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# Surviving Bio-Angst: An Introductory Position on the Groundwork for Ethical Policy Making in Biotechnology

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## 1. The *Spirituality* of Biotechnological Anxiety

Many things characterize the second half of the twentieth century, but perhaps none is more revealing than our loss of certainty. The atrocities of the Second World War made us lose faith in ourselves, while more recently the continual deterioration of the environment and the alienation brought about by our technologies have called into question the ultimate goals and practices of science. Collectively, Western society faces a crisis of certainty – we have lost the sense of who we are, what we are able to do, and ultimately where we are going.

It is not surprising, then, to find many commentators struggling to find the perfect verbal aphorism that encapsulates these complex and troubled times. Various offerings have undisputed, though partial and incomplete, success: *the aspirin age*, *the age of globalization and post-industrialization*, *the age of anxiety*, *the Prozac age*, *the nuclear age*, and most recently, *the age of terrorism*. Of these, W.H. Auden's claim that our search for meaning in this, "the age of anxiety," is particularly pertinent because it reflects the *results* of all the issues facing modernity. It is a reminder that today the complexities of our modern world, when considered as a whole, have led to a sense of cultural anxiety precisely because we have lost certainty in our abilities and ourselves. The specific issues of weapons of mass destruction, drugs, or globalization (for example) are connected because of the anxiety, more specifically, the *angst* they create.

The reasons for the age of anxiety are numerous, having origins and reflections in most of the great ideas and movements of the twentieth century. Joseph Wood Krutch identifies H.G. Wells and Bernard Shaw as symbolic of the transforming of Western society

from the Age of Confidence to the Age of Anxiety. As ardent spokesmen for the confidence of human abilities throughout most of their lives, both of them nevertheless “died crying ‘Woe, woe’ to the very people whom they had previously reassured.”<sup>1</sup> Of course, Wells and Shaw are simply two in a long lineage of nineteenth and twentieth century authors and artists who have struggled to describe and explore the overall character of modern disillusionment caused by the collapse of trust in universal truths, and its inevitable effects on the natural human search for meaning. Despite their many outward differences in outlooks and ideologies, many of the greatest writers and artists of the modern era in this context are united in their concern to illuminate the modern search for meaning when both science and religion have seemingly lost their universal appeal as the basis for what is “true”. Such a list would have to include some of the most important ideas and movements in modernity – Nietzsche’s *nihilism*, Durkheim’s *anomie*, Marxist *alienation*, Kierkegaard’s *leap of faith*, Existentialist *angst* and *absurdity*, Freud’s *neurosis*, Tillich’s *anxiety of meaninglessness*, and innumerable others. Broadly, but nevertheless accurately, then, anxiety in its many variations characterizes the last one hundred years of our cultural, intellectual, artistic and political experience.

The case is made more strongly today because the advances of biotechnology have quickly destroyed whatever little roots our fragile self-understanding has achieved since the rise of science replaced religion in importance (not meaning) within the social sphere. Nearly all of the ethical discourse surrounding biotechnology is shrouded in a language of treading cautiously; we are on unfamiliar ground and we need to move slowly. On radio and television talk-shows, informal barroom discussions and more formal public debates, the anxiety caused by biotechnological issues is palpable. This source for this concern is bio-angst. For Paul Tillich, this situation is predictable because the current developments in the bio-sciences call for answers that our former modes of thought cannot handle.

In Tillich’s analysis, anxiety is manageable (though it never ceases) because the individual accepts the social methods by which they are able to cope: “These structures, as long as they are in force, keep anxiety bound within a protective system of courage by participation. The individual who participates in the institutions and ways of life of such a system is not liberated from his personal



anxieties but he has means of overcoming them with well-known methods." In a period of great change such as ours, however, "these methods no longer work. Conflicts between the old, which tries to maintain itself, often with new means, and the new, which deprives the old of its intrinsic power, produce anxiety in all directions."

Following Tillich, I believe that the anxiety caused by biotechnology today is not primarily ontic or even moral (as Tillich argues is the case in the ancient and medieval forms of anxiety), but it is *spiritual*: it concerns the question of the larger meaning of existence and our place in it, and is perhaps the most pressing long-term question facing us today.

## 2. Ending Anxiety through Avoidance?

There are, of course, anxieties caused by biotechnology that are not spiritual. The health concerns surrounding genetically modified foods and the legal questions concerning biotechnological patenting, for example, are trenchant and necessary. By themselves, however, they do not account for the tremendous public anxiety that surrounds the biotechnological industry. Margaret Somerville writes: "New genetic discoveries and technologies have, along with new reproductive technologies, had a major impact on our sense of the sacred. They can lead us to believe that we understand the origin and nature of human life and that, because we can, we may manipulate – or even 'create' – such life." (*slippery slope* argument).

All of these things call into question the very foundations of our self-understanding, humanness, and relationship to the natural world, and therefore create a great deal of anxiety. Left impotent under the perceived threats of the new biotechnological revolution are our old structures and categories of meaning. Collectively, we do not have groundwork for dealing with the knowledge that we can and will continue to perfect the ability to precisely manipulate the very foundations of the origin of life.

This is not to say, however, that the types of concerns currently expressed in biotechnology are without precedent. In fact, biotechnology is the logical culmination of the scientific revolution begun in the sixteenth century. We are no longer the physical centre of the cosmos (the Copernican and Newtonian Revolution), afforded a special and higher status in nature (the Darwinian Revolution) because of our rational minds (the Freudian Revolution). In

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retrospect, Western science has continually decentred the singular and persistent idea that humanity is distinct from the rest of creation. Despite this, underlying our legal system, moral ethos, and self-understanding is the belief that human life *is* special. While the history of Western science, especially astrophysics, is persistent in painting for us a picture of ourselves as just another animal on lonely planet in a lonely universe, up until very recently our society has been tremendously successful at avoiding the inevitable problems this poses, largely because we *could* avoid the question. The scientific revolutions of the past were foremost largely *descriptive* while biotechnology is primarily concerned with *application*. The practical considerations of knowing that the earth is not the centre of the universe, or that humans descended from life forms that are more primitive are minimal because they are simply describing the workings of the world and therefore have little ethical import. Now that we can apply our knowledge to create life or modify genes, the question can no longer be avoided. How special or even sacred can human life actually be if we can manufacture it in a laboratory?

Ostensibly, this is an effective argument because it could potentially put a stop to what seems as the inevitable culmination of the scientific revolution, and indeed the overtly stated goals of materialists: the complete understanding of the processes of human life, and with it the creation of life itself. In the long term, however, ignoring scientific knowledge because of anxiety can prove to be tremendously dangerous.

Imagine for a moment that the year is 2030. Suddenly but predictably, a worldwide crisis occurs in natural reproductive abilities. Due to the long-term effects of some environmental pollutant, or perhaps through mechanisms not fully understood, male sperm-count is adversely affected to the point where human reproduction, and thus human survival, is seriously threatened. As unlikely as this proposition may at first seem in a world that currently has a net increase of three people every second, this is no mere science-fiction scenario. A controversial and influential study published in the British Medical Journal in 1992 claimed that male sperm count is significantly lower in males born in 1970 as compared to those born just fifty years earlier. Currently, there is a scientific battle ensuing about this issue, but for my purposes here, the results of the debate are irrelevant. The processes involved with natural



human reproduction, including embryology, are among the least understood of the human biological processes, and therefore possible difficulties (even ones we cannot imagine today) arising in them would be especially dangerous to our long-term survival as a species. It would not take much argument to show that difficulties in human reproduction may prove to be more of a threat than nuclear war, especially with the dramatic rise of biological weapons and the unknown effects of environmental contaminants. Therefore, the knowledge gained by cloning, currently a source of anxiety, becomes the remedy for a possible *future* anxiety. How many people who are against cloning today would deny this very knowledge and technology tomorrow if we needed it to ensure the survival of our species?

Against the current trend of applying ethical principles to current issues, then, *long-term* effects, goals and contingencies must be at the forefront of decision-making policies. Enabling such long-term vision is the first step in facing our anxieties over biotechnology.

### 3. Legislation and Education

Given situations such as these, it is thus far more dangerous to legislate *against* pure scientific work than it is to legislate it. It is relatively easy to foster the anxiety that much of society already associates with the biotechnological sciences, and once such work is deemed too dangerous, what is lost is incalculable. In the same way, cutting budgets in health-care or education produces savings that can be witnessed on a balance sheet and are therefore easy to justify. However, the losses to accessibility, quality and the long-term wellness of society will become concrete as well, but are characteristically harder to currently ascertain because they are not immediate and cannot be quantified through numbers alone. What is lost if we stop stem cell research or cloning, whatever the current (and possibly valid) ethical issue arguing against it, is in the same way harder to quantify. Short-term thinking may relieve some of our current anxieties, but the losses to future health, safety or even survival must be seriously considered before any decisions are made.

This is not to say, of course, that science and scientists should have *carte blanche*. Because of its stress on the manipulation and not simply the description of life processes, biotechnology poses difficult ethical problems. The ethical implications of doing stem cell

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research, for example, cannot be avoided in the same way that it can be in astrophysics. The nature of the research itself, and not its findings or implications, needs ethical deliberation. However, we must be fully knowledgeable (as far as this is possible) about the potential risks in deeming such work inappropriate.

The danger is not in the scientific work but rather the materialism, scientism and determinism that quite frequently accompanies discussions of the benefits of not only biotechnology, but also all the physical sciences. The culprits of such un-scientific thinking rank among the most important popular scientists writing for an educated non-specialist audience – E.O. Wilson, Ray Kurzweil, Stephen Jay Gould, Richard Dawkins, and Carl Sagan, for example. They are united in their belief that life is guided by blind mechanistic forces, and, more importantly, life is *only* composed of such forces. The source for their belief stems obviously in their passion for the scientific method and its successes, and for that they should be applauded. However, such a cosmological and epistemological claim cannot, and can never be, sustained by such a method. How would one go about proving, scientifically, that materialism in fact comprises the fundamental basis of human life (as opposed to love, commitments, and/or faith)? The material constituents of life only tell us exactly that – what life is made out of – and it can never tell us what life is *only* made of, or why, who, or what made it, and for what purpose. Such patently un-scientific thinking must be avoided in biotechnology: simply because the constituents of life processes can be manipulated, we must resist the false but apparently popular conclusion that human life and its meaning is found in this mechanistic and deterministic manner. So while biotechnology as a science has tremendous potential to transform the world, its successes should be carefully understood so that it remains a science and not a shoddy philosophical ontology and epistemology.

Bio-angst must, then, be dealt with through a long and slow *process* of education. It cannot be viewed as a problem to be solved, but as a new way of orienting ourselves. The inevitable anxieties over biotechnology must be based in long-term possibilities, and not in short-term myopias spurred by political interests, superficial platitudes, and easily manipulable public opinion polls. Biotechnology will have tremendous effects on all aspects of society, including (but not limited to) health-care industry, insurance, stock-



markets, life science, ethics, and politics. In order to guide and assimilate these various aspects of biotechnology, the educational system must be transformed in order to produce citizens that are able to cope with these new long-term challenges.

The current higher education system is not designed to face such challenges. The trend towards specialization is important only at the highest levels of education, which only a small percentage of the population requires. For the vast majority of higher-level education, it is no longer practical or sensible to segment knowledge into artificial disciplines that both damages the integrity of the subject, and ultimately fails at forming within the student a sense of coherence in their educational experience. Currently, most Arts faculties provide little of the required scientific training to understand even the most elemental scientific theory, while Science faculties do not for the most part consider the tremendous social, philosophical, and religious influences on the history and current development of their fields. In fact, many good scientists today still believe in the unsophisticated and false notion of naïve realism (i.e. that their work is purely objective). Our current University educational system has been tremendously successful at producing narrowly specialized individuals (scientists, doctors, lawyers, accountants, writers and the like), but have not been as successful at producing individuals within disciplines who are sufficiently competent to comment on the social (including, but not limited to, the ethical) component of their work.

Biotechnology, because of its sheer force on society, provides (or rather forces) a re-evaluation of the methods, goals and practices of our educational system. The revolutionary character of the biotechnological revolution necessitates that all members of society be able to think about the nature of biotechnological advances. Not only specialized scientists, but *all* educated individuals must be able to participate in this latest re-creation of our self-understanding. Failure to do so would all but ensure continual and perpetual bio-angst, and it would also prevent the vast majority of citizens an educated voice in the inevitable legislations that will soon alter the foundations of our social structure.

This new educational orientation would thus have to both produce scientists who have better historical, social and ethical knowledge, as well as giving non-scientists better scientific competencies. It would also have to address current ethical issues, as



well as create hermeneutical space to develop longer-term strategies, and assess their implications on our humanity. Through such an education, cultivating a vision of who we want to be and the world we want to create becomes central, and we are transported out of the anxiety ridden stress that biotechnology causes, and can begin to soberly assess it as a long term *process* and not as a knee-jerk gut reaction that is often the case today.

## Notes

- <sup>1</sup> Joseph Wood Krutch, *The Measure of Man* (New York: Charter Books, 1953), p. 13.
- <sup>2</sup> Paul Tillich, *The Courage to Be* (New Haven: Yale University Press, 1952), p. 68.
- <sup>3</sup> Margaret Somerville, *The Ethical Canary: Science, Society and the Human Spirit*, (Toronto, Ontario: Penguin, 2000), p. 13.
- <sup>4</sup> Carlsen, E., A. Giwercman, N. Keiding, and N. Skakkebaek, "Evidence for Decreasing Quality of Semen During the Past 50 Years," *British Medical Journal* 305 (6854) (September 12, 1992):609.