Author's Commentary on "From Fundamental Physics to the Private Sector"

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This case shows that ethical issues arise even when none of the parties involved commit obvious ethical violations.

It might be tempting to confine the study of ethics to situations in which one or more of the parties involved has committed some obvious violation of ethical principles. Once this stance is taken, many make secondary the study of ethics on the grounds that "the people I deal with on an everyday basis are reasonably ethical." This case reminds us that the study of ethics is important nevertheless, and should always be at the forefront of our thought process.

In this case, Huge and Ivy are confronted with ethical dilemmas even though both parties have operated in a manner that, at least at first glance, seems ethical. After all, both parties want to see the new MRI technique succeed, and neither party is hindering the progress of the other. This case also reinforces the fact that ethics plays an important role in fundamental science, despite the fact that its experiments are rarely conceived with a practical application in mind. Furthermore, it may remind

us that the study of ethics doesn't always ask us to choose between a '"right" and "wrong" answer. This fact can be troubling to some scientists, and it is worth discussion.

It is also instructive to note that this case never focuses on one individual. Often our case studies revolve around interactions between individuals, which can lull us into believing that these are the only ethical situations that we need to look out for. One might argue that behaving ethically does not just involve doing what is right for one's own situation, but also involves understanding how ethical decisions are dealt with between groups.

We must be willing to approach ethics with forethought. It is not sufficient to just wait for a situation to present itself and then "behave ethically." Ethical behavior must involve understanding (or at the bare minimum, attempting to understand) what ethical decisions might lie ahead. In the end, the reader may note that the downfall of the parties involved in this case is not that they took an unethical step along the way, but rather that they failed to consider the ethics of their research before they began.

Question 1

The first topic this question is likely to raise is how a moral obligation to society differs from what is legally right (i.e., patent law). Too often, the two are deemed to be identical. Although one could argue that both parties have a moral obligation to society to mass produce the new technique, one cannot argue that the most efficient manner for either party to do so would necessarily be legal. Furthermore, this question is a good way to get students to think about the ultimate purpose of science. Is the ultimate goal of science to search for truth, to better society or to do something else? What do you do when the search for truth conflicts with bettering society?

Question 2

One interesting way to approach this question might be to ask. "Why do we call the funding we get for experiments 'grants'?" The word "grant" carries a connotation of

"free money"; however, most would argue that grant recipients have some sort of responsibility to the entity that funded the research. At the vary least, scientists have the obligation to show that the money was spent wisely. If they fail to do so, they will not receive any more grants and will no longer be able to practice science.

Question 3

This is an especially interesting topic for scientists whose livelihoods depend on ideas that do not or have yet to bear practical applications. Many scientists' careers are based on developing abstract, entirely theoretical notions. Occasionally, these abstract theories will yield an application (either directly or indirectly) that is highly profitable. Some examples include the CD player, the internet and quantum computing. This question asks the reader how to maximize public gain from scientific applications without squashing a valuable reservoir of talent that could produce new, applicable science.

Question 4

This question requires readers to look beyond the ethical questions presented to them and instead examine how their choices place others in a situation where there is an ethical decision to be made. In other words, is it good enough to behave in a way that passes the ethical decision on to another party?

Question 5

This question asks readers to weigh the pursuit of truth, utilitarianism and patent law all at once. This discussion can be especially rich because many, if not most, of the ethical decisions that we must make require deciding between choices, all of which have good intentions. It is important to remember that the study of ethics is not only important when trying to decide between right and wrong, but also when deciding between two "right" options.

Question 6

At this point, the reader may ask about the four universities that did not emerge as players in this case study. After all, at least six universities contributed to the pool of basic science research that Huge and Ivy applied to new MRI techniques. What do Technological University, Private University, Popular University and Selective University deserve?