make ends meet, the time saved by these on-line homework system is literally a life-saver for many a swamped instructor.

Going even further in the direction of computer delivery of instruction, there is the looming threat of on-line or “hybrid” courses (and even entire degree programs); I say “threat” because these new delivery modes may offer wider access to higher education, but they certainly challenge the primacy and methodologies of more traditional higher ed. MOOCs (Massive Open Online Courses) or smaller relatives are only possible because of computer networks and the processing and interactivity available at the edges of the network: we more traditional faculty may not be eagerly anticipating their growth and success, but certainly the possibility that they may provide a meaningful education depends in some large measure on the details of the IT infrastructure they employ.²

In addition, there is the relationship of what we do with IT on campus to the new, more networked, mobile, IT-savvy lifestyle of today's students. If this generation's primary method of acquiring information and communicating with others is over the network, we may want to adapt some of our delivery strategies to this new reality – perhaps not all, resisting some modern trends in favor of more traditional approaches may be useful (... although perhaps resistance *is* futile).

Finally, just as a literature course may teach students how to do close reading and to write well, or a philosophy class may teach general critical thinking skills, or a math class general problem-solving strategies, so can many of our classes teach immensely important

²Please note that I do not by any means intend to be saying that the two changes just mentioned – on-line homework in math classes and MOOCs or other on-line instructional modes – are good things, having a lot of IT in them, which we faculty should embrace. I am in this article entirely neutral on this issue; I merely want the faculty to be the drivers of scholarly and pedagogical policies and decisions on campus, even those which have an IT component. Personally, I think the best thing for math classes would be to pay those adjuncts a far better wage so that they can hand-grade all the homework they assign. But if this is not possible, at least it should be math department faculty who make all the decisions about software and hardware related to the on-line homework systems they might choose to use.

general lessons about living in the modern, networked, computerized world ... but only if we are using these new technologies in responsible, mature ways in our classes.

For this last point, I am essentially suggesting that we can use the IT infrastructure on our university campuses to instill certain habits of mind in our students, habits which are particularly relevant in the modern world. Some of these would be: knowing how to search well (the flip side of the modern ease of plagiarism); understanding security and privacy on networks, how to get them and when they are important; knowing how to share digital media, even when formats employed by different users are different; when some simple task may be more easily done on a computer than by hand, and having some idea of how to do it; *etc.*

3. PROBLEMS

Here is a sample of the complaints I have heard from colleagues at my own and other institutions:

- (1) the following not available:
 - network
 - printer(s or other hardware)
 - software required for pedagogy or scholarship
 - incoming e-mail
 - campus web site
- (2) data (*e.g.*, backup or shared files) lost
- (3) repairs slow to the point of stopping other activities
- (4) mailboxes full
- (5) limit on sizes of e-mail messages
- (6) complex/impossible/slow process to get content onto web site
- (7) no specific commitment on timing of upgrades or repair, or such commitments broken
- (8) infestations of malware (this is the computer security term for malicious software, including viruses, rootkits, botnets, keyloggers, trojan horses, *etc.*)
- (9) pedagogically poorly designed layout of, and access to, computing facilities such as computer labs, ‘smart’ classrooms, *etc.*
- (10) staff with particular expertise (or generally able to answer basic questions at the Help Center) unavailable or vastly overworked
- (11) upside down decision-making processes – faculty minimally involved in, or never consulted regarding, decisions about:
 - what software can be used for pedagogy or scholarship
 - what hardware may be purchased or hooked to the network, for pedagogy and scholarship
 - how faculty and students may access their IT resources
 - what will be on the campus web site(s) (usually based exclusively on treating them as a marketing tool, restricting content based to promote “brand maintenance”)
 - priorities and goals for IT services, and how to use resources to pursue them – *e.g.*, setting *all campus courses should use Blackboard* as a top priority without any consultation with faculty if they want such a “learning management system”, and then negotiating with the provider for multi-year contracts based on this goal
- (12) “centralization” of services such as, for example:

- moving hardware (printers, computer labs, high-end processors or display devices, storage, *etc.*) out of individual departments or academic buildings into central IT spaces [which *always* results in diminished use of these resources]
- similarly moving specialized knowledgeable IT staff
- taking control of campus web sites away from *the people who make the content* (the faculty and students)

4. SOME ROOTS OF THESE PROBLEMS, AND FIRST RESPONSES

I contend that behind these problems are a series of widely believed myths.

4.1. Cost. One such myth has to do with how much technology costs. There is a well-established belief that IT is a major expense on the order of new buildings or other large changes to physical plant.

While (certain small) aspects of this are partly true, it is for the most part false: Moore's Law and the faster version which applies to cost of storage³ mean that modern computer hardware is fantastically powerful at very low cost. The meaning of "low cost" depends a lot on context, of course, but even in these tough economic times, the entire hardware replacement/upgrade budget or a contract to rewire several buildings, would be in the same order of magnitude as the salary of a single high-end non-instructional figure like an associate provost or football coach.

4.2. Market fundamentalism. Another widespread fairy tale is that "the market knows best". Of course, we are all familiar with the grim consequences of this market fundamentalism for corporatization of academia (and in many other aspects of American life). But in the IT sphere, it has led to a reliance on commercial software, often with the belief that the bigger is the corporate provider, the better off we users are likely to be.

While products from nearly monopoly-scale corporate sources have certain advantages, they also have enormous disadvantages, some of which I describe in my article *Information Technology Wants to Be Free* in the September/October issue of **Academe: Magazine of the AAUP** (also to be found on my website www.poritz.net/jonathan/papers).

4.3. Leave it to the professionals. A final myth is that there is an insurmountable gulf in knowledge and expertise between IT staff and faculty, which implies that the IT professionals should make all the decisions.

I believe that this is often a mixture of intimidation (not always intentional) on the part of the staff and fear (rarely warranted) on the part of the faculty. As in any specialized, technical field, IT experts speak in a sort of code with specialized terminology and abbreviations. When they use this terminology in conversation with non-experts, it can simply shut down the discussion. But if faculty can stay current with the rapid expansion of our own scholarly disciplines, and expect our students to learn quickly the new lingo in our classes, surely we can easily master enough of this dialect to make meaningful contributions to IT decisions.

The actual situation with professionalism is really the precise opposite of this myth: IT staff certainly do know their specialized field of hardware and software for networks and individual machines, but faculty nearly always know far better the IT that matters to their scholarship and pedagogy. In my experience, there is only one situation where

³These laws say that the amount of processing power available per dollar doubles every 18 months [Moore], while information storage per dollar doubles every year. They are both somewhat inaccurate and approximate, it must be said, but do correctly point to the exponential growth of computer power and of stored data.

IT staff have the knowledge to lead rather than to follow in terms of choosing software and hardware for research and teaching. That is in the area of general pedagogical IT, at colleges and universities which are lucky enough to have an “Instructional Technology Center” or similarly titled office: often these centers are filled with highly expert staff who do know more about new technologies which are generally of use in pedagogy. They are often also excellent communicators able to teach old faculty new tricks despite the barriers of terminology, impatience, and fear.

The above were myths the community has in general, but there are also belief within the IT subcultures on our campuses (and in the wider world) which lead to many of the unfortunate outcomes mentioned in §3; here I shall describe two.

4.4. Black and white. The first of these IT-internal beliefs is that the best way to run an IT installation is with *whitelists*, not *blacklists*. These are terms from the computer security business, where blacklists are the lists of specific programs (and pieces of hardware, network configurations, IT use-cases, *etc.*) which are forbidden in an IT set-up where otherwise everything is permitted to the users. The alternative of whitelists – the lists of specific IT components which are permitted in a system where everything is otherwise forbidden (sort of an “everything which is not compulsory is forbidden” model, to misquote *The Once and Future King*) – is what is in place across most campuses around the country.

The problem with whitelists is that are by design antithetical to innovation: only the uses that the IT staff (notice, **not** the people doing the actual pedagogy and scholarship) has thought of and planned for are allowed. Blacklists can instead permit all future good ideas, excluding only the particular bad outcomes which must be forbidden.

For example, the whitelist approach to FERPA consequences of student work and grades residing on a professor’s computer is to make a list of particular uses that the professor may make of her computer, in person and across a network. The blacklist approach is to require security of the actual sensitive information, by some sort of software protections for example, but to allow by default all other, non-infringing uses of the computer and its network presence. [*E.g.*, want to run a wiki from your computer to supplement a course text? Go right ahead, as long as the gradebook files on that same machine are well locked down.]

4.5. Service contracts. Another common belief or practice in the IT community itself is a desire to out-source responsibility. This is a common strategy in many businesses and indeed branches of academia, and it is repeated here in the form of a desire to have service contracts covering as much campus hardware and software as possible. For the campus IT staff, this means that when almost anything goes wrong, there is any easy answer which can be given to frustrated users: “We’ve called it in.”

In the early days of the computer age, when universities had just a few fabulously expensive “mainframes,” it came as a great surprise that the service contract cost more, during the lifetime of ownership, than the original room full of hardware. After the PC revolution, computers have become commodities whose price has crashed. Similarly, software is a mass production whose marginal cost of additional units is **zero**, so the commodity price is trivial. In either case, service contracts cost infinitely more than up-front item costs.

[This has been turned into something of a virtue today: more and more functions of a campus or corporate IT infrastructure are being “moved to the cloud”, where the users

do not own anything (hardware or software or, perhaps, even their own data!) but merely pay for a service delivered via a fat network cable to a thin local client.]

There are careful cost-benefit analyses which needs to be done here, and it is absolutely not the case that in every situation it makes sense for campus IT to handle everything internally and never to pay for service contracts of any kind. But certainly refusing even to consider covering the risk internally sometimes misses a cheaper and more effective alternative.

5. OPEN ARCHITECTURES AND FREE SOFTWARE

As we have just seen, a blacklist approach to security and network policies is likely to be superior to a whitelist approach, because of its openness to new ideas, the lifeblood of a university. The same point can be generalized to the hardware and software products we use on campus: it only makes sense to avoid systems which are designed to close off unanticipated new uses in favor of the allowed, specific, sanctioned uses by keeping data and hardware structures in closed formats.

We should note that an additional advantage of open formats should appeal even to free marketeers: “closed systems” is basically a synonym for “monopoly controlled systems”, and therefore openness should allow competition, reduce cost, and improve quality.

In short, for these reasons mentioned above, campus IT should always come down heavily in favor of **open architectures**. These are data (and, to a lesser extend, hardware) formats which are public and free of legal encumbrances.

The case for open systems and architectures is very practical, as we have seen, but it is also ideological: universities are in the business of sharing knowledge and culture. We chose to pursue this ideal when we made our lives in academia, and we presumably want to show our students that openness and sharing can be a viable alternative to unfettered self-interest (*pace* invisible hands).

Fortunately, there is an entire movement which has created a truly viable alternative: **free software**⁴. Here are some examples of free software which we can use on our campuses:

- the operating system **Linux**, an alternative to Windows and Apple’s OS X
- the web server **Apache**
- free alternatives to MS Office such as **Openoffice** or **Libreoffice**
- **Moodle**, a free learning management system

More examples are given in the previously mentioned **Academe** article *Information Technology Wants to Be Free*, where some more of the history and evolution of free software are also given. That paper also mentions an additional benefit of free software: its **quality**, including resistance to malware, is generally far higher than that of commercial software – this should come as no surprise if you believe in the scientific method and peer review.

Note that I am not suggesting that we impose these free software options on our respective campuses – this would violate the IT openness and freedom principle I was advocating above! I am merely saying that free software should be the default on campus, alongside whatever systems, commercial or free, that individual users want and need for the teaching, learning and scholarship. Of course, I have heard from numerous faculty who resist learning new, free, software that they feel any time spent away from their

⁴The word “free” here does not refer to cost – although free software tends to be far less expensive than commercial software – it refers to a kind of freedom not unlike academic freedom: “Free as in speech, not as in beer,” in the words of one of the early free software pioneers, Richard Stallman.

discipline, on technology, is wasted and so they intend to stay with the commercial software they know forever (if possible). But the openness arguments presented here are quite persuasive in the long run, as is the lack of down time free software users tend to spend due to malware. These motivations have pushed many a technological conservative to choose to learn free software alternatives when their favorite commercial software undergoes a major change and they will have to spend (waste) that IT learning time anyway.

6. BABY STEPS AND LONG-TERM STRUCTURES

Unfortunately, we are currently a long way from the kind of openness I just described. Far from being a default on most campuses (actually, on no campus that I know of in the US – although it is policy in some other countries and at some American high-tech companies), openness is not only discouraged, but typically anything other than the standard suite of commercial software is *forbidden*.

Once we faculty know that there are alternatives to the current closed regime, we can demand change. But until this awareness is widespread, faculty may consider campus IT debates to be as important as faculty involvement in policy regarding campus provision of paper and pencils.

So (self-)education is the first step. There are almost certainly a handful of faculty, staff and/or students who have experience with alternative, free software at nearly every institution of higher ed, and they can share this with the communities. In my personal experience, these presentations can also be extremely popular with students, because of the cost (frequently zero!), flexibility, and power of free software.

Next, faculty need to shine a spotlight on the stream of decisions made by campus IT departments. It should be clear that IT policies and practices are deeply involved in “curriculum, subject matter and methods of instruction, research, [...] and those aspects of student life which relate to the educational process” to quote the part of the *AAUP Statement on Government of Colleges and Universities* which outlines areas in which the faculty are agreed to have primary responsibility. Yet rather than having this responsibility, faculty are often completely uninformed of IT policies and planning until after the fact.

Sometimes the dissonance here is almost humorous, as when a former CIO on my campus informed a committee of faculty that he had decided to negotiate an extension to our **Blackboard** contract, entirely without seeking any faculty input on the learning management system we were expected to use in our ongoing contact with students (coincidentally, at around the same time I had heard very positive opinions from the first dozen faculty I spoke to about the possibility of trying out **Moodle**). If we are to have any hope for improvement in IT governance, surely cases like this, when shown clearly to the campus community, will bring impetus for change.

Another case which warrants some interesting debate is that of control of the campus web site. At present, many universities leave this entirely in the hands of the Office of External Affairs (or its equivalent; this is the campus PR office) for the stated use as a marketing instrument. Faculty can try to make the case that the web site also serves a pedagogical purpose – getting to students course-related information and, more and more frequently, IT tools used in and around the classroom – and a scholarly one – communicating scholarship and showing, sharing, and collaborating on current projects.

Furthermore, a good argument could be made that as a marketing device, our web sites would be far more effective if they had a great deal more content – achievable only by far greater openness – rather than today’s obsession with uniform color palettes, approved

university logos, and particular font choices. Consider, for example, the most visited site on the World Wide Web: `google.com` has a rather minimal user interface and leads immediately, when the user finds an interesting search result, to sites with different styles, colors, and fonts. If our campus web sites were packed with content, they would be more useful to our students, faculty, and staff, and probably a far more effective marketing tool for our universities. What prospective student will select my university, where there is good brand identity on every web page, but almost no content describing programs, classes, special opportunities or professors' scholarly work over a messy site filled with such content but lacking the characteristics of a brand? Experience with `google.com` seems to make clear that "Content is king."

If we can have these discussions and bring the issues into the open, we will have made great progress. To retain any progress we have achieved, we need to set up systems for ongoing faculty involvement in IT decisions, as the *Statement on Governance* would suggest.

Most universities have a Chief Information Officer [CIO], a "cabinet-level" administrator who is usually involved in campus "executive committee" meetings, setting long-term goals and priorities, ... and who often has other strange powers like the requirement to sign off on all research grant applications (in theory to approve any consequences the proposed research could have on IT systems).

Several of these roles may be reasonable, but all of them require far greater faculty involvement. It seems to me that an ideal arrangement would be for one or several faculty to have a formal involvement in these activities of the CIO and her staff:

- if a single individual (some kind of "dean of IT"-like position), then release time and real personal authority would be necessary for the faculty member to be effective (*e.g.*, only a faculty member should have such a decisive role over other faculty grant applications!);
- if a committee (some sort of faculty senate-empowered oversight committee), then it must meet regularly (frequently) and have direct involvement – real oversight! – in IT decisions and operations, and not merely act as a conduit for the dissemination of new policies and other announcements from the CIO to the faculty body (as is so often the case today).

Somehow the dynamic of the relationship between the faculty and the CIO must change from the common current one of faculty watching and reporting out, through one of faculty listening and responding, and end up at one where the faculty are involved, probably day to day, with implementing current policies and setting future priorities. Campus IT departments and CIOs must think of themselves as servants of the community, partnering with (not dictating to) those other servants, the faculty (who serve their students and disciplines), to improve the academic environment. Only in this way can information technology live up to its promise in the academy, rather than being an instrument of bureaucracy and control which drains resources, time, and energy from our pedagogical and scholarly purpose.

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