

# Two Issues in Computer Ethics for Non-Programmers

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**ABSTRACT:** Two of the distinctive ethical issues that arise for computer users (as opposed to computer programmers) have to do with the file formats that are used to encode information and the licensing terms for computer software. With respect to both issues, most professional philosophers do not recognize the burdens that they impose on others. Once one recognizes these burdens, a very simple argument demands changes in the behavior of the typical computer user: some of the ways we use computers gratuitously impose significant burdens on others; it is wrong to impose significant burdens on others gratuitously; some of the ways we use computers are unethical.

## 1. SOME GENERAL FEATURES OF COMPUTER ETHICS AND THE NEED FOR CONSCIOUSNESS RAISING

There are many things one can do with computers that are wrong, and the wrongness of the act is obviously the same as if one had done it without a computer. The ethics of lying, cheating, stealing, and so on do not change because one uses a computer.

There are other activities such that one's computer—or at least someone's computer—plays a central role. Writing software that allows spying on unsuspecting computer users centrally involves computers. In this case, it is not the software author's computer that is central: one could write computer software on cocktail napkins. In this case, it is the victim's computer that plays a central role.

One could even deliver a malicious "program" without using a computer. One could suggest that computer users type "`sudo rm -rf /`"; on some computers, this would delete all of the data on the system. There are many ways to harm people by making use of their own computers. As Chang<sup>1</sup> puts it, "Social engineering . . . refers to manipulating a computer user to take an action with undesired consequences, such as downloading a file containing malware, clicking on a link that takes them to a fraudulent Web site, or divulging confidential information." ("Malware" is a generic term for computer programs that do evil, large or small.)

There are other sorts of computer programs, the propriety of which is hotly debated. It is possible to write a program to bypass the encryption system for DVDs that is simple enough to put on a t-shirt. Whether one thinks of this information as contraband depends on one's views about the rights of the producer of the DVD and the rights of those who wish to use the DVD (perhaps for purposes the producer did not intend).<sup>2</sup>

Here is another example: one could write software that is wasteful by design. Imagine a coal company paying a programmer to modify a entertaining computer game that is about to be released: suppose computers running the modified game would consume more electricity. One would think that the coal company and the programmer are taking advantage of the users of the game—to say nothing about environmental costs.

One need not be a computer programmer to face ethical issues in which computers play a central role. Merely using one's computer for a long period of time without installing updated versions of the software on the computer can put others at risk, much as driving a poorly maintained car puts others at risk. A poorly maintained computer typically lacks "patches," i.e., updates to software to prevent one's computer from being compromised. Patches to the operating system are most important. The patches released by Microsoft for Windows and by Apple for the Mac OS are like safety recalls for cars. Because malicious software can use a poorly maintained computer to attack other computers, your poorly maintained computer on the internet is like a car with defective brakes on the road.

Running an unpatched operating system on a networked computer imposes burdens on others, but it is more difficult to say whether it is blameworthy. A significant problem in unraveling computer ethics is the pervasive ignorance of computer users. The vast majority of computer users know very little about how their computers work; perhaps the blame, when there is blame to be had, belongs to the computer manufacturers, or the providers of network services. Unpatched operating systems are a hazard, and computer manufacturers and network operators have an obligation to take steps to reduce the risks. They certainly do know how computers work.

As a practical approach to pervasive ignorance, licensing computer use (on the model of requiring a license to drive an automobile) might help to bridge the gap between one's ability to do harm with one's computer and one's moral responsibility.<sup>3</sup> If one needs a license to connect one's computer to a network, and one must demonstrate computer literacy to get the license, then computer users can bear more responsibility for reducing the risks attached to various forms of malware.

It is not my project here to lobby for computer licensing, however. The important feature of computer licensing, from my point of view, is that the proposal highlights a problem: computer users might escape blameworthiness through brute ignorance. Ignorance is not always an excuse, but it certainly is in some cases.<sup>4</sup> In any case, it is a problem that computer users might have this attitude: "I don't know how computers work, so I have no obligations beyond the obvious ones (don't use a computer to lie, cheat, steal, and so on)."

Computer licensing is a practical solution, but so is consciousness raising. My project is to point out certain harms that can result from our choices about how we use our computers. These harms are not complicated. Furthermore, once one is aware of the possible harms, one cannot dismiss them as the province of one's IT department, or the computer manufacturers. All computer users support the production of certain kinds of software, with certain licensing provisions, through their choices about what software they use and how they use it.

There are two central choices I shall discuss. One is the choice to use certain software. One's choice to use certain software crucially involves an endorsement of the licensing terms of the software (though the precise nature of this endorsement could be debated). Objectionable licensing terms would be a moral cost associated with the choice to use software.

One also chooses to transmit and to store information in various formats. This is a matter of how one uses software: most software offers options for the file format one uses when storing and transmitting information. (If a particular program offers only an objectionable format for the data manipulated by the program, this would of course be a reason against using the software at all.) I shall address this second category of choices first.

## **2. THE ETHICS OF FILE FORMATS**

Suppose a computer user is working with important information—a list of names and political contributions for the 2008 US presidential election, for example. What ethical considerations apply to the choice of the file format for that information? The answer to this question depends on the role the information plays.

If the computer user is an employee of the government, the user might post the data to a web site to comply with laws dealing with transparency in the political process. She might also store the list in an archive, to be available to the public in the future. Access to the data, in this case, makes the democratic process more transparent.

If the computer user is a professor teaching a class, the professor might send the list to her students for analysis, to prepare for discussion. Access to the data, in this case, plays a role in the education of the students.

If the computer user is an employee of a private firm, the user might circulate the data internally for analysis (to construct a list of potential future contributors to various causes, for example). Access to the data, in this case, allows the firm to make money.

It is the example of the private firm that is the most tempting model for casual computer users. In this case, the argument is strongest that any file format of the user's (and firm's) choosing is permissible. One is even tempted to dismiss the question; "whose business is it," one would think, "how private parties store their data?"

The argument is not as strong as that, however. If some software is objectionable and if using some formats supports objectionable software, it may be wrong to use those formats and buy that software—even in private. One might worry that the public/private distinction breaks down for reasons like those given in

connection with the consumption of pornography, or recreational drugs.<sup>5</sup> For now, however, I shall set aside those considerations.

In the case of the government employee, it is clear that there are ethical considerations that weigh against encumbered, proprietary formats for information. A proprietary format is one that is under the control of a company or individual. It is encumbered to the extent that computer users face constraints when using it. If the government employee stores and transmits the information in a proprietary, encumbered format, the information is not freely available. Those who would use the information must satisfy the company that controls the format before they have access to it.

Satisfying the company that controls the format generally—and most obviously—involves paying the company money. It almost always—and less obviously—involves a licensing agreement between the individual and the company. Both of these components are relevant. If you send someone a document formatted for Microsoft Word 2007, you are not giving the recipient the document with no strings attached. You are insisting that to have reliable access to the document, the recipient must pay Microsoft and must give up certain rights as specified in Microsoft's licensing agreement. (I shall discuss reasons for thinking some licensing agreements are unacceptable in the next section; for now it suffices to observe that licensing agreements are burdens.)

A brief word about the distinction between a format's being proprietary and its being encumbered is in order. One might think that it is the encumbrances that matter; however, any proprietary format is subject to shifting encumbrances. Companies can provide different converters at different times, for different prices. Other companies can attempt to provide converters for the file formats of their competitors—with varying success. Indeed, a single company may have difficulty maintaining converters for its own formats. Thus it may be imprudent, at least, to store valuable data in a proprietary format—even in a private setting.

It would be a mistake to reason that because a format is unencumbered right now there are no ethical issues about using that format. Just because a company provides a viewer or a converter at the moment at no charge (for example), this is no guarantee that computer users will have access to the data in the future.

Governments have obligations to provide citizens with unfettered access to information. A government cannot satisfy such an obligation by providing the information with the proviso that any citizen who wants the information must pay off a corporation before getting it, and must agree to the corporation's licensing agreement.

The second example is closer to home. Faculty send information to each other frequently. Depending on whether the institution in question is public or private, some choices about file formats might resemble the case of the private firm, or they might resemble the case of the government employee.

Perhaps more vividly than in the case of the private firm, faculty collectively make decisions about what formats their institutions will use. Some faculty members have more power than others: untenured faculty may hesitate to complain that the chairs of their departments are implicitly pressuring them to pay off certain companies, and agree to the companies' licensing agreements.

In some cases, the collective nature of some decisions about computer software may blind the individual to the ethical significance of her choices. If the IT department provides everyone with a license for the “standard” office software, each individual may write off any concerns about file formats: “of course everyone has access to the information, because the IT department provides access.”

It is true that institutional decision making may in important ways preempt some individual choices. There is another debate at the level of institutional decision making about the wisdom of committing to proprietary software. As van Horn<sup>6</sup> puts a commonly heard sentiment, “I believe the time has come for school districts, which have institutional, volume licenses for Microsoft Office, to consider large-scale implementation of free OpenOffice.org and perhaps some other open-access software. Such a move could easily save districts hundreds of thousands of dollars” (551). That said, it would be a mistake to neglect the role of the individual—with regard to choices about file formats—in perpetuating the institutional inertia. If you send a Microsoft Word document instead of a plain text file, you are making it slightly harder for the IT department to change. You are helping to make it the case that your institution depends on Microsoft Word.

Also, again, there is a distinction between the money that changes hands between the IT department and the corporation providing the software, and the licensing agreement between the individual and the corporation. It is not enough to say that your colleague has free access to the information because the IT department paid the fee. There are other strings attached to the use of most computer software.

In addition to one’s colleagues, there is another group to be considered. Students communicate with faculty, as well. If you send documents in Microsoft Word’s latest format—and expect to receive such documents—you are attaching strings to the information and encouraging others to attach such strings. You are making a condition of having reliable access to the information your students’ having an ongoing relationship with Microsoft. This involves both their payments to Microsoft and their agreement to Microsoft’s licensing terms.

The model of the government employee makes the situation particularly vivid: bundling the information with the encumbered, proprietary format is gratuitous. If the information is supposed to be freely available, requiring a payoff to a third party to get access to the information is repugnant.

Once we appreciate the situation of the government employee, we can ask what justification we might have to impose such burdens on our students, or our fellow faculty members. In many cases, computer users do not take seriously these burdens. One complains that computers are unreliable, that it is sometimes difficult to open a document that one receives. One rarely stops to consider one’s own choices about formats—except in brief struggles to find something that works.

We do, however, put pressure on others when we choose our file formats. We apply pressure individually: you need such-and-such software to open this document. We also apply it collectively: everyone is using this program, and is keeping more or less current, so you must do so as well to open our documents.

A large part of the problem is that most computer users choose a format only in the sense of accepting the default format (which is proprietary and encumbered). What makes this choice gratuitous is that there are alternatives: either non-proprietary formats or at least less encumbered proprietary formats.

Perhaps we could offer a justification if the formats we choose institutionalize software that has been effectively vetted in a free, competitive market. This is not the case. There has been no serious commercial competitor to Microsoft Word since the early 1990s, and there has been no serious commercial competitor to Microsoft Excel for longer. Thus the “market” for some of the most commonly used software is like the “market” that establishes CEO pay.<sup>7</sup> The market for office software is worse, however: for an enormous swath of users, there is no comparison shopping—there is just the salient choice to use what everyone else uses, and to use the default formats.

The situation may be changing as institutions move away from proprietary formats. OpenOffice.org, in particular, has been gaining momentum as government agencies (mostly outside the US) take seriously an obligation to provide unfettered access to information.<sup>8</sup> This is not directly relevant to the decision facing the individual, though of course she might take seriously both the kinds of reasons entertained by the government agencies and the possibility of helping to change the direction of her own institution. But changing institutional policy is not the focus of this paper.<sup>9</sup> The choice before the individual is what software to use, and what formats to use.

I am constructing an argument about computer ethics for non-programmers. The first part of the argument turns on the fact that some computer software is designed to be exclusive: using that software, at least with its default settings, makes it difficult to use any other software to process that information. The default format for information storage and transmission, if the information is processed using typical software, is proprietary and encumbered. Sending information in proprietary and encumbered formats puts pressure on others to pay money to the companies that control the formats, and to acquiesce to the companies’ licensing terms. These are burdens. They are often imposed gratuitously. This is unethical—at least if done knowingly. But now you know.

For the computer programmer, the ethical question is whether it is permissible to use proprietary and encumbered formats to put pressure on people. For the non-programmer, the related ethical question is whether to participate, whether to choose the formats that coerce others into paying money and acquiescing to licensing terms. The ethics of our choices about what software to use and how we use it are intimately tied to the design of the software.

The second part of the argument, to which I now turn, has to do with the details of the licensing terms. I claimed that pressure to acquiesce to licensing terms is separable from the money one has to pay to obtain software. In providing software, the programmer determines the terms of the licensing agreement, if there is one. The decision about the terms raises ethical questions for the programmer. The decision to endorse them is your problem.



### 3. SOFTWARE LICENSES AND SURRENDERING RIGHTS

It is an odd fact about computer software that it comes with licensing terms, especially since almost no one reads the terms. As a condition of installing software, typical licensing terms require that users give up their rights to do things with their computers.

One might think that such requirements are justified: surely people writing computer programs have a right to protect themselves—from your making copies of the programs and selling them, for example. But those sorts of protections are already a part of the law. The license agreements that come with computer software typically, and crucially, demand that one not look too closely at what the computer software is doing. This is frequently a matter of banning “reverse engineering,” and increasingly commonly a matter of allowing the producer of the software to collect information about you.

Here is Apple’s “Consent to Use of Data” provision: “You agree that Apple and its subsidiaries may collect and use technical and related information, including but not limited to . . . Apple may use this information, as long as it is in a form that does not personally identify you, to improve our products or to provide services or technologies to you.”<sup>10</sup>

Apple claims a very broad right to collect information about you—if you use the software that is needed to make use of one of Apple’s music players. There would be at least some comfort if they offered clear restrictions on the ‘related’ relation, made clear the limits on what improvements and services and technologies are relevant, and explained what constitutes ‘use of information in a form that personally identifies someone’. And how would you know what sort of information Apple is collecting? Under the terms of the agreement, you cannot reverse-engineer the software (or have someone more computer-savvy do it for you) to find out.

I am sure that Microsoft’s license terms contain similar provisions. I can’t be absolutely certain, since Microsoft provides their license terms as an executable that requires Windows to run. The executable will unpack a document in PDF format—which could be read on many computers<sup>11</sup>—but Microsoft packages it as a program that requires Windows to run.

Apple, by the way, doesn’t even want you to reverse-engineer their licensing agreement: it is provided as a password protected PDF, and copying and pasting the text is forbidden.

You might not care about your rights; you might quickly click “I agree” with each update of the software on your computer. But there is an ethical question about making such demands. That is the issue for computer programmers: is it morally permissible to extract such concessions as are in typical licensing agreements as a condition of using software? Lest one dismiss this ethical issue with “*caveat emptor*,” note that very few computer users read the licensing agreements, the agreements are long and difficult to read, they are generally not available to the customer until after the transaction is complete, and many computer users are not of legal age. There is a case to be made that, under the circumstances, it is wrong even to offer such terms. How could one possibly suppose that one’s customers would make a rational choice to accept them?

Robinson<sup>12</sup> rejects the reasoning that sets aside some software licenses on the grounds that the transaction looks more like a sale than a licensing agreement. “[Some courts and commentators] insist that an end user license must be deemed to be a sale because it bears most of the characteristics a sale and consumers understand it to be a sale. This is very peculiar. One might say the same about a transfer of a fee simple in Blackacre subject to deed covenants restricting the use of the land, but it would be frivolous to argue that a buyer’s understandings about the normal incidents of a fee simple property interest trump the explicit deed restrictions” (1491). We should note that unlike the case of real estate transactions, consumers do not pay for computer software with their attorneys in tow; that it is an odd contract that one is only able to inspect after handing over one’s money; that the vast majority of stores will offer to *sell* you software, and will give you a *sales* receipt for the software.

If there is controversy over the enforceability of software licensing agreements, there is still a danger in supporting them. Some will argue that you can help to create precedent even while blissfully ignorant of what you are doing. Robinson continues: “Critics may despise the practice of [software] licensing, but it has persisted as a standard market practice for more than three decades. The persistence of a practice for such a long period suggests that there cannot be much divergence between consumer expectations and market norms” (1491). This line of reasoning is surprising, given how little attention consumers give the issue.<sup>13</sup> Still, some software licensing agreements have been enforced.<sup>14</sup>

Also note that the provisions about “reverse-engineering,” “decompiling,” and “disassembling” computer programs seek to make it as difficult as possible for competitors to offer products that have similar functionality. The obvious absurdity of such requirements in other domains should give us pause. Should you agree not to try to find out what ingredients are in the cookies you buy? Should you promise never to take apart your electric razor? Even if you have no personal interest in doing these things, endorsing such agreements supports a marketplace with extra barriers to entry and reduced competition<sup>15</sup> as well as artificial inefficiencies.<sup>16</sup> I doubt that typical computer users have an argument in favor of doing this, and there are obvious harms attached to doing it.

Your decision as a non-programmer is whether to endorse such agreements. Ought you to give up your right to find out what your computer software is doing? Ought you to allow the programmers of the software to collect information about you? Taking a step back, ought you to endorse such agreements without knowing precisely what is in them?

It is certainly the case that there are rights one ought not to give up. You ought not to agree not to speak at a faculty meeting to make it go by more quickly, if you have any reason to suppose that your voice might help your department to reason well. If there are some rights you ought not to agree to give up, you can hardly defend agreeing to give up rights without knowing exactly what they are.

As in the case of the choice of the file format, we generally make sacrifices with regard to licensing terms gratuitously. There are often alternatives to software with licensing terms that require us to give up rights.<sup>17</sup>



#### 4. LAZINESS IS NOT A GOOD REASON

One might be tempted to claim that any course other than muddling along with the status quo is impractical. "I must agree to the licensing terms, because I need the software; I use the default formats because they are most convenient; it is too costly to change." There is plenty of software that is less burdensome, however, both in terms of licensing and price. The main feature of the dominant software packages is precisely that they are the dominant software packages. And in choosing software with proprietary, encumbered formats and restrictive licenses, you are imposing costs on others. If you communicate with your students, some of the burdened parties are those to whom you have a special obligation. One cannot impose such burdens without a strong justification. "It is too costly to me" is almost certainly not good enough. "I am in the habit of not thinking about it" is right out.

#### Endnotes

This paper was presented at the annual meeting of the Association for Practical and Professional Ethics in March, 2010 and was awarded the Early Career Scholar Prize.

1. Frederick R. Chang, "Is Your Computer Secure?" *Science* 325.5940 (2009): 550–1.
  2. Seth F. Kreimer, "Technologies of Protest: Insurgent Social Movements and the First Amendment in the Era of the Internet," *University of Pennsylvania Law Review* 150.1 (2001): 119–71; Pamela Samuelson, "Anticircumvention Rules: Threat to Science," *Science* 293.5537 (2001): 2028–31.
  3. Guy Kewney, "Do We Need Computer Competence Tests?" *The Register* (2008). Retrieved from [http://www.theregister.co.uk/2008/01/21/computer\\_competence\\_tests/](http://www.theregister.co.uk/2008/01/21/computer_competence_tests/).
  4. Holly [M.] Smith, "Culpable Ignorance," *Philosophical Review* 92.4 (1983): 543–71.
  5. Nicola Lacey, "Theory into Practice? Pornography and the Public/Private Dichotomy," *Journal of Law and Society* 20.1 (1993): 93–113; Douglas N. Husak, "Recreational Drugs and Paternalism," *Law and Philosophy* 8.3 (1989): 353–81.
  6. Royal Van Horn, "The Other Office," *The Phi Delta Kappan* 88.7 (2007): 487–551.
  7. Paul G. Wilhelm, "Application of Distributive Justice Theory to the CEO Pay Problem: Recommendations for Reform," *Journal of Business Ethics* 12.6 (1993): 469–82.
  8. I thank an anonymous reviewer for raising this point. Cf. Laura DeNardis and Eric Tam, "Open Documents and Democracy: A Political Basis for Open Document Standards," *SV* (2007). Available at SSRN: <http://ssrn.com/abstract=1028073>.
  9. OpenOffice.org maintains a list of 'major deployments': [http://wiki.services.openoffice.org/wiki/Major\\_OpenOffice.org\\_Deployments](http://wiki.services.openoffice.org/wiki/Major_OpenOffice.org_Deployments).
- Institutional change comes slowly, in any case. American University has a web page that trumpets three categories of advantages of OpenOffice.org and that lists no disadvantages. (<http://www.american.edu/oit/software/Open-Office.cfm>) The 'related links' for the page include a page for faculty and staff to download Microsoft Office at no charge, since the university has negotiated the purchase of a license to cover all faculty and staff.
10. See <http://images.apple.com/legal/sla/docs/itunes.pdf>.
  11. A reviewer worries that the PDF format may be encumbered in the future, depending on the whims of the Adobe corporation. This issue is complicated by the fact that PDF comes in many versions. The original version of this document, for example, is a PDF

(version 1.4), and was created (and can be viewed) using ‘Free’ software that has nothing to do with Adobe. (‘Free’ software is software whose licensing terms guarantee its users certain freedoms; see Richard M. Stallman, *Free Software, Free Society: Selected Essays of Richard M. Stallman* [Boston, MA: GNU Press, 2002.]) So far as I know, PDF ceased to be proprietary or encumbered in any way when, in 2008, Adobe turned over the family of formats to an independent organization, the ISO: <http://www.iso.org/iso/pressrelease.htm?refid=Ref1141>. Thus Adobe may be ahead of others with regard to producing software to create and read PDFs with the newest features, but any other company or group of programmers has equal access to the standard.

12. Glen O. Robinson, “Personal Property Servitudes,” *The University of Chicago Law Review* 71.4 (2004): 1449–523.

13. newslite.tv reported that on April 1, 2010, an online game store added a provision to its terms and conditions such that its customers agreed to give up their immortal souls. According to the report, 88% of the customers—7,500 people—failed to check off a box that would have rejected the relevant clause and earned them a £5 gift certificate. (<http://newslite.tv/2010/04/06/7500-shoppers-unknowingly-sold.html>)

14. See Robinson, “Personal Property Servitudes,” 1476–7, fn.98.

15. Cf. Josh Lerner and Jean Tirole, “Some Simple Economics of Open Source,” *The Journal of Industrial Economics* 50.2 (2002): 197–234, §IV(ii).

16. Stefan Haefliger, Georg von Krogh, and Sebastian Spaeth, “Code Reuse in Open Source Software,” *Management Science* 54.1 (2008): 180–93.

17. Ira V. Heffan, “Copyleft: Licensing Collaborative Works in the Digital Age,” *Stanford Law Review* 49.6 (1997): 1487–521; Heidi S. Bond, “What’s so Great about Nothing? The GNU General Public License and the Zero-Price-Fixing Problem,” *Michigan Law Review* 104.3 (2005): 547–71.