ing our attention back to what the ratings are—peers' judgments of the quality of the department's faculty based largely on scholarly publications. They say little or nothing about the quality of instruction, the degree of civility or humaneness, the degree to which scholarly excitement is nurtured by student-faculty interactions, and so on. In brief, the peer ratings are not ratings of overall doctoral program quality but, rather, ratings of the faculty employed in those programs, reflecting primarily their research records. No claim has ever been made that the ratings are more than this, but they have often been interpreted as being more by those who used them.

Summary

Peer ratings of the quality of doctoral program faculties were obtained in a 1975 national survey of chemistry, history, and psychology programs. The ratings were then compared to those obtained 6 and 11 years earlier by the American Council on Education. In general, the rankings obtained from the ratings proved to be highly stable over the 11-year period, particularly in chemistry and history.

Some ratings were also obtained for subspecialties within the three disciplines. Though it is clear that variations in quality among subspecialty faculties do exist and are important for individual program evaluations, it is unlikely that such subspecialty ratings would be feasible or useful in national surveys of the reputations of doctoral programs.

The ratings were found to be highly related to a number of research-oriented variables of departments (such as size, productivity, percentage of alumni holding academic positions at Ph.D.-granting universities), but unrelated or very weakly related to such features as the student-reported quality of teaching and degree of faculty concern for students, or faculty-reported degree of departmental effort toward the career development of junior members of the faculty.

References and Notes

1. A. M. Cartter, *An Assessment of Quality in Graduate Education* (American Council on Education, Washington, D.C., 1966).
2. K. D. Roose and C. J. Andersen, *A Rating of Graduate Programs* (American Council on Education, Washington, D.C., 1970).
3. C. F. Elton and S. A. Rodgers, *Science* **174**, 565 (1971).
4. W. O. Hagstrom, *Sociol. Educ.* **44**, 375 (1971).
5. D. D. Knudsen and T. R. Vaughan, *Am. Sociol.* **4**, 12 (1969); L. S. Lewis, *ibid.* **3**, 129 (1968).
6. J. M. Beyer and R. Snipper, *Sociol. Educ.* **47**, 541 (1974).
7. M. J. Clark *et al.*, *Assessing Dimensions of Quality in Doctoral Education: A Technical Report of a National Study in Three Fields* (Educational Testing Service, Princeton, N.J., 1976).
8. D. W. Breneman, paper presented at the 59th annual meeting of the American Council on Education, New Orleans, La., 1976.
9. The mean ratings in 1965 and 1969 of the departments that participated in the 1975 study were converted into rankings. We thank the American Council on Education for providing us with the necessary data.

10. This research was supported in part by NSF grant GY-11305 to the Council of Graduate Schools in the United States. The preparation of this article was supported in part by a grant to the council from the Fund for the Improvement of Postsecondary Education.

NEWS AND COMMENT

Scientists Dispute Book's Claim That Human Clone Has Been Born

On Friday, 3 March, the New York *Post* proclaimed the news in one and a half inch type across the front page: "BABY BORN WITHOUT A MOTHER, HE'S THE FIRST HUMAN CLONE." Thus the *Post* reported the forthcoming publication of a book by an author named David Rorvik who claims that a baby boy born some 14 months ago is a clone—an exact genetic copy—of his millionaire "father." It was a sensational birth announcement.

Although the *Post*'s page one story was not the first news account of the controversial book that many scientists already have denounced as a probable hoax, it did catapult *In His Image, The Cloning of a Man* to national attention. David Rorvik and the alleged baby clone were reported coast to coast on the Friday evening news, though neither author nor clone was available to cameramen.

The next morning, the story appeared in the *New York Times*, a.k.a. the "old gray lady," where it was discreetly placed on page 19 under a gray headline that said, "Scientists Skeptical About Book On Baby Created in Laboratory." By now, it has been in nearly every paper in the country.

And always the question is the same: Could it possibly be true? More than a dozen knowledgeable researchers queried by *Science* say "No," although most agree that human cloning is theoretically possible. Rorvik, in hiding but speaking through his publisher— J. B. Lippincott Company—says, in effect, that he won't tell and asks us just to take his word for it. In a formal statement Lippincott acknowledges that corroborating evidence of Rorvik's astonishing claim will be withheld indefinitely. "To protect the child from harmful publicity and other participants from certain controversy, Rorvik refuses to divulge names or places even to his publisher," it said in the statement that leaves the company just a bit shy of fully supporting its man. "David Rorvik assures Lippincott that it [the story] is true. Lippincott does not know."

In His Image was originally scheduled for publication in June, but Lippincott will start the presses early. The book will be out on the 31st of March, at which time Rorvik is expected to emerge from seclusion to begin a "national author tour."

From what *Science* has been able to learn, the gist of *In His Image* is this: Sometime in 1973, Rorvik was approached by a West Coast millionaire in his sixties who wanted to leave posterity a clone of himself. The man was prepared to spend millions. He asked Rorvik to find the scientists who would be willing to give it a try. ("My decision to recruit the medical talent required to clone a human being came after a long period of soul-searching," Rorvik informed the public in a recent statement released through his publisher.*) The alleged cloning took place somewhere outside of the United States in a land "beyond Hawaii," where, according to persons who have seen the manuscript, all experimentation leading up to the successful clone was done with human cells. In order to accomplish its mission, the cloning team would need three things: a large supply of human ova, donor cells from the millionaire to serve as the vehicle of cloning, and a surrogate mother ready to carry the clone to term. It is said that ova were collected from women who, in the belief that they were helping infertile women bear children, submitted to a minor surgical procedure

*Thus far, Rorvik has refused to speak to the press but on 7 March he issued a statement through Lippincott, his publisher. Quotes attributed to Rorvik are taken from that statement.

0036-8075/78/0324-1314$00.75/0

to extract eggs via a thin cannula inserted into the uterus through the navel. Then, by an undisclosed means, the nucleus of each tiny, fragile human egg was removed, to be replaced by a process of cell fusion with the nucleus of a cell—possibly a testicular cell—from the millionaire "father," code-name—"Max." (Technically, Max would be the child's twin, separated in time, not its father.) Rorvik claims that the cloning was successful, that an egg began to divide and grow until it was large enough (at least 64 cells) to be implanted in the uterus of the surrogate mother, who is called "Sparrow." (Rorvik named the doctor on the cloning team "Darwin.") The birth reportedly took place in December 1976. Max, Sparrow, and the cloned baby are said to be together, and Rorvik reports, "I have seen the child since his birth. He is alive, healthy, and loved today." (If millionaire and child exist, their genetic identity could well be proved by available tests that number more than 50.)

If *In His Image* were being published as fiction, or even as "docu-drama" which is currently in vogue, it probably would not have stirred such interest. But it is being published as unverifiable truth; as such, it raises a number of serious questions. Why, for instance, would Lippincott, an old-line, conservative house with a solid reputation in the medical book and journal business, risk its reputation with what could well be a hoax? Other houses previously had said "No." Simon & Schuster, among those to turn it down, went so far as to explain that the editorial board rejected it ". . . because the writer did not offer, and would not present or promise, documentation of his assertions." *Newsweek* refused serial rights on the same grounds. But Lippincott decided to go ahead because "The book he [Rorvik] proposed to write would inevitably arouse much controversy, but would explore scientific, social, moral and religious issues of great import. We believed he would treat these issues in a revealing, responsible manner," Lippincott senior vice-president Edward L. Burlingame said in a statement. According to the publisher, "*In His Image* is being published as nonfiction on the strength of Mr. Rorvik's credentials."

Which leads one to ask, Who is David Rorvik? A native of Montana, he graduated from the University of Montana in 1966 and went on to get a master's degree from the Columbia University School of Journalism. He worked for a couple of years in the 1960's as a medical reporter for *Time* and then turned to free-lance writing. He is the author of *Brave New Baby*, a discussion of the perils of what is loosely called "genetic engineering," and coauthor with Landrum B. Shettles of *Your Baby's Sex: Now You Can Choose*, a book about Shettles' highly disputed theory that the sex of a baby can be predetermined by the timing of intercourse. Other Rorvik pieces on the "genetic engineering" theme include "The Embryo Sweepstakes," published in the *New York Times* [Sunday] *Magazine* of 15 September 1974, a serious article about the scientific possibilities and ethical considerations that surround laboratory manipulation of reproduction. "The winner [of the embryo sweepstakes]," Rorvik predicted, "will be a brave new baby conceived in a test-tube and then planted in a womb."

In 1975, Rorvik was awarded a journalism fellowship by the Alicia Patterson Foundation to investigate the politics of cancer research. He focused on laetrile. An individual at the Patterson Foundation called Rorvik a "crusader," but a "very meticulous" writer.

Whether his credentials will turn out to be strong enough to justify Lippincott's faith that he is telling the truth about the first human clone remains to be seen, but early indications are that, if money is what publisher and author are after, they will be rewarded. The Literary Guild will offer *In His Image* as an alternative selection, and paperback rights are expected to go for at least a quarter of a million dollars.

Although *In His Image* may prove to be a money-maker for Lippincott there is

Lippincott's ad as it appeared in Publishers Weekly, *13 February.*

real concern within the scientific community that the book and its publicity could prove harmful to serious research in mammalian and human genetics.

The furor over the alleged baby clone has brought to public attention a good deal of research that is neither directly related to cloning nor conducted by scientists who sanction human cloning in any way, but which is cited as evidence that, scattered across the scientific landscape, all of the techniques necessary to clone a human being already exist. Rorvik says all that has been missing is the will to bring the techniques together. "Certainly you cannot do what you *do not try to do*," he says.

But the scientific community has said what it thinks about Rorvik's claim. Simply put, no one believes it. A number of reasons for disbelief have been advanced, some more plausible than others. Among those that fall into the "not very persuasive" column are suggestions that it can't be true because (i) the scientists involved surely would want to publish and (ii) no one working in any related field has heard anything about it. Surely word would get out. Such reasons ignore the imaginative if bizarre premise of the plot: a vain, aging bachelor with millions, an unorthodox medical team with something other than tenure or election to the National Academy of Sciences on its mind, an exotic experiment being conducted in some faraway land.

However, when one looks at the state of the art in cloning and other areas of cellular and molecular genetics, and at Rorvik's own prepublication hints about the science, the basis for skepticism grows. Start with cloning, the removal of a nucleus from an egg or germ cell and its replacement with the nucleus from a body cell. Ever since frogs were successfully cloned in the early 1960s, it has been mistakenly thought that cloning frogs is no trick at all. However, workers in the field have told *Science* that there is a good deal of misapprehension about what can and cannot be done. For example, most successful cloning occurs when an immature, not fully differentiated frog cell nucleus is implanted in an enucleated frog egg. There are only a couple of claims that an *adult* nucleus has been used successfully to clone an adult frog and these are the subject of some dispute.

When it comes to cloning mammals, reports are that it's never been done, though not for lack of trying. Geneticists and cell biologists interested in differentiation are working hard to clone a mouse. So, scientists who are used to taking things in logical progression, from frog to mouse to man, are not ready to accept the unsubstantiated claim that someone has made the leap from tadpole to human baby.

In response to an unending stream of skepticism in which he has been labeled everything from a "fraud" to a "jackass" in print, Rorvik put out a statement addressing the science of his claim but his statement has not done much to convince scientists that he has a case. Alleging that "A refinement of existing cell-fusion techniques was used in the first successful cloning of a man," Rorvik cites by name a number of investigators whose work, he says, "can, with various alterations, be productively applied to the cloning task." He lists nine investigators whose papers he thinks apply.

Science was unable to contact each of them before this article went to press but did speak with some, among them Beatrice Mintz, a developmental biologist at the Institute for Cancer Research in Philadelphia. Mintz, who has done pioneering work in mouse genetics but who was not delighted to be gratuitously associated with Rorvik's book, which she, like most of her colleagues in science, presumes to be a hoax. More to the point, she notes that Rorvik's citing of her work is a sign of his "limited knowledge" of the cell fusion field.

Rorvik, in his statement, also names and quotes scientists who have predicted human cloning, offering their past views to support his own declaration that "I take strong issue with those who assert that human cloning is still out of scientific reach." Among those named are Nobel laureate James Watson, Kurt Hirschhorn of Mt. Sinai Medical School in New York, and Bernard Davis of Harvard. Not one of them believes Rorvik's claim. Furthermore, their past writings on the subject of cloning were a call for public discussion of a complex issue, not endorsements of cloning.

Almost no one seriously thinks that experimentation in human cloning is taking place in this country but the current controversy has inspired three scientists and a public interest group to file a lawsuit to find out just what possibly related research is going on. Jonathan Beckwith of Harvard, Ethan Signer of MIT, Lieb Cavalieri of Sloan-Kettering, and the Peoples Business Commission, a Washington, D.C., based lobby co-directed by Jeremy Rifkin and Ted Howard, have filed a suit asking a federal court to expedite a Freedom of Information Act request. They are asking the National Institutes of Health (NIH), the National Science Foundation, the Central Intelligence Agency, and the Departments of Agriculture and Defense for information about grants involving cloning (in any species), test-tube fertilization of human eggs (NIH, for its part, says it supports no such studies), genetic screening, and recombinant DNA technology. The suit-filers, who figure prominently among the opposition in the recombinant DNA debate, are not suggesting that Rorvik's claim is true—merely that it could be, if not now, soon. Therefore, they say, it is time to survey science and begin public debate. "We're worried that we're too close to cloning for comfort, even if the book is a hoax," Rifkin told *Science*. "All our values would be upset if we could Xerox life. We need to be responsible enough to divorce good science from that which is dangerous."

The NIH already has begun a computer search of its grants and expects to have volumes of information (which could have been obtained by a simple request) available soon. The Peoples Business Commission explains its resort to the court by saying that the situation is of such importance that any delay in agency compliance would be intolerable. The court has yet to act but lawyers familiar with Freedom of Information Act proceedings speculate that no court will see the urgency in responding to an event that may be a hoax and that the Business Commission will have to move through normal channels.

Whereas public interest groups tend to think in terms of lawsuits when it comes to controversial issues, Congress is inclined to want to hold a hearing and, not surprisingly, the idea has been broached by the health subcommittee of the House which is chaired by Representative Paul G. Rogers (D–Fla.). A spokesman for the subcommittee told *Science* that "If 99.9 percent of scientists are wrong and the story is true, there should be an open hearing to lay the issues out before the Congress and the public. The first step before any hearings would be to verify this thing," he said, "so we want to talk to the author." However, congressional calls to Lippincott were treated no differently than those from the press, bringing only the promise of cooperation (but not verification) once the book is out.

If *In His Image* is fiction, why would Rorvik want to pass it off as truth? He offers a clue: "It is my hope that this first successful cloning of a human being will alert the public to the far more promising and also far more perilous developments already occurring in the realm of genetic engineering." Rorvik may see his book as some kind of political statement.—BARBARA J. CULLITON