PHIL 222
Philosophical Foundations of Computer Science
Week 12, Tuesday

Nov. 12, 2024

Ethics (1): Introduction (cont'd)

Philosophers' approach.

This is a question of computer ethics + applied ethics. How do we tackle such questions?

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Instead of the term "applied ethics" (which may suggest that applied ethics is to normative theory what applied math is to pure math), Darwall proposes "case ethics", like case law.

> Just as there is "case law," the findings of judges about the issues brought before them, including, crucially, the reasoning or *ratio* that led to their conclusions, so also is there case ethics: our considered judgments about specific ethical issues or cases along with the reasons or principled reflections that underlie our judgments.
>
> [pp. 17f.]

On the one hand, judgments on cases invoke normative theories:

> [W]e commit ourselves implicitly to some theory (or range of theories) whenever we give reasons to support our judgments.
>
> [p. 18]

On the other, the study of normative theory often invokes cases, too:

> [T]heories are often formulated and evaluated by reflecting on the ethically relevant features of cases. Thus some philosophers maintain that we can appreciate the general moral relevance of a distinction between killing and letting die (or, more generally yet, between causing evils and letting them happen) by reflecting on a specific case like Judith Thomson's famous "trolley problem," [. . .].
>
> [p. 17]

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Unlike, say, the property of yellowness, which might attach to something all by itself, as it were, ethical properties require, by their very nature, completion by further properties that are their reasons or grounds. If I judge a certain experience to be valuable, I must think it has aspects that make it good, features that are the grounds of its value. Or if I think that a certain action is morally required, I must think there are certain characteristics of the action and the situation that make it morally obligatory, features that are the grounds of its obligatoriness. And these thoughts commit me to the existence of background normative theories. I am committed to thinking there are truths that relate an experience's having certain properties to its value, such that any experience that had exactly those (and no other ethically relevant) properties would be valuable also, other things being equal. Or, similarly, I am committed to thinking there exists some valid moral principle that relates an action's having certain features to its being morally required. [p. 19]

This is why, e.g., when discussing software property rights — whether or how we should protect them — one typically needs to

i. identify what characterizes properties that should be protected by property rights, as well as figuring out principles behind property rights (why there are property rights, why we ought to protect them, etc.),
ii. judge whether software has these characteristics.

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ii. judge whether software has these characteristics.

In this chapter of the course, we discuss software property rights and laws currently protect them, but for the reason above we will also review two relevant normative theories:

a. utilitarianism,
b. a natural rights argument, by John Locke in particular.

Ethics (1):
Utilitarianism

Utilitarianism is a particular form of **consequentialism**.

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What is consequentialism? Darwall:

> Consequentialist moral theories start with a *non-moral value theory*: a normative theory of which states of the world (things that can happen) have intrinsic value, which have disvalue, and some account of how these values compare, [. . .].
>
> Consequentialist moral theories all agree that the moral rightness and wrongness of acts are determined by the non-moral goodness of *relevant consequences*. [. . .]
>
> All forms of consequentialism [. . .] understand moral evaluation to be an assessment of *instrumental* or *extrinsic* value at the most fundamental level. All are based on theories of the intrinsic, non-moral value of outcomes, and all assess the moral status of acts and character by determining which acts, social rules, or traits of character are the best instruments for promoting the most valuable states. [p. 27]

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On this issue, utilitarianism takes the following position:

> We might call *benefit consequentialism* the view that valuable states all concern the good or welfare of some [conscious] being or other, and that moral assessment must ultimately be based on this. [. . .] By and large, [. . .] benefit consequentialists have tended to hold that people are benefited or harmed, respectively, by what positively or negatively affects their mental lives, that is, to hold either *hedonistic* or *desire-based* forms of consequentialism.
>
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   We do not discuss these different takes. I will use the phrase "happy" to refer generically to what is valued in your favorite version of utilitarianism.

2. Another difference is due to . . .

> Second, consequentialist theories can also disagree by holding that consequences of different sorts are relevant to determining moral right and wrong. ***Act-consequentialism*** holds that whether a given act is right depends on the value of the consequences of *that act*, compared with the value of the consequences of any other act the agent could do in the circumstances. According to ***rule-consequentialism***, on the other hand, the rightness of acts depends on the consequences, not of the act, but of the social acceptance of a rule requiring, forbidding, or permitting the act, compared with the consequences of accepting other possible rules for that kind of case. If accepting a rule requiring an act of that kind would have the best consequences, then the act is morally required. And consequentialism can take other forms too. [p. 27]

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Therefore there are **act-utilitarianism** and **rule-utilitarianism**, too!

Ethics (1):
Locke's Labor Theory of Property

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- A **human right** is . . . . Again a lot of different views, e.g.,
  - It is a certain mixture of legal and natural rights.

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Political philosophy

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Locke is a **contractarian**: he claims that the government's authority comes from consent of the governed.

State of nature. Suppose we lived without government and *its* law.

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> Men living together according to reason, without a common superior on earth, with authority to judge between them, is properly the state of nature. [§19]

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Locke does not think that the state of nature is lawless: there must be **natural laws** and **natural rights**.

But though this be a state of liberty, yet it is not a state of licence: though man in that state have an uncontrollable liberty to dispose of his person or possessions, yet he has not liberty to destroy himself, or so much as any creature in his possession, but where some nobler use than its bare preservation calls for it. The state of nature has a law of nature to govern it, which obliges every one : and reason, which is that law, teaches all mankind, who will but consult it, that being all equal and independent, no one ought to harm another in his life, health, liberty, or possessions [. . .]. [W]hen his own preservation comes not in competition, ought he, as much as he can, to preserve the rest of mankind, and may not, unless it be to do justice to an offender, take away or impair the life, or what tends to the preservation of life, the liberty, health, limb, or goods of another. [§6]

And that all men may be restrained from invading others' rights, and from doing hurt to one another, and the law of nature be observed, which willeth the peace and preservation of all mankind, the execution of the law of nature is, in that state, put into every man's hands, whereby every one has a right to punish the transgressors of that law to such a degree as may hinder its violation: for the law of nature would, as all other laws that concern men in this world, be in vain, if there were nobody that in the state of nature had a power to execute that law, and thereby preserve the innocent, and restrain offenders. And if any one in the state of nature may punish another for any evil he has done, every one may do so: for in that state of perfect equality, where naturally there is no superiority or jurisdiction of one over another, what any may do in prosecution of that law every one must needs have a right to do.

[§7]

> "[I]n the state of nature every one has the executive power" of the law of nature [. . .]. [§13]

Locke's upshot regarding the government's political authority is that everyone would consent to cede this executive power to the government, because it would be a rational thing to do.

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> To this strange doctrine, viz. That "in the state of nature every one has the executive power" of the law of nature, I doubt not but it will be objected, that it is unreasonable for men to be judges in their own cases, that self-love will make men partial to themselves and their friends: and, on the other side, that ill-nature, passion, and revenge will carry them too far in punishing others; and hence nothing but confusion and disorder will follow: [. . .]. I easily grant, that civil government is the proper remedy for the inconveniencies of the state of nature, which must certainly be great, where men may be judges in their own case; [. . .]. [§13]

As a side note, Locke then also argues that some form of government, such as despotism, may have no authority — since if the despot is no less impartial than we would be in the state of nature, it would not be rational to cede our power to him.

> I shall desire those who make this objection to remember, that absolute monarchs are but men; and if government is to be the remedy of those evils, which necessarily follow from men's being judges in their own cases, and the state of nature is therefore not to be endured; I desire to know what kind of government that is, and how much better it is than the state of nature, where one man, commanding a multitude, has the liberty to be judge in his own case, and may do to all his subjects whatever he pleases, without the least liberty to any one to question or control those who execute his pleasure? [. . .] Much better it is in the state of nature, wherein men are not bound to submit to the unjust will of another [. . .]. [§13]

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> Whether we consider natural reason, which tells us, that men, being once born, have a right to their preservation, and consequently to meat and drink, and such other things as nature affords for their subsistence; or revelation, which gives us an account of those grants God made of the world to Adam, and to Noah, and his sons; it is very clear, that God, as king David says, Psal. cvx. 16, "has given the earth to the children of men;" given it to mankind in common. But this being supposed, it seems to some a very great difficulty how any one should ever come to have a property in any thing [. . .]. But I shall endeavour to show how men might come to have a property in several parts of that which God gave to mankind in common, and that without any express compact of all the commoners. [§25]

Though the earth, and all inferior creatures, be common to all men, yet every man has a property in his own person: this nobody has any right to but himself. The labour of his body, and the work of his hands, we may say, are properly his. Whatsoever then he removes out of the state that nature hath provided, and left it in, he hath mixed his labour with, and joined to it something that is his own, and thereby makes it his property. It being by him removed from the common state nature hath placed it in, it hath by this labour something annexed to it that excludes the common right of other men. For this labour being the unquestionable property of the labourer, no man but he can have a right to what that is once joined to, at least where there is enough, and as good, left in common for others. [§27]

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An object, which originally belongs to everyone, becomes my private property when I "mix my labour with" it, since my labor belongs solely to me.

Ethics (1):
Current Laws Concerning
Software Intellectual Property

Here we review what laws currently protect software ownership (in the U.S., primarily):

1. copyright,
2. trade secrecy,
3. patent.

Property rights in software have philosophical foundations in

1. utilitarianism,
2. natural rights arguments.

Copyright. 17 U.S. Code § 102:

(a) Copyright protection subsists, in accordance with this title, in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device. Works of authorship include the following categories: (1) literary works; (2) musical works, including any accompanying words; (3) dramatic works, including any accompanying music; (4) pantomimes and choreographic works; (5) pictorial, graphic, and sculptural works; (6) motion pictures and other audiovisual works; (7) sound recordings; and (8) architectural works.

(b) In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work.

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a. behavior (input-output relation),
b. algorithm,
c. source code,
d. object code (obtained by compiling the source code).

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Due to the idea/expression distinction, c and d are copyrightable (Apple v. Franklin), but a and b are not.

— But aren't a and b the most valuable components of software?

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- (a) behavior (input-output relation),
- (b) algorithm,
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Due to the idea/expression distinction, (c) and (d) are copyrightable (Apple v. Franklin), but (a) and (b) are not.

— But aren't (a) and (b) the most valuable components of software?

(In addition, infringement requires knowledge of a preexiting work; hence there is no infringement if someone creates something similar or identical independently with no such knowledge.)

Trade secrecy. Laws vary from jurisdiction to jurisdiction.

Johnson:

> To hold up in court, what is claimed as a trade secret typically must: (1) have novelty, (2) represent an economic investment to the claimant, (3) have involved some effort in development, and (4) the company must show that it made some effort to keep the information a secret. Software can meet these requirements. Many software companies try to keep their software secret by using nondisclosure clauses in contracts of employment and by means of licensing agreements with those who use their software.

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Selling or licensing software often requires that a lot of secret (codes, etc.) be revealed. Even Google's algorithm is now well studied.

Patents. The type called "utility patent" is (far more likely) applicable to software. 35 U.S. Code § 101 (Inventions patentable):

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

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There are conditions for patentability (e.g. 35 U.S. Code §§ 102, 103).

> The five primary requirements for patentability are: (1) patentable subject matter, (2) utility, (3) novelty, (4) nonobviousness, and (5) enablement. [`https://www.law.cornell.edu/wex/patent`]

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For software, (1) can pose essential difficulty in two ways. Johnson:

> In the patent system, abstract ideas, mathematical formulae, scientific principles, laws of nature, and mental processes cannot be patented.

The doctrine of “mental steps”:

> if the process could be carried out purely in one’s mind, the invention [is] not patentable.
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Remember what software / programs / algorithms can be.

i. “In the 1970s and 1980s, there was reluctance to grant patents on software or software-related inventions for fear that in granting patents on software, ownership of mental processes might, in effect, be granted. Each of the steps in an algorithm is an operation a person can, in principle at least, perform mentally.”

ii. “Granting a monopoly on the use of a software invention could lead to a monopoly on the use of a mathematical algorithm. This is explicitly prohibited in patent law as inappropriate subject matter. The problem is, what is a software invention if not an algorithm [. . .].”

Ethics (1):
Philosophical Foundations of
Software Intellectual Property

Utilitarianism. Patent laws are built primarily on utilitarian grounds.

Johnson:

> The goals of the patent system are to foster invention, promote disclosure of inventions, and assure that ideas already in the public domain remain there for free use. Achievement of these goals is, in turn, expected to improve the economy, increase employment, and make better lives for citizens.

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The debate over proprietary software (PS) and free and open source software (FOSS) typically concerns the utilitarianly best option.

PHIL 222
Philosophical Foundations of Computer Science
Week 12, Thursday

Nov. 14, 2024

Ethics (1):
Locke's Labor Theory of Property
(cont'd)

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Locke's upshot regarding the government's political authority is that everyone would consent to cede this executive power to the government, because it would be a rational thing to do.

> To this strange doctrine, viz. That "in the state of nature every one has the executive power" of the law of nature, I doubt not but it will be objected, that it is unreasonable for men to be judges in their own cases, that self-love will make men partial to themselves and their friends: and, on the other side, that ill-nature, passion, and revenge will carry them too far in punishing others; and hence nothing but confusion and disorder will follow: [. . .]. I easily grant, that civil government is the proper remedy for the inconveniencies of the state of nature, which must certainly be great, where men may be judges in their own case; [. . .]. [§13]

As a side note, Locke then also argues that some form of government, such as despotism, may have no authority — since if the despot is no less impartial than we would be in the state of nature, it would not be rational to cede our power to him.

> I shall desire those who make this objection to remember, that absolute monarchs are but men; and if government is to be the remedy of those evils, which necessarily follow from men's being judges in their own cases, and the state of nature is therefore not to be endured; I desire to know what kind of government that is, and how much better it is than the state of nature, where one man, commanding a multitude, has the liberty to be judge in his own case, and may do to all his subjects whatever he pleases, without the least liberty to any one to question or control those who execute his pleasure? [. . .] Much better it is in the state of nature, wherein men are not bound to submit to the unjust will of another [. . .]. [§13]

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> Whether we consider natural reason, which tells us, that men, being once born, have a right to their preservation, and consequently to meat and drink, and such other things as nature affords for their subsistence; or revelation, which gives us an account of those grants God made of the world to Adam, and to Noah, and his sons; it is very clear, that God, as king David says, Psal. cvx. 16, "has given the earth to the children of men;" given it to mankind in common. But this being supposed, it seems to some a very great difficulty how any one should ever come to have a property in any thing [. . .]. But I shall endeavour to show how men might come to have a property in several parts of that which God gave to mankind in common, and that without any express compact of all the commoners. [§25]

Though the earth, and all inferior creatures, be common to all men, yet every man has a property in his own person: this nobody has any right to but himself. The labour of his body, and the work of his hands, we may say, are properly his. Whatsoever then he removes out of the state that nature hath provided, and left it in, he hath mixed his labour with, and joined to it something that is his own, and thereby makes it his property. It being by him removed from the common state nature hath placed it in, it hath by this labour something annexed to it that excludes the common right of other men. For this labour being the unquestionable property of the labourer, no man but he can have a right to what that is once joined to, at least where there is enough, and as good, left in common for others. [§27]

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An object, which originally belongs to everyone, becomes my private property when I "mix my labour with" it, since my labor belongs solely to me.

Ethics (1):
Current Laws Concerning
Software Intellectual Property

Here we review what laws currently protect software ownership (in the U.S., primarily):

1. copyright,
2. trade secrecy,
3. patent.

Property rights in software have philosophical foundations in

1. utilitarianism,
2. natural rights arguments.

Copyright. 17 U.S. Code § 102:

(a) Copyright protection subsists, in accordance with this title, in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device. Works of authorship include the following categories: (1) literary works; (2) musical works, including any accompanying words; (3) dramatic works, including any accompanying music; (4) pantomimes and choreographic works; (5) pictorial, graphic, and sculptural works; (6) motion pictures and other audiovisual works; (7) sound recordings; and (8) architectural works.

(b) In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work.

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a. behavior (input-output relation),
b. algorithm,
c. source code,
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(In addition, infringement requires knowledge of a preexiting work; hence there is no infringement if someone creates something similar or identical independently with no such knowledge.)

Trade secrecy. Laws vary from jurisdiction to jurisdiction.

Johnson:

> To hold up in court, what is claimed as a trade secret typically must: (1) have novelty, (2) represent an economic investment to the claimant, (3) have involved some effort in development, and (4) the company must show that it made some effort to keep the information a secret. Software can meet these requirements. Many software companies try to keep their software secret by using nondisclosure clauses in contracts of employment and by means of licensing agreements with those who use their software.

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Selling or licensing software often requires that a lot of secret (codes, etc.) be revealed. Even Google's algorithm is now well studied.

Patents. The type called "utility patent" is (far more likely) applicable to software. 35 U.S. Code § 101 (Inventions patentable):

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

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There are conditions for patentability (e.g. 35 U.S. Code §§ 102, 103).

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For software, (1) can pose essential difficulty in two ways. Johnson:

> In the patent system, abstract ideas, mathematical formulae, scientific principles, laws of nature, and mental processes cannot be patented.

The doctrine of “mental steps”:

> if the process could be carried out purely in one’s mind, the invention [is] not patentable.
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Remember what software / programs / algorithms can be.

i. “In the 1970s and 1980s, there was reluctance to grant patents on software or software-related inventions for fear that in granting patents on software, ownership of mental processes might, in effect, be granted. Each of the steps in an algorithm is an operation a person can, in principle at least, perform mentally.”

ii. “Granting a monopoly on the use of a software invention could lead to a monopoly on the use of a mathematical algorithm. This is explicitly prohibited in patent law as inappropriate subject matter. The problem is, what is a software invention if not an algorithm [. . .].”

Ethics (1):
Philosophical Foundations of
Software Intellectual Property

Utilitarianism. Patent laws are built primarily on utilitarian grounds.

Johnson:

> The goals of the patent system are to foster invention, promote disclosure of inventions, and assure that ideas already in the public domain remain there for free use. Achievement of these goals is, in turn, expected to improve the economy, increase employment, and make better lives for citizens.

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The debate over proprietary software (PS) and free and open source software (FOSS) typically concerns the utilitarianly best option.

Natural rights theories. Legal rights and natural rights are different kinds of rights. Therefore, independently of what current laws say, there are

I. A natural rights argument in favor of software ownership.

II. Against the natural rights argument.
   i. Against Locke's labor theory of property in general.
   ii. Against its application to intellectual property in particular.

III. A natural rights argument against software ownership.

I. *A natural rights argument in favor of software ownership.*

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(Does a really imply b? For instance, we need to make sure that being a physical object is not an essential feature of the property in a.)

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Robert Nozick, *Anarchy, State, and Utopia* (1974):

> Why does mixing one's labor with something make one the owner of it? [. . .] why isn't mixing what I own with what I don't own a way of losing what I own rather than a way of gaining what I don't? If I own a can of tomato juice and spill it in the sea so that its molecules (made radioactive, so I can check this) mingle evenly throughout the sea, do I thereby come to own the sea, or have I foolishly dissipated my tomato juice?

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We may indeed be able to look at FOSS in the light of this example.

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Therefore what you want to be protected is not quite your right to use the result of your work, but rather your right to control others' use for economic gain. The right of the latter sort, the counterargument goes, does not come from the principle a.

- *A natural rights argument against software ownership.*

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Johnson revisits the doctrine of "mental steps":

> Nevertheless, these operations are in principle capable of being performed mentally by a person. Thus, they thought there was the possibility that ownership of programs could lead to interference with freedom of thought. Of course, patents wouldn't be granted with that possibility in mind, but down the road those who were granted patents on programs might, through a series of court cases, effectively acquire a monopoly on mental operations. So the argument went.
>
> This concern — that granting ownership to programs might interfere with freedom of thought — could be understood to be a natural rights argument against ownership of software. Individuals, the argument would go, have a natural right to freedom of thought.