

Patenting Life

The inventiveness of the human spirit knows few limitations, but the patentability of its inventions is carefully regulated by certain key provisions of patent law. Any "process, machine, manufacture, or composition of matter" awarded a patent must be useful for some purpose and must be a genuine, non-obvious innovation. It must be truly human-made and not a "law of nature" or a "product of nature." In addition, the invention must lend itself to a precise, written description. Within these confines, patents have been awarded to millions of innovations, ranging from the neutrino reactor to purified vitamin B-12. But in the last few years controversy has arisen over whether patent protections should extend to tinkerers who create, not a new gadget, but a new form of life.

The question of whether existing statutes do allow at least some life forms to be patented was settled in 1980, when the Supreme Court upheld a patent awarded to geneticist Ananda Chakrabarty for a new strain of bacteria particularly suited for cleaning up oil spills. The Court ruled that Chakrabarty's discovery "is not nature's handiwork, but his own. . . the relevant distinction [is] not between living and inanimate things, but between products of nature, whether living or not, and human-made inventions." In a similar case, *In re Bergy*, a lower court was even blunter: "the fact that microorganisms . . . are alive is a distinction without legal significance." The Chakrabarty decision, however, was a narrow ruling based on arguments about Congress's intent in drafting the relevant legal provisions. The question remains open: should current law be amended to bar the patenting of life?

Opposition to patenting life forms can arise from two distinct objections to it (among others). One is that even the lowliest of life forms has a dignity that should render it unpatentable. The second is that patenting lower life forms will lead to far more serious tampering with the workings of nature, which we would do well to resist while we can.

The Sacredness of Life

Activist Ted Howard, coauthor with Jeremy Rifkin of *Who Should Play God?*, inveighs against the Bergy decision for its denial that life has any sacred status. He charges that the court, in calling a living microorganism "a useful industrial tool," in essence pronounced that "life does not have to be treated as life at all." The claim seems to be that life itself, even at its lowliest, is invested with a sanctity that the patent process defiles.

What does this claim amount to? Certainly whatever sacredness is ascribed to life has to be squared with the fact that human beings are permitted to own all manner of in-

dividual (nonhuman) living things — and even to kill most of them, as wantonly as we please. With every step we take legions of microorganisms perish, and we are not judged the worse for it.

At issue here, however, are not individual creatures, but whole species. Does this make matters better or worse for the defender of life's sanctity? Philosopher Bryan Norton cautions that it is very difficult to argue that species as such have any intrinsic moral worth, since most moral systems are based, at bottom, on respect for the rights and interests of *individuals*: "to apply the concepts of rights and interests to species as collectives radically alters their very logic." Yet we do reserve special moral condemnation for genocide, the deliberate extermination of a *group*, as a worse evil than the random killing of the same number of isolated individuals. And we do have policies aimed at preserving species. So there may be some special worth attaching to a life form that is not possessed by its individual members.

But wherein does the sacredness of life reside? Just how sacred is some all but invisible strain of slime? What is there about the sheer fact of being alive that matters so much? It is hard enough, some argue, to draw a line between living and nonliving, let alone to claim that the line, once drawn, is of any momentous moral concern. Thus an amicus brief filed by the University of California at Berkeley in *Bergy* asserts: "Recognition of the difficulty that skilled scientists are experiencing in drawing a bright line between life and its absence effectively destroys the argument that life itself is not only *the essential characteristic of any living being* . . . but *the one which* . . . precludes patentability." On this view, it would have to be some other, further characteristic that makes the real difference, such as being able to feel, or suffer, or care, or reason. But these characteristics are absent from lower life forms.

Others, however, see respect for lower life forms as respect for our own distant ancestors in a great, unbroken chain of life — theirs is the vital spark passed on to us through eons of evolution. Leon Kass, writing in *Commentary*, suggests that "reacquiring a respect for our relatives, the ever-changing living forms, could regain for us a much needed recognition and appreciation of the natural and unchanging source of all change."

At this point one might ask: is disrespect for life shown by taking out patents on new life forms, or does the real disrespect lie in performing the research that leads to their creation in the first place? The research itself is where we "play God"; the ensuing patent may seem so much frosting on the cake. But Douglas MacLean, director of the Center for Philosophy and Public Policy, points out that respect for sacred values is exhibited in a variety of social-

ly acknowledged ways. We show respect for the sanctity of human life, for example, by "forming conventions and ritualizing certain behavior and activities to transcend . . . the necessity of using and exploiting one another." These may take the form of taboos: collective societal decisions that there are some things we will not do. Refusing to patent life forms as so many more "industrial tools" may, then, be one way of expressing our respect for the value inherent in all of life. But it remains to be shown that prohibiting patents does in fact have this kind of social meaning.

After Microorganisms, the Deluge

A second group of objections is motivated by fear of what the patenting of lower life forms will bring in its wake. The possible adverse consequences cited are of two kinds: the nightmarish shift in our values and attitudes that might result one day in granting patents to the creators of genetically altered human beings; and the massive evolutionary disruption that might be wreaked once human beings dabble too far in God-playing.

In the dispute over patenting life, the question is repeatedly raised: if lower life forms are patentable, where will we draw the line? What meaningful distinction can be made to avoid extending the same patentability to higher forms of life? However, meaningful distinctions do not seem hard to come by, even if present law offers no grounds for making them. (As a matter of fact, the difference in complexity alone between microorganisms and higher animals makes it very unlikely that the latter will ever be capable of the "full, clear, concise, and exact" description currently required in a patent application.) If we believe that there is nothing in itself troubling about patenting microorganisms, but there is something in itself troubling about patenting species of higher animals, or ultimately human beings, we can point to whatever differences lead us to give a different answer in the two cases: differences such as sentience, consciousness, social relationships, reason. It may be difficult to pinpoint any precise break in the life continuum where we feel confident that all and only species to one side of that line deserve special protection. But that it is difficult to draw a precise line does not mean that it is impossible to make some rough, but workable, distinctions.

It is harder to answer the question: where can we draw the line to make sure that our genetic meddling doesn't have far-reaching and disastrous consequences? Jonathan Glover, Fellow in philosophy at New College, Oxford, thinks that this is the real worry behind the otherwise obscure charge that geneticists who create new life forms are "playing God." For if the prohibition on playing God "tells us not to interfere with natural selection at all, this rules out medicine, and most other environmental and social changes. [But] what makes [genetic engineering,] and not the others, objectionably God-like?" One answer may be, Glover suggests, that genetic changes may be both more drastic and less reversible than environmental ones, and we object to "a particular group of people, necessarily fallible and limited, taking decisions so important to our future."

Granted that fears of irreversible tinkering in the evolutionary process are valid ones, in what way are they addressed by a decision to place new limits on the patentable? The Supreme Court in *Chakrabarty* acknowledged the possible dangers of genetic research, but decided that "the grant or denial of patents on microorganisms is not likely to put an end to genetic research. . . . Legislative or judicial fiat as to patentability will not deter the scientific mind from probing into the unknown any more than Canute could command the tides." Kass agrees: "denial of individual patent applications seems a poor way for society to decide questions about allegedly dangerous research and technology. . . . As they are instruments for encouraging innovation, they are poorly designed for regulating or controlling it."

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How, then, should the pace and direction of technological change be regulated and controlled? Threats to health and safety posed by new technologies can be dealt with by the sorts of regulations promulgated by agencies like the Food and Drug Administration and the Nuclear Regulatory Commission. But Kass argues that this focus on health and safety unduly constricts the full measure of our concern: "We have few means of assessing and regulating with regard to the massive consequences of new technologies to our mores, institutions, and ways of life." MacLean adds: "Our regulatory agencies are designed to protect the public from the harmful consequences of technological failure. With genetic engineering, our deepest fears seem to be directed toward the consequences of technological success. We are concerned about the ultimate ramifications of increased knowledge, and its applications. Neither our current regulatory laws nor the agencies that enforce them seem well equipped to address these social issues."

Patent law in any form is certainly inadequate to acknowledge these deeper concerns. Our challenge is to design institutional mechanisms that will allow us to express our respect for whatever it is we take to be sacred about all life and to control the growth and direction of new technology in a way that will allow human life to flourish to its fullest.

Sources quoted in this article are: Ted Howard, "Patenting Life: A Major Corporate Breakthrough toward Genetic Engineering," *The Progressive*, vol. 43, no. 9 (September 1979); Bryan G. Norton, *The Spice of Life: Why Preserve Natural Variety?* (forthcoming); Leon Kass, "Patenting Life," *Commentary*, vol. 72, no. 6 (December 1981); Douglas MacLean, "Social Values and the Distribution of Risk," in MacLean, ed., *Values at Risk, Maryland Studies in Public Philosophy* (Totowa, N.J.: Rowman and Allanheld, 1985); Jonathan Glover, *What Sort of People Should There Be?* (Harmondsworth, England: Penguin Books, 1984); and court cases *In re Bergy* 563 F.2d 1031 (1977) and *Diamond v. Chakrabarty* 100 S. Ct. 2204 (1980).