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GUEST EDITORIAL

## AVARICE AND THE HEALTH CARE CRISIS

EUGENE F. DIAMOND, MD

In his recently published and much anticipated third encyclical entitled “*Caritas in Veritate*,” Pope Benedict XVI lays out a brilliant conservative blueprint for addressing the crucial economic problems of our age. Contrary to expectations in some circles, the Pope does not call for big government intervention. He upholds free markets while addressing the moral and theological roots of the cultural crisis.

The Pope correctly identifies the economic crisis as having its roots in rampant greed, irresponsible financial speculation, and the failure of government regulation. The crisis has occurred within an interpersonal moral breakdown in which Christian love and truth have been undermined by a crass materialism. He sees the crisis as an opportunity for new discernment through which to shape a new vision for the future. The economic crisis is, in reality, a moral crisis whose solution requires a restoration of Christian values.

The American electorate has intuitively recognized that the new administration’s attempts at sweeping reforms based on statist economics and heavy-handed efforts at social intervention have been counter-productive.

In an almost unprecedented protest at town meetings during the Congressional recess and “tea parties” across the country, the electorate has shown its dissatisfaction with proposals for Obamacare. At a recent tea party in Homer Township outside Chicago, 10,000 angry protesters congregated without very much promotion of the event. The most prevalent anxiety (which the Administration has called “orchestrated”) was that funds used to cover the uninsured would be obtained from a reduction in medical care for the elderly under Medicare. An obsessive preoccupation with the “46 million without insurance” had dominated the debate. Even the number of uncovered people has been shown to be subject to vast subtractions for illegal aliens, those economically able to buy insurance who have preferred to use the cost of the premiums as venture capital, those eligible for Medicare who have not applied for it, and other risk-takers who protest that they are healthy and immune to disease and injury.

Aside from problems of eligibility, an important and inadequately-addressed issue relates to the allotment of Medicare expenses. The multibillion-dollar cost of defensive medicine is an expense that is often discussed but never really confronted. Tort reform can be expected to be a low-priority issue given the symbiosis between the national Democratic Party and the trial lawyers’ lobby. Nevertheless, tort reform is universally-recognized as a major cost of unnecessary expenditure related to the practice of “defensive medicine.” In-patient laboratory and radiology costs have been demonstrated to be reducible by state caps on non-economic damages in malpractice suits. Threats of litigation, however, are not solely responsible for the reliance on elaborate and repetitious in-patient work-ups.

A recent evaluation of inpatient input into diagnostic evaluation, through the time-honored and highly productive contribution of careful history-taking and thorough physical examination, is alarming in this regard. Timed interviews by attending physicians of patients’ complaints showed that the patient was allowed an average of

*thirteen seconds* to describe his problem before the attending physician intervened with a question or a suggested technical response. This preemption of the patient's self-description of complaints is almost always an attempt to shorten physician-patient dialogue.

Reimbursement of these kinds of cognitive interaction is much undervalued as compared with procedure-oriented diagnostic evaluation.

The brevity of rapport between the patients and the attending physicians was dictated by a real or perceived time constraint. As laboratory surveillance expanded and increased in accuracy, and as radiological diagnosis went through several generations of exhaustive accuracy such as the C-T scans or MRIs, many diagnosticians decided to forego laborious patient-centered evaluations like the historical narrative or the thorough physical examination in order to await the laboratory or imaging data.

There was an inevitable transition of the role of the physician from the physician humanist envisioned by the Hippocratic ideal to the physician scientist and finally the physician technocrat. The comprehensive education of the physician which was modernized after the Flexner report was narrowing down to the highly focused and micromanaged specialty education. The narrowing of focus was accompanied by expansion of training time spent in Residency Programs; training time increased from three years to five or seven years often followed by a fellowship targeted to a single technique or super specialty. Medical educators expressed concerns that the profile of individuals being attracted to medical education was the overachieving, obsessive-compulsive type of candidate who had to be systematically reminded that the patient was a human person rather than an experimental animal. Admissions committees who had become completely dependent on a set of numbers created by grade point averages and medical aptitude scores had to be reminded to include other talents such as empathy, humanism, and, people-centered orientation.

Long periods of specialty training upset the balance between primary care providers and specialists. The specialist was expected to provide not only encyclopedic fact accumulation but also, more and more, a unique technical skill. Even non-surgical specialties were centered on procedures so that the gastroenterologists claimed the territory of colonoscopies and gastroscopies. The cardiologist became an interventionist aimed at catheterizations, bypasses, echocardiography, while the pulmonologist relied on bronchoscopy and ventilator surveillance, and even the radiologist co-opted biopsies and scans performed in his domain.

The many and prolonged training programs at university and tertiary care centers required more trainees than American schools were able to provide so that trainees from other countries came to the United States for post graduate education and almost invariably stayed here rather than returning to their native land. This produced an unintended brain drain on many second and third-world countries which could ill afford to give up medical practitioners. Those who had come here for training in highly equipped centers could be excused for not returning to countries where facilities were not available for using their newly-acquired skills. Many came from cultures where physicians failed to receive prestige and compensation comparable to that in the American profession. Their inclination was toward a business model for medical practice in which volume and cost-effectiveness prevail. Having been called upon to serve the non-affluent part of the



culture during their training, they might have felt that they had fulfilled their duty to this section of the population.

Even though salaries for physicians-in-training increased modestly, the length of training insured a longer period of limited income. Many American graduates had accumulated large amounts of debt, even before starting post-graduate training. Young practitioners starting practices or joining groups as junior partners had been subjected to prolonged experience with penury and, with growing families and dependents, were anxious to make up for lost time and higher earnings.

Paradoxically, the board certification requirements for specialists and even primary care providers had largely guaranteed a pool of young practitioners whose competence had been greatly enhanced from the time when many entered practice after a one-year internship. The standing of the medical community had not necessarily resulted in a greater regard for the profession as a result of improved ability. If anything, the status of doctors had diminished, and polls revealed a prevailing attitude of “I like my doctor but I don’t like doctors as a group.” Very little medical care was rendered without compensation as the middle class patients were largely covered by insurance and the poverty sector by Medicaid or Medicare for the aged. The overall public perception of medical care was that it was characterized by avarice instead of selflessness.

Many medical offices displayed “Payment is expected in advance” notices and patients in emergency rooms were stringently screened for ability to pay. In the area of hospital care the concentration on fee for service was a matter of economic survival, but the perception, if not the reality, of private out-patient practice was that of an unhealthy preoccupation with money instead of service. Some office waiting rooms will compromise the reputation of the generous physician with a member of the staff who seems to project “pay or else.” tenses

Idealistic students contemplating a career in medicine will have to realistically evaluate the prolonged period of preparation with attendant debt, the hostile medico-legal environment and the threat of suits, the ever-expanding complexity of health care delivery and its demands for a lifetime of learning, and the growing societal consensus that medical costs are a national crisis. If cost reduction shifts its emphasis from insurance companies and government bureaucracies to the provider and his perceived avarice, the future of a medical calling may be further tainted. Professional organizations like the AMA would do well to promote the image of the dedicated and selfless practitioner as a priority. **E&M**



GREY MATTERS

## DOING NO HARM TO HIPPOCRATES: REALITY AND VIRTUAL REALITY IN ETHICS EDUCATION

WILLIAM P. CHESHIRE, JR., MD

“How could physician healers have turned into murderers? This is among the most profound questions in medical ethics.”<sup>1</sup>

“How could men and women *sworn to the Hippocratic oath, trained as professionals in the world’s most advanced scientific culture, come to commit crimes that even today stand as exemplars of evil?*”<sup>2</sup>

“They were all doctors.” – Auschwitz survivor<sup>3</sup>

On July 23, 1944, Nazi officers ordered the entire Jewish population of Kos to leave their homes and, along with the Jewish population of nearby Rhodes, to board three small cargo boats. Stripped of their personal belongings and identity papers, these families were taken on an eight day voyage by sea to Piraeus, and from there, crowded into cattle cars, North by train for the 13 day journey to their final destination at Auschwitz. Such was the fate of many Jewish men, women and children throughout the Nazi-occupied territories in Europe, who were forcibly exiled and sent to their deaths. Auschwitz, the largest of the Nazi death camps, alone claimed approximately 1.3 million victims.<sup>4</sup> Of the 116 deportees from Kos, 104 perished, and only one survivor returned to the island.<sup>5</sup>

Kos, the second largest island of the Dodecanese in the Aegean Sea, was the birthplace of Hippocrates (ca. 460 – 370 BC). From the corpus of Hippocratic writings came the often cited maxim “First, do no harm.”<sup>6</sup> From the Hippocratic school also came the Hippocratic Oath, which for thousands of years has, despite episodic breaches, remained the ethical cornerstone of medical professionalism. The Oath of Hippocrates holds the physician to the moral standard of serving the interests of the patient above competing interests: “Whatever houses I may visit, I will come for the benefit of the sick.” About the Oath, Allen Verhey writes, “It treats medicine as a form of human activity with goods internal to it and standards of excellence implicit in it, not simply as an assortment of skills which can be made to serve extrinsic goods with merely technological excellence.”<sup>7</sup> Accordingly, the Oath binds physicians to the duty to heal and prohibits applying the techniques of medicine to the taking of life: “I will neither give a deadly drug to anybody if asked for it, nor will I make a suggestion to this effect.”<sup>8</sup>

Upon their arrival at Auschwitz, the prisoners from Kos would have been greeted by a physician, but not for the purpose of medical care. The account of Dr. Otto Wolken, a surviving prisoner physician, documents the process:

“When the transport trains came in, the arrivals had to pass before the camp doctor . . . on duty. He pointed his thumb either to the right or to the left. Left

meant death by gas. From a transport consisting of about 1,500 people, about 1,200 to 1,300 went to the gas chambers.”<sup>9</sup>

Medical expertise contributed to the formulation and implementation of the extermination program euphemistically called the selection process, and virtually all physicians assigned to Auschwitz participated in such selections.<sup>10</sup> At Auschwitz, physicians selected who would be killed, supervised their suffocation in the gas chambers, and determined when the victims were dead.<sup>11</sup>

Camp hospitals provided limited medical care but functioned primarily as camouflage for the killing of prisoners who were officially registered as patients. There, SS physicians sorted out which prisoners were too sick or weak to work, who were then killed by injections of phenol to the heart or sent to underground homicidal gas chambers disguised as showers. Physicians certified that their near starvation diets were sufficient for life. Physicians rode in ambulances or Red Cross cars to the crematoria to specify the quantity of Zyklon-B pellets to throw down the holes according to the number of people awaiting death. Physicians falsified their causes of death in the medical records.<sup>12</sup>

The German SS dispatched more than 300 physicians to the concentration camps.<sup>11</sup> At Auschwitz and the other camps, physicians also conducted harmful medical experiments on nonconsenting prisoners (most of whom who were going to die anyway), exposed them to toxic chemicals, infected them with typhus and tuberculosis, and performed vivisections.<sup>13</sup>

Following the liberation of the surviving prisoners of Auschwitz by the Soviet army on January 27, 1945, the world became aware of the atrocities committed in the Nazi concentration camps. At the trial in Nuremberg known as “The Case Against the Nazi Physicians,” Telford Taylor, in his opening statement for the prosecution, argued,

“They are not ignorant men. Most of them are trained physicians and some of them are distinguished scientists. Yet these defendants, all of whom were fully able to comprehend the nature of their acts, and most of whom were exceptionally qualified to form a moral and professional judgment in this respect, are responsible for wholesale murder and unspeakably cruel tortures. . . . All of them violated the Hippocratic commandments which they had solemnly sworn to uphold and abide by, including the fundamental principle never to do harm – *primum non nocere*.”<sup>14</sup>

Medicine under the Third Reich, summarizes ethicist Nigel Cameron, “was a betrayal of the Hippocratic tradition.”<sup>15</sup> Psychiatrist Robert Jay Lifton concurs, adding,

“When we think of the crimes of Nazi doctors, what comes to mind are their cruel and sometimes fatal human experiments. Those experiments, in their precise and absolute violation of the Hippocratic oath, mock and subvert the very idea of the ethical physician, of the physician dedicated to the well-being of patients.

. . . the Hippocratic oath, though a pledge to remain a healer and to disavow killing or harming those one treats, was all but abandoned in Auschwitz. The oath was perceived as little more than a distant and muted ritual one had performed at medical school graduation, and was readily reversed by the

searingly immediate selections ritual, as well as by the array of direct pressures and rewards in the direction of a Hippocrates-free Auschwitz self.”<sup>16</sup>

That was then. Theirs was another time, another place, another world, was it not? If the factors from which emerged the Nazi ideology of hatred really belonged to some alternative universe shut off from our own, then it might be possible to relax in safety. There would also be less need to preserve the evidence and memory of such events. So many of the photographs from that era are in shades of grey or stark black and white, which gives the impression that the mid 20<sup>th</sup> century was a reality separate from the richly colorful modern world. The greyness of old photographs is, however, only an artifact of earlier camera technology.

That history, that geography, and that human nature overlap with and are continuous with our own. The uncomfortable words of Russian novelist and historian Alexander Solzhenitsyn are once again relevant: “If only there were evil people somewhere insidiously committing evil deeds and it were necessary only to separate them from the rest of us and destroy them. But the line dividing good and evil cuts through the heart of every human being.”<sup>17</sup>

As I write this article, the memories of having visited the Auschwitz-Birkenau museum and the remains of the death camps just this week are etched on my mind like an open wound. Traveling to the site, there is no chasm in the Earth’s crust separating what remains of Auschwitz from the rest of the European continent. That bleak place exists in our own world. Auschwitz, once connected to every major European city by railroad, is still connected to present reality – geographically by roads, temporally by only a few years, and morally by universal fallen human nature.

The deceitful slogan, “Arbeit Macht Frei” (work makes one free), hangs over the entry gate. Formerly electrified barbed wire stretches around the camp, the 13 km borders of which are punctuated by signs reading “Halt!” (Stop!) or “Vorsicht” (Beware). One walks through the same mud through which Nazi physicians marched and prisoners trudged, too emaciated to shiver in the severe cold. The living quarters are appallingly horrid, unheated, unspeakably unsanitary, and were once infested with lice and rats. Three-tiered wooden bunks, each intended to sleep 15 prisoners – 5 to a bed – often held more. There is no shortage of sites of punishments and executions, including poorly ventilated dark cells, gallows, “the post” at block 11, gas chambers, and the infamous “Wall of Death.” Piles of empty canisters of Zyklon-B correspond to thousands of lives lost. Walking into the Nazi’s first crematorium, one can see layers of ash coating the ceiling. The smell of smoke lingers still.

Physical evidence of the authenticity of the historical record is preserved throughout the museum. Archival Nazi documents are displayed for the visitor to inspect. Lined along the walls are the names and faces of thousands of prisoners photographed upon entry to the camp. Huge piles of personal belongings, including 40 kg of eyeglasses, 80 thousand shoes – even the tiny shoes of children – and two tons of clipped human hair to be sold and woven into cloth, are almost more than the buildings can contain.

Monstrous crematoria and large-scale gas chambers await the visitor who ventures to nearby Birkenau (Auschwitz II). The total area of these gas chambers was 2255 square meters and the capacity of the crematoria 4420 people. Death took just 20 minutes. In the center of the railroad track entering the camp and leading to the crematoria is the

concrete platform where the selections occurred. The vast size of this grim landscape of horror staggers the senses.

The visitor also encounters heroic points of light amidst the moral darkness of the camp. Cell #18 of block 11 marks where Maximilian Kolbe, a Polish Franciscan friar, was executed, having offered his own life in place of a stranger condemned to death.

A gentle rain fell the day I visited Auschwitz, as if Heaven continues to shed tears for those who suffered there.

Natural erosion and deterioration are gradually threatening the continued conservation of the remaining buildings and relics of Auschwitz. Incrementally, the fragile ruins of the Birkenau gas chambers are collapsing. The Auschwitz-Birkenau Foundation, with the help of funding from the governments of Poland and other nations and generous individuals, is currently working to raise a Perpetual Fund to ensure the long-term preservation of the Auschwitz-Birkenau Memorial and Museum. Stewards of the site have indicated that funds to date are insufficient to preserve indefinitely all of the crucial relics, and there are some remains that no amount of funding can save.<sup>18</sup>

Photographs and recordings of interviews of camp survivors can help to safeguard the preservation of the history of Auschwitz so that future generations can be educated about this important yet painful chapter in the history of medical ethics. Perhaps, then, with concerted efforts shared by nations around the globe, such tragedies can be avoided in the future.

Film also allows the viewer to enter vicariously into the story of the death camps and feel something of the terrible weight the victims endured. Of the many films made about the Holocaust, the 1992 movie, *The Grey Zone*,<sup>19</sup> despairingly considers moral decisions within a system of constrained choices in which survival may require cooperation with evil. The film's title refers to the profuse grey ash of the dead, which covered everyone and everything.

Considering the possibility that, a generation from now, visitors to the remains of Auschwitz might have the opportunity to witness only part of what is now viewable, the option of virtual reality may offer a technologically sophisticated means to rescue a permanent record of the camp and provide the visitor with a memorable experience. Internet surfers currently can access Auschwitz information and photographs interactively through a virtual tour sponsored by the State Museum of Auschwitz-Birkenau.<sup>20</sup> Virtual reality has the advantage of minimizing cost while greatly increasing access. Current technology supplies information, links to articles, and slideshow format images. Future technologies might render the virtual reality tour more realistic, with high resolution computer graphics, motion simulating walks through the camp, sensory interaction with panoramic stereoscopic displays, tactile force feedback, even the opportunity to interact with avatars or computer-generated recreations of characters virtually reenacting the events of the camp.

While there is much about virtual reality that can be affirmed for the purpose of educating students and the public about serious historical events, there is also reason to pause. One suspects that a virtual reality tour of Auschwitz, no matter how convincingly realistic, would lack the authenticity of a genuine visit. It might also lack credibility, since it would be all too easy to modify or otherwise tamper with the details and how

they are presented. Scale as measured by a finger gliding across a computer touchpad is not the same as distance measured by how fatigued one's legs feel after walking the full length of the grounds at Birkenau. The camp's physical proportions echo its moral proportions. Having recently walked there, the camp's dust still clings to my shoes and its memories to my mind.

Nor would a virtual representation adequately capture the irony of the string quartet greeting prisoners returning from slave labor factories to the locked confines of the camp. Virtual recreations would altogether miss the contrast of the external innocence of quaint buildings concealing murder inside. A visually enhanced Internet copy of Auschwitz could become, in addition to an educational tool, disturbingly, an open gate to the eyes of children too young for its content as well as an entertainment curiosity for the lighthearted. Distanced from the actual scenes by windows that one can drop out of sight by a single click, the virtual viewer might no longer be able to shudder. Without a proper moral relationship to the story of Auschwitz possible by visiting in person, a virtual reality link could all too easily disrespect the deceased victims of the camp.

The Apostle Paul visited the island of Kos circa 58 AD during his third missionary journey to share the hope of life in Jesus Christ (Acts 21:1). Paul, who described himself as a Jew of Jews (Phil 3:5), were he alive today, undoubtedly would have felt "great sorrow and unceasing anguish" for the loss of his Jewish kinsmen (Romans 9:2-5) during the Holocaust of the 20<sup>th</sup> century. It is worth remembering the words of Psalm 34:18, which declares that, "The LORD is near to the brokenhearted and saves the crushed in spirit."

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CLINICAL ETHICS DILEMMAS

## END-OF-LIFE CARE IN THE LONG-TERM CANCER SURVIVOR

KATELYN BRASWELL, WILLBURN BOLTON, MD, GRACE HUNDLEY, MD, GREGORY W. RUTECKI, MD

**Editor's Note:** This column presents a problematic case that poses a medical-ethical dilemma for patients, families, and healthcare professionals. As it is based on a real case, some details have been changed in the effort to maintain patient confidentiality. In this case, a patient with a long-term disease experiences a prolonged period of relative 'wellness' and is lost to follow-up until fatal complications evolve. The case is complicated by the lack of adequate surrogacy.

**Column Editor:** Ferdinand D. Yates, Jr., MD, MA, Acting Consultant in Clinical Ethics, CBHD.

### Question:

How should the family and the medical team proceed with medical care when there is conflict over treatment options in a long-term cancer survivor in the absence of clear surrogacy?

### Case Presentation

A fifty-three-year-old African-American man, who had been diagnosed with a rare and aggressive type of cancer more than twenty-five years ago, was recently admitted to the hospital for severe hypoglycemia and was unresponsive to stimulation. This was his first admission to this particular hospital, and, most recently, he had been under Hospice services in the community. At the time of his initial diagnosis of cancer, the treatment included a craniectomy for a brain metastasis. Subsequently, multiple chemotherapeutic regimens, including experimental therapies, were attempted with temporary respites of tumor growth. He returned to his original community after the academic center told him that they had no further curative treatment to offer. Apparently, Hospice and comfort care were not explicitly discussed.

Surprisingly, despite the aggressive nature of the underlying malignancy, the patient was lost to medical follow-up and apparently had minimal complications for many years. At the time of presentation, with hypoglycemia, the workup documented a large metastatic tumor in the liver, and he also had extensive metastatic disease in the lungs, kidneys, and pancreas. In addition, the patient had visible tumor masses throughout much of his subcutaneous tissue. Initially, the patient was conversant for short intervals, but he seemed unwilling to engage in medical decision-making with or without the presence of his family. He expressed no particular religious preference in any of the hospital records.

At times, even after correction of the hypoglycemia, he was confused, unresponsive, or belligerent with caretakers, and after the first week of hospitalization he was no longer communicative. Despite his previous entry into hospice care, the attending physicians

were surprised to learn that certain family members wanted further medical treatment other than palliative care. Specifically, the patient had a massive tumor on his upper right arm that was not causing pain or circulatory embarrassment, and the family insisted that it be surgically removed despite the physicians' opinion that such a course of action would be invasive, burdensome, and futile. A medical consultant agreed with the family, and a meeting was arranged for the family and the medical team.

The patient was not married, but had a "common law" relationship for more than ten years. However, he had been estranged from his female partner for the past fifteen years. The patient had a son living in the same community, and they saw each other several times each week. The relationship was described as a good one, and the medical team felt that the son was likely the most appropriate member of the family to speak on the patient's behalf. However, no one had been granted a durable power of attorney, there was no health care agent, and a living will was not available.

The patient's son had assisted in the prior hospice placement. In addition, the son noted that he and his father had some detailed conversation regarding his father's upcoming death with recall that his father had repeatedly told him that he wanted to die at home. His common law partner and other relatives – verbally abusive at times— noted that the patient "always refused to give up," and that "everything" should be continued. The family and the medical team could not reach consensus on either the establishment of a do-not-resuscitate order or the reinstatement of hospice care. The estranged partner perceived that the improvement of the patient's glucose level was proof that he was responding to treatment and still "fighting." An Ethics Consultation was requested.

## **Denouement**

The ethics consultants sympathized with the son and the healthcare team regarding the appropriateness of comfort care without resuscitation effort and continued hospice enrollment if the patient was discharged. An Oncologist spoke to the family and told them that there were no treatments that could reverse his terminal condition and that every effort would be made to make him comfortable. As the "common-law" partner no longer asked for surgical intervention, a temporary agreement to palliate (without a do-not-resuscitate order) was reached. Over the next week, the patient accumulated a large amount of abdominal fluid and developed increasing difficulty with breathing; however, he seemed comfortable with morphine. A few days later, the patient developed signs of pneumonia with fever, and his son asked for another family conference with the medical team. At this meeting, consensus was reached regarding comfort care, and a do-not-resuscitate order was initiated. The patient expired peacefully about two days later.

## **Discussion**

It was apparent that the patient defied all odds and survived much longer than anyone expected. However, his prolonged survival may have given everyone, including himself, his partner, and his son unrealistic expectations. Earlier in the course of the illness, surgery and chemotherapy affected long periods without the obvious progression of an incurable malignancy. Medical situations such as this are not only rare, but also are difficult to employ in the typical cancer milieu. Nonetheless, physicians should

be hopeful and yet remarkably circumspect when making any predictions regarding progression of disease and prognosis. A recent study revealed that women who were presumably “cured” from breast cancer – who in fact demonstrated manifestation of early as well as late stage disease at the time of the initial diagnosis – had died from complications of breast cancer (not complications of treatment) twenty-three years after the initial diagnosis.<sup>1</sup> The results of this study have led others to observe that physicians should be cautious in ascribing a complete cure to any cancer.<sup>2</sup> Similar late recurrences have been documented with other tumors including testicular and rectal cancers. In our case, during the course of his illness, the patient may have sincerely believed that he was cured despite mounting (and undiagnosed) evidence to the contrary. While he seemed to accept his prognosis, distant relations seemed to grasp at early respites from active disease, and any continuity of medical care relationships was hampered by interrupted geographic contingencies. The patient’s health care may have been compromised by the lack of a primary care physician who typically would have established a longstanding relationship with the patient and family and who would also facilitate appropriate end-of-life care plans. In this specific situation, the healthcare team, the patient, and the patient’s family were thrust into a chaotic situation without any background preparation or relationship and with limited medical information.

The other prominent issue arising in this case is the notion of surrogacy. Although surrogates do sometimes make decisions for loved ones that are contrary to the wishes of the patient, the primary intent is for the surrogate to act on the patient’s prior statements. In this scenario, most people would recognize that the patient’s son should have the authority for healthcare decision-making. He had the most intimate contact with his father, had conversation with his father regarding the terminal illness, and seemed to be in the best position to understand the limits of medicine in dealing with his father’s malignancy.

Being hopeful and yet circumspect in prognosis, identifying appropriate surrogate decision makers, and developing trust through years of compassionate care are still the best ways to realize a dignified death with cancer. These interrelated activities are really the basis for appropriate healthcare and should be safeguarded in our sometimes fragmented system of providing health.

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## Editor’s Comment

The primary concern of surrogacy should be that of enacting the medical decisions that represent the medical preferences expressed by the patient. Surrogacy may become a complicated problem because of a number of reasons: 1) there is no directly appointed surrogate (our case), 2) the surrogate may not be willing or able to act as such, 3) the surrogate may not know the patient’s medical preferences, 4) the surrogate’s decisions may be in direct contradiction to the known choices and preferences of the patient, and 5) the physicians may not be willing to employ the decisions made by the surrogate. Whereas each of the above reasons – and perhaps others – has its own peculiarities, we

will focus on the first one, because, in our case, the patient apparently had not selected a surrogate, and there were several family members who wished to speak for the patient.

When there is no official surrogate speaking on the behalf of the patient, the medical team necessarily must go to extra effort to learn what, if anything, the patient had said in prior discussion that may give some direction to the decision-making process. Many states have a family medical decisions act (of some sort) that allows other members of the family to express what they know about the patient's medical preferences and empowers the physicians to proceed with end-of-life care even if there is no surrogate. In addition, many states endorse a rank-order of family and friends whom the physicians may enlist in the decision-making process. In my state of New York, the following is the authoritative order: patient's spouse, adult children of the patient, surviving parents of the patient, and siblings of the patient. In certain situations, where a very close friend or neighbor or a religious person has had intimate dealings with the patient, this information may be instrumental. Conflict among family members occurs occasionally in these situations, and the main hope of resolution typically lies in repeated conversations. Sometimes the physicians may enable the family to agree to a time-limited trial of a particular treatment to see the effect on the patient's medical condition, and the physician may also enlist the family's help in setting particular therapeutic goals. This type of reasoning often helps the family jointly approach a more definitive end-of-life decision.

### Suggested Reading

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## SACRED CELLS? A REPLY TO PETERS, LEBACQZ, AND BENNETT

GARY S. ELKINS, PHD

In 1998, biologist James Thomson discovered a method to extract cells from unused human embryos in order to develop them in a laboratory. Unsurprisingly, Thomson's breakthrough opened the floodgates, not only to the expansion of stem cell research, but also to questions about the status of preimplanted embryos and whether it is ethical to destroy them for their potential benefit. It stands to reason that this question should be resolved *before* early embryos are subjected to research. After all, if preimplanted embryos are not individual humans possessing moral standing, then a strong case can be made that human embryonic stem cell research (hereafter referred to as hESCR) should continue. The issue, of course, is not whether the embryo is a *human* (i.e., it belongs to the species *Homo sapiens*) but whether it is an individual human being with moral dignity and therefore entitled to protection from destruction. Thus, if there is strong genetic evidence that supports the view that individual human life begins at fertilization, then hESCR is unethical and should cease.

In my paper, I will critically assess some of the key arguments presented by Ted Peters, Karen Lebacqz, and Gaymon Bennett in their book, *Sacred Cells? Why Christians Should Support Stem Cell Research*.<sup>1</sup> Peters, Lebacqz, and Bennett were part of the Geron Corporation's Ethics Advisory Board.<sup>2</sup> As indicated in the title of their book, the authors support hESCR. To establish a convincing case for hESCR, they must demonstrate that either the early embryo is not an *individual* human being or that, regardless of their status, not all humans deserve equal protection.<sup>3</sup> The authors deny the idea that early embryos are individual humans; they contend that it is morally permissible to derive hES cells from a preimplanted embryo because, from their perspective, "individualization" is not established during the first 12-14 days before implantation. Their denial of individualization prior to implantation is primarily supported by two factors: 1) certain natural phenomena, such as twinning, might occur before implantation, which suggests that individual human life does not occur prior to implantation,<sup>4</sup> and 2) there is little persuasive theological support for the belief that a soul is present at fertilization.<sup>5</sup> If their line of reasoning is sound, then the authors have presented a formidable challenge to the traditional view that fertilization establishes a human life with dignity and a moral status.<sup>6</sup> I will endeavor to respond to this challenge. I contend that the moral status of the preimplanted embryo is not undermined by their scientific evidence (e.g., the embryo's potential to twin, the appearance of the primitive streak, etc.) nor their theological considerations.

There is much positive to be said about *Sacred Cells?* For example, the authors aim to address the topic of hESCR within a *Christian* context as opposed to a "research standards framework."<sup>7</sup> A research standards framework is described as a perspective that has "nothing overtly to do with religion or theology."<sup>8</sup> The authors acknowledge the need for a research standards framework, but they believe that the issue raises "religious concerns" that can be addressed only from a religious perspective. Additionally, the authors are correct in observing that the debate is not between Christianity and science;

rather, it is about one's preferred "framework" and determining which framework accounts for both the status of the embryo and the proposed benefits of hESCR. They also remind us that Christian ethicists have a *positive* role to play in ethical discussions; Christian ethics is not merely about rejecting innovative technology. Furthermore, they caution against risky procedures such as human egg donation and the commercialization of donated eggs.<sup>9</sup> Finally, they are to be commended for making a *reasoned* case for hESCR. To their credit, their argument is strong; that is, their premises, if true, offer strong support for the conclusion that embryos are not individual humans.

To accomplish their task, the authors distinguish between three "frameworks:" 1) the "embryo protection framework" which emphasizes the need to safeguard the preimplanted embryo, 2) the "human protection framework" which views some technologies as harmful to the natural development of humans,<sup>10</sup> and 3) the "future wholeness framework" which considers the potential benefits of hESCR.<sup>11</sup> The authors present these three options as "competing ethical frameworks" and endorse the future wholeness framework.<sup>12</sup> I maintain that these frameworks are not mutually exclusive. Indeed, they are complementary<sup>13</sup> and respect for all three can be accomplished by means of induced pluripotent stem cell research (iPSCR) without moral controversy.

The authors insist, nonetheless, that the pivotal question of this discussion is not essentially about the status of the embryo at the point of fertilization.<sup>14</sup> Merely focusing on the embryo's status is too simplistic, they claim.<sup>15</sup> It is not that they misunderstand the logic of the "embryo protection framework." When considering the question of the "moral status of the blastocyst," they concede that if the "disaggregation" of a blastocyst "constitutes the destruction of *human persons*, then the argument of embryo protectionists carries significant moral weight [*italics added*]."<sup>16</sup> Thus, if the embryo at fertilization is indeed an individual human being with moral dignity, then it stands to reason that hESCR should *not* be permitted. Consequently, they reveal that the "EAB<sup>17</sup> was careful at the outset to use the term 'blastocyst' when talking about the developmental stage at which stem cells are derived."<sup>18</sup> The distinction between a blastocyst and an embryo not only allows them to approve of hESCR, but also to approve of so-called "therapeutic cloning."<sup>19</sup> The authors speak with regret that they eventually "capitulated" to the common scientific usage (i.e., ES cells) despite their desire that "the discussion of stem cells should be separated from the abortion debate..."<sup>20</sup> At any rate, in their opinion there are other questions of importance that should be raised in addition to the question of the status of the embryo— above all, what hESCR can do to improve the wellbeing of "actual" humans.

Then again, the future wholeness framework proceeds with at least three debatable assumptions:

1) First, the authors assume that hESCR will live up to all the therapeutic hype and relieve "the suffering of millions if not billions of persons in the future."<sup>21</sup> Robert George and Christopher Tollefsen caution against such optimism. They warn that the "promises of the proponents of embryo research are speculative [and] are often exaggerated and unrealistic... Not only are the benefits exaggerated, but the perils are swept under the rug as well."<sup>22</sup> Maureen Condit<sup>23</sup> agrees that *all the* "predictions have not held up to scientific experimentation."<sup>24</sup> In fact, at the time of writing this paper, hES cells are being gathered for research and testing, but there is no record of a successful therapeutic application of hESCR. In addition, there are potential risks that

accompany hESCR. For example, researchers admit that “scientists are still unable to predict the behavior of transplanted stem cells in patients. Undifferentiated ES cells can form tumors... creating a risk of cancer if the cells are not all successfully differentiated before transplantation.”<sup>25</sup> Condic concurs, “The tumor-forming potential of embryonic stem cells has proved a significant problem that does not show signs of being resolved any time soon.”<sup>26</sup>

2) Second, even if hESCR lives up to the excitement, it is ethically presumptuous to give utilitarian considerations priority over questions about the status of the preimplanted embryo. Accordingly, the *success* of hESCR and therapy should not be the determining factor for the *use* of this procedure; if it is unethical to kill early embryos for utilitarian purposes, then any promised benefits from the practice are morally inconsequential.<sup>27</sup>

3) Third, the authors believe that it is better to be “sorry than safe” than “safe than sorry.”<sup>28</sup> In other words, we should proceed with hESCR rather than be sorry that we missed out on an opportunity to benefit humankind. Yet, even the authors admit that they “cannot say with absolute or apodictic confidence that the 14-day threshold is decisive” for determining individualization.<sup>29</sup> Essentially, they are willing to give unproven technology the benefit of the doubt, but not the embryo. On the other hand, the “safe than sorry” option avoids this dilemma by playing it safe (i.e., by not destroying human embryos) and simultaneously supporting the promising therapeutic benefits of induced pluripotent stem cell research.

## The Case for hESCR

A forceful argument should measure up to at least two criteria: 1) The premises should contribute in a manner that establishes the conclusion. And, 2) there should be compelling reasons to accept that the premises are true. I maintain that the authors successfully pass the first test but fail the second. That is to say, their premises, if true, successfully support the conclusion that hESCR is morally permissible. However, some of their premises are less than compelling and, therefore, render the argument unpersuasive.<sup>30</sup> Thus, in order to defeat their line of reasoning, I must establish that there are convincing reasons not to accept one or more of their premises.

There are a variety of ways that one could reconstruct the authors’ argument. For the purposes of this paper, I will summarize two central premises and the conclusion:

*P1)* Scientific evidence (e.g., the possibility of twinning before implantation, the formation of the “primitive streak,” etc.) demonstrates that the preimplanted embryo is not an *individual* human.<sup>31</sup>

*P2)* There is no obvious and indisputable theological proof that “ensoulment”<sup>32</sup> occurs at fertilization.<sup>33</sup>

*Conclusion:* Therefore, hESCR is morally permissible from a Christian standpoint.

In sum, if science establishes that individualization does not occur either at fertilization or before implantation, and if Scripture or sound theological reasoning does not actually teach that a soul is present at fertilization, then it would appear that hESCR is neither a violation of human dignity nor an infringement of a theological mandate. As a matter of fact, if humans will profit from hESC therapy, then it would seem that hESCR supports

human flourishing and dignity. Essentially, the authors offer the advantages of hESCR without fear that a moral or theological threshold has been crossed.

### Theological Considerations

P2 deserves some consideration because the authors claim to represent a Christian standpoint.<sup>34</sup> I argue that they commit at least two errors. First, in seeking theological justification for hESCR, the authors violate hermeneutics by suggesting that hESCR is consistent with Jesus' promise of abundant life.<sup>35</sup> For example, they appeal to John 3:16 to support their view that "God intends 'abundance' or 'fullness' of life for all. Fullness of life [they contend], includes health."<sup>36</sup> Additionally, their proof texting permits them to suggest that Revelation 21:4 ("mourning and crying and pain will be no more") somehow goes hand in hand with the practice and goals of hESCR.<sup>37</sup> On the contrary, I argue that, while the Gospel is good news for this present life, both of these passages, in particular Revelation 21:4, are primarily eschatological in their focus. Of course, there is a sense in which eternal life begins at the moment of salvation. Even so, while humans may experience healing, they still will physically die before they enter into eternal life. Furthermore, I see nothing in Scripture to justify, even remotely, hESCR, especially when the research destroys the earliest stage of human life.<sup>38</sup>

Second, while Scripture does not explain the mystery of the soul, nor does it state that individualization occurs at fertilization,<sup>39</sup> the following passage indicates that God is actively involved in the formation of the prenatal human. In Psalm 139, David writes,

You created my *inmost being*; you *knit me together* in my mother's womb (v. 13). I praise you because I am fearfully and wonderfully made; your works are wonderful, I know that full well (v. 14). My frame was not hidden from you when I was made in the secret place. When I was *woven together* in the depths of the earth (v. 15) your eyes saw my *unformed body*.<sup>40</sup> All the days ordained for me were written in your book before one of them came to be (v. 16) [italics added].

Psalm 139 portrays the process in terms of being "knit together" (v. 13) and "woven together" (v. 15) by God;<sup>41</sup> Moreover, God creates us as *individual* and *personal* humans. As one commentator observes, the passage implies that "Creation is existential! The intensely personal language the psalmist returns to ('I' and 'my') complements that of the second section. God is concerned with the *individuals* whom he has formed... [italics added]."<sup>42</sup> Personal identity and God's involvement appear to be present at the occasion of David's writing *and* in his unborn state. In other words, the David whom God created in his mother's womb is the same David writing this Psalm. The argument against individualization at fertilization and before implantation opposes the general thrust of this passage. It has to impose some kind of arbitrary stage in the process, e.g., the formation of the primitive streak, and contend that this is actually when individual human life begins. But what evidence do we have in Scripture that the primitive streak is the true beginning of an individual human life? At any rate, even if it is not possible to demonstrate from Scripture whether the soul is present at fertilization, the destruction of an early embryo remains morally wrong if it can be shown that it is an individual human being at fertilization. Hence, I will argue that science confirms what Scripture implies.



## The Scientific Evidence for P1

What then is the scientific evidence for P1? I will address the two strongest points of the authors’ argument: 1) the phenomenon of twinning and 2) the appearance and significance of the “primitive streak.”

From the authors’ point of view, “several *morally* relevant biological changes occur between the embryo’s 12<sup>th</sup> and 14<sup>th</sup> day of development [italics added].”<sup>43</sup> These changes include implantation whereby “the *in vivo* embryo adheres to the mother’s uterine wall” and when the “primitive streak, which marks the location of the future backbone, appears, and the central nervous system first begins to develop.”<sup>44</sup> Once the primitive streak appears, the embryo cannot twin. The presumption is that it seems unlikely that the preimplanted embryo is an *individual* person deserving special protection. If the preimplanted embryo is truly a distinct individual, then how could it become two (or more) individuals before implantation? And if the preimplanted embryo lacks the capacity for sentience because it has no nervous system, then in what sense is it an individual person?<sup>45</sup> In sum, if their evidence stands, then the authors appear to have a strong scientific case against the occurrence of individualization prior to implantation. Thus, a successful counter-argument should present compelling evidence that twinning and the development of a primitive streak do not count conclusively against the view that the preimplanted embryo is an individual human life. I will offset the strength of their evidence, not by denying the fact that twinning might occur before implantation but by demonstrating that the case for individualization at fertilization is stronger than their opposing evidence.

## The Scientific Evidence in Support of the Individualization of the Zygote

I will argue that an embryo’s individualization, which, I contend, occurs at fertilization, is a stronger indicator of its true status than the appearance of its primitive streak. I also question why “implantation” marks the beginning of human life. It seems that one could add additional criteria such as evidence of brain activity or self-awareness to the list of requirements. Indeed, the writers imply that we should understand the soul as “our relationship with God.”<sup>46</sup> But certainly, if we follow their logic, an embryo at the beginning of the formation of a primitive streak cannot be said to have a relationship with God. In contrast, I maintain that the individualization of the embryo is not based on its *location* in the womb. To defeat the authors’ claims, I will consider whether the scientific evidence confirms the individualization of the zygote.

The following continuum (Figure 1) presents the general 14-day development of an embryo:

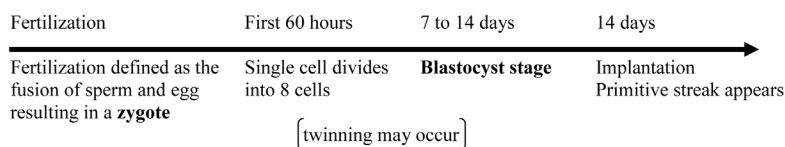


Figure 1: Continuum showing 14-day development of an embryo

In *Embryo: A Defense of Human Life*, George and Tollefsen observe that “when a sperm cell penetrates and fertilizes an *oocyte* (i.e., a female egg), the twenty-three chromosomes of the sperm cell and the twenty-three chromosomes of the egg cell can line up to result in the full forty-six chromosomes of the normal human somatic cell.”<sup>47</sup> Every subsequent somatic cell in the human body, as the cells divide, is identical to the initial somatic cell.<sup>48</sup> This is not to suggest that an embryo is merely a somatic cell. George and Tollefsen write that, “[i]n the case of somatic cells, each has *potential only* in the sense that something can be done to it so that its constituents (its DNA molecules) can become a distinct whole human organism, that is, a human being, a person [italics added].”<sup>49</sup> On the other hand, an embryo is “dynamically developing himself or herself to the further stages of maturity of the distinct organism—the human being—that he or she already is.”<sup>50</sup> In sum, an embryo is genetically *complete*; it has “an active disposition to develop itself to its next, more mature stage.”<sup>51</sup> A scientific case can be made that at the stage when the twenty-three chromosomes from the male and female gametes merge, then the zygote is formed, fertilization can be said to have occurred, and the one-cell embryo can begin to divide and develop further.<sup>52</sup> George and Tollefsen conclude that when the male and female gametes become “a single entity, the human embryo is certainly complete... [and] [T]he zygote is now genetically unique and its sex is established.”<sup>53</sup> The zygote is now a “distinct organism directing its own process of growth and development.”<sup>54</sup>

### What is a Zygote?

What exactly is the ‘zygote’ at the moment of fertilization? Does it make more sense to refer to a zygote as an individual “person” with the “potential to mature according to [its] kind”<sup>55</sup> or as a *potential* person? Essentially, the status of a zygote is an *ontological* question as well as a scientific one. In other words, it is a question of the zygote’s *essence*, i.e., *what* is it?<sup>56</sup> At first glance the answer is indisputable—there is no doubt that it is a “human” zygote. The essential question then is whether the zygote and ensuing blastocyst are *individual persons* entitled to protection from destructive procedures such as hESCR.

Edwin C. Hui offers the following four arguments in support of the human individuality of a zygote at fertilization:<sup>57</sup>

1) Fertilization results in genetic *uniqueness*. Hui writes, “The mixing of the paternal and maternal chromosomes leading to a genetically unique unicellular zygote remains the most biologically significant event in the whole process of the transmission of human life.”<sup>58</sup> William Cheshire concurs,

Every embryo of human origin is genetically a member of the human species, is genetically male or female, and, with the exception of identical twins and (hypothetically) clones, is genetically unique. The extraordinarily detailed genetic montage of a new human embryo resulting from the recombination of maternal and paternal DNA forms a living entity that differs from every other entity that has ever existed.<sup>59</sup>

2) There is genetic *continuity* from fertilization to further embryonic development. In other words, one’s unique genetic makeup remains *constant*, barring any outside interference, from the point of fertilization. Again, Hui observes that the multiplication

of cells does not “compromise the genetic continuity of the zygote as the same ontological individual; this same genetic uniqueness continues in the multicellular embryo.”<sup>60</sup> Jerome Lejeune, the renowned geneticist who discovered the genetic cause of Down syndrome, offers the following testimony in support of the fertilized egg:

...some people would believe that the pre-embryo does not have the same significance as an embryo. On the contrary, the first cell knows more and is more specialized than any cell which is later in our organism... Now the reason that a fertilized egg is the most specialized cell under the sun is because it has a special indication underlining segments of DNA which shall be expressed and others that shall not be expressed. No other cell will ever have it during the life of this individual... In the beginning it was written really not only what is the genetic message we can read in every cell, but it was written the way it should be read from one sequence to another one...<sup>61</sup>

Cheshire adds,

Moreover, through the genome the continuity of human genetic identity is maintained throughout an individual's lifetime. The genome seated within the zygote, the first cell of the human life span, is the very same genome a person will have in old age.<sup>62</sup>

3) Fertilization produces a zygote with the *intrinsic* capability for self-development. As Hui explains, the zygote “possesses an inherent and naturally active capacity, encoded in its genome, to control and coordinate all its systematic development and differentiation throughout the entire life process from fertilization onward.”<sup>63</sup> One could argue that the capacities, although not actualized, are nonetheless intrinsic (i.e., built into the zygote's DNA) to the zygote. This is important to note because some say that *in vitro* fertilized eggs, if not implanted, will not develop into a mature person. Thus, it is claimed, *ex vivo* zygotes are not individual persons because they cannot actualize their capacities. On the contrary, the act of implantation has no bearing on the *status* of the zygote. In other words, the *location* of the zygote does not determine the ontological and, further, moral *status* of the zygote.<sup>64</sup> Hence, it is not a question of whether the zygote depends on its mother to develop but whether the zygote has the intrinsic capacity to self-develop before implantation. According to Hui, the inherent capacity for self-development justifies the belief that individualization occurs at fertilization.<sup>65</sup> J. P. Moreland adds that, at the point of conception, a human embryo is an actual living human embryo that has potential (unless the potential is removed) to become a postnatal human baby. Perhaps it is helpful to make a distinction between “the possession and the actualization of one's capacities.”<sup>66</sup> Thus, Moreland continues, “Simply because an embryo has not actualized its capacities does not make it any less intrinsically valuable.”<sup>67</sup>

4) There is no evidence that differences in appearance or the development of organs results in any abrupt changes to the genetic identity of the individual.<sup>68</sup> In other words, there is more scientific evidence of continuity, from zygote to adulthood, than any proposed differences, regardless of differences in appearance or the growth of organs. Hence, the appearance of the primitive streak, or any additional attributes of the body, does not alter the original genetic makeup of the zygote.

## Arguments Against the Genetic Uniqueness of Early Embryos

Some dispute the evidence of genetic uniqueness. The counter-arguments include:

1) At the earliest stage of fertilization, the zygote relies on the mother for the “messenger ribonucleic acid (mRNA).”<sup>69</sup> Hui notes that,

it has been shown that it is only at the four- to eight-cell stage of embryonic development that the embryonic genes begin to be expressed... It is only at this stage of the ‘switching on’ of the embryonic genes that the embryo *begins to assume genetic control* and, in one sense, begins to *function* autonomously as a genetically distinct individual [italics added].<sup>70</sup>

In other words, before the 4-8 cell divisions, it seems that the mother provides the initial guiding information for subsequent embryonic activity. Thus, if the early zygote is not genetically unique due to guiding information provided by the mother, then it seems that the case for genetic uniqueness must be discarded.

On the other hand, other researchers disagree with those who claim that the zygote depends *solely* on the mother for the information necessary for development.<sup>71</sup> Hui observes that “even if during the course of normal embryogenesis certain maternal RNA molecules are found to contain organizing information, it does not automatically follow that the zygote or early embryo is thus ‘genetically silent’ and passively controlled by maternal informational molecules.”<sup>72</sup> That is, although the mother supplies important “organizing information” as well as nutrition, this does not discount the crucial role the zygote plays in its own formation.<sup>73</sup> Cheshire adds,

...the genome encodes all the instructions the organism needs to synthesize cellular building blocks and develop from an embryo into a unique, mature individual with a beating heart, sensitive fingers, and a brain that even in toddlers vastly outclasses the most advanced computers. Although microscopic in size, the human genome is enormous in its information content... the embryo is actively engaged in transcribing and translating the genome, synthesizing proteins and macromolecules, arranging intracellular architecture, taking in nutrition, burning oxygen for cellular metabolism, and strategically directing the complex process of cellular specialization on a deliberate trajectory toward actualization of all the functional capacities that typify a being of the species *Homo sapiens*. Life has begun. And with each cell division the embryo duplicates the entire genetic library with nearly perfect fidelity.<sup>74</sup>

George and Tollefsen agree:

Human embryos are not...some other type of animal organism, like a dog or cat. Neither are they a part of an organism, like a heart, a kidney, or a skin cell. Nor again are they a disorganized aggregate, a mere clump of cells awaiting some magical transformation. Rather, a human embryo is a whole living member of the species *Homo sapiens* in the earliest state of his or her natural development... who comes into existence as a single-celled organism (the zygote)...<sup>75</sup>

2) The second counter-argument highlights the “totipotentiality” of the zygote.<sup>76</sup> Essentially it is a question of whether the zygote is a single individual or a collection of totipotent cells. It is not until after implantation that a preimplanted embryo loses its

totipotentiality. The implication is that the preimplanted embryo lacks definition, i.e., individuality, and that one acquires individuality *after* implantation, not before.

Then again, others challenge this understanding of the preimplanted embryo and look to additional factors that indicate individualization well before implantation. Some propose evidence of “intracellular and intercellular (internal) differentiation and formation” in the very early stages of cell division.<sup>77</sup>

Hui writes,

This internal differentiation and organization of cellular activities takes place much earlier than the formation of the primitive streak and is determined *from within* (italics mine) the zygote, and hence it justifies the conclusion that the early embryo exhibits all the unity of an individual organism with an intrinsic goal-directedness.<sup>78</sup>

In short, there is indeed differentiation, but it is *within* the *individual* zygote. As one researcher describes it, “There is nothing vague, undirected or undecided about [the zygote]. It is the *human zygote* which represents the greatest fullness of human content and usable information, of directedness and decisive action—more than that found in any of the later cells.”<sup>79</sup> Hui concludes, “The totipotency of a part does not entail that prior to the division of the whole (i.e., the early embryo), the parts (the cells of the early embryo) are not functioning as specialized parts within an integrated whole.”<sup>80</sup>

3) A third counter-argument is offered by some as the principal reason for denying individualization before implantation. I revisit P1:<sup>81</sup>

*P1*) Scientific evidence (e.g., the possibility of twinning before implantation, the formation of the “primitive streak”) demonstrates that the preimplanted embryo is not an *individual* human.

The third counter-argument underscores twinning as evidence *against* individuality before implantation. As a matter of fact, not only is twinning possible before implantation, but also the recombination of twins into one single embryo is also. This again raises the question of how a preimplanted individualized embryo could divide into two or more embryos or recombine. In response, Hui explains that identical twinning is rare; not every zygote has the potential to twin. Typically, zygotes are not prone to twin before implantation. Hence, merely because some zygotes, for some unknown reason, twin, does not necessarily prove that the majority of zygotes lack individuality. I should add that currently there is no scientific explanation of *how* twinning occurs. It could be genetically determined at fertilization. It is worth mentioning that, in rare instances, twinning may occur *after* implantation.<sup>82</sup> Would the authors also deny the individuality of embryo at the point of implantation based on rare instances of post-implantation twinning? Furthermore, by destroying the preimplanted embryo, one potentially terminates not only one but two individual human lives if the embryo has the genetic potential to twin. In sum, it seems rather arbitrary to make the mere possibility of twinning the moral threshold for determining when an embryo is an individual human. It is far from decisive that twinning proves that zygotes are not individuals. What we have instead are comparatively rare events that are difficult to explain but inconclusive in their implications.<sup>83</sup>

## Conclusion

In conclusion, I have considered some of the key arguments for hESCR in *Sacred Cells?* The authors highlight the appearance of the primitive streak at implantation and the potential for twinning as evidence that the early embryo is not an individual human being. However, I do not consider the appearance of the primitive streak to be a more impressive stage-of-life milestone than the act of fertilization itself. In reality, the fertilized embryo already contains the genetic material that will later inform the primitive streak. The authors have a stronger case if they can demonstrate that the phenomenon of twinning is evidence against individualization at fertilization and the subsequent blastocyst stage. Then again, it is less than obvious what twinning means for the preimplanted embryo. First, it raises the question of how a preimplanted embryo is to be understood in their proposal. On the one hand, no one denies that it is a *human zygote* or *human blastocyst*. Yet, if the authors are correct in their assumptions, then the embryo is in some kind of intermediate state of existence. In effect, fertilization gives rise to a “subhuman” embryo that, with a mere change of location, becomes an individual human being with a soul. I argue that implantation changes the *location* of the embryo but not its status. Second, if we follow the authors’ argument, then what proof do we have that implantation guarantees the beginning of individual human life? In fact, twinning may also happen *after* implantation. In addition, I see nothing in their treatise to prevent the introduction of additional criteria (e.g., self-awareness, ability to feel pain, etc) as requirements for human life. The authors even propose that we should “understand the soul and the spirit in terms of our relationship with God.”<sup>84</sup> One wonders if an embryo at implantation, or even a neonate, can be said to have a relationship with God. I have countered the authors’ claims with scientific evidence for the embryo’s genetic uniqueness at fertilization and its genetic continuity throughout human maturation. This line of reasoning offers stronger support for the conviction that individual human life begins at fertilization. If my reasoning is correct, then the authors’ arguments denying human individualization at fertilization are unsuccessful. We can thus affirm with confidence that human life begins at fertilization and, is indeed, sacred.

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## Endnotes

- 1 Ted Peters, Karen Lebacqz and Gaymon Bennett, *Sacred Cells? Why Christians Should Support Stem Cell Research* (Lanham, MD, Rowman & Littlefield Publishers, Inc., 2008).
- 2 The Geron Corporation was founded by Michael West (Ph.D. in medicine from Baylor College of Medicine). West’s goal was to conquer death, which he said was “inarguably the greatest and highest calling of mankind...” Ibid., 6.
- 3 Robert P. George and Christopher Tollefsen, *Embryo: A Defense of Human Life* (New York, The Doubleday Broadway Publishing Group, 2008) 22-23.
- 4 At least two additional reasons are given in support of their argument - “chimerism” and “fetal waste.” Chimerism is the process whereby two distinct zygotes may recombine to form one embryo. Fetal waste concerns the percentage of miscarriages in early pregnancy. *Sacred Cells?* 120 and 185ff. It is beyond the scope of this paper to address these two concerns. Robert George and Christopher Tollefsen’s *Embryo: A Defense of Human Life* (c.f. my bibliography) offers a brief response to “natural embryo loss.” Edwin Hui’s *At the Beginning of Life* (c.f. my bibliography) speaks to the issue of chimerism. I have chosen instead to focus on the implications of twinning.
- 5 The writers prefer to explain the soul in terms of “our relationships with God” that “affords our dignity and our eternal destiny.” Ted Peters, et al, 148. But then, if this is true, is it accurate to suggest that even an implanted embryo has a *relationship* with God?
- 6 Many Protestants and the official position of the Roman Catholic and Orthodox Churches.
- 7 Ted Peters, et al, 36.
- 8 Ibid., 31.
- 9 That is, beyond reimbursement for the medical expenses of the procedure. Ibid., 32-33.
- 10 Leon Kass represents this framework and believes technologies such as hESCR threaten to “denaturalize us.” Ibid., 62ff.
- 11 These three frameworks are suggested as a subset of a general “theologically based ethical framework.” Ibid., 43.
- 12 This is not to suggest that the authors see no value in the other two frameworks.
- 13 The authors admit that “more frequently than not, positions taken within this framework (i.e., the human protection framework) partner themselves with the embryo protectionists.” Ibid., 69. iPSCR is not morally controversial because it does not require the destruction of human embryos.
- 14 In their preface they state, “The central question – the one that currently dominates the public debate – is whether the early embryo possesses morally protectable dignity, so that destruction for purposes of research is forbidden.” Ibid., ix. However, the authors disagree that this should be the central question; they prefer instead to make human improvement the focal point of the discussion.
- 15 Although the authors disagree with those who equate hESCR with abortion, they acknowledge that the “embryo protection framework” (e.g., Nigel Cameron) regards hESCR to be on the same level as abortion. Ibid., 49.
- 16 Ibid., 80.
- 17 Ethics Advisory Board
- 18 Ibid., 23.

- 19 Ibid., 27. In other words, if the preimplanted embryo is not an individual human, then the cloning of embryos would also be morally permissible.
- 20 Ibid., 23.
- 21 Ibid., x.
- 22 George and Tollefsen, 17.
- 23 *A professor of neurobiology and anatomy at the University of Utah School of Medicine.*
- 24 Maureen Condi, “What We Know About Embryonic Stem Cells, *First Things*,” *First Things*, (January, 2007) <http://www.medterms.com/script/main/art.asp?articlekey=18261> (accessed January 6, 2010). Condi continues, “It is relatively easy to generate stem cell derivatives in the laboratory that have at least some of the properties of normal, mature cell types. But the test of whether an embryonic stem cell–derived brain cell, for example, is indeed a normal adult brain cell is to put it into the brain of an adult animal and determine whether it survives and contributes to normal brain function. In addition, if laboratory-generated cells are to be therapeutically useful for the treatment of human disease and injury, they must be shown to have therapeutic value in adult animals: It is not sufficient that embryonic stem cell–derived cells merely survive in adults; they must also be able to repair the underlying disease or injury. It is precisely this kind of test that embryonic stem cell–derived tissues have proved unable to pass.”
- 25 Ali Khademhosseini, Joseph Vacanti and Robert Langer, “Progress In Tissue Engineering,” *Scientific American*, May, 2009, 68. The writers also note that “remarkable progress has been made in producing ES-like cells from regular adult body tissue, such as skin cells.” Ibid., 68.
- 26 Condi, “What We Know About Embryonic Stem Cells, *First Things*,” *First Things*, <http://www.firstthings.com/article/2009/01/002-what-we-know-about-embryonic-stem-cells-26> (accessed January 6, 2010).
- 27 The authors, of course, deny that the early embryo is an individual human.
- 28 Peters, et al., 78.
- 29 Ibid., 239.
- 30 This is not to concede that their additional evidence against individualization *is* persuasive (e.g., chimerism and fetal waste). It is simply to acknowledge that it isn’t feasible in this paper to address some of the other evidence.
- 31 I remind the reader that no one questions whether the zygote is a *human* zygote. The authors also note the amount of “fetal wastage” (i.e. the number of fertilized eggs flushed from the womb before implantation) whereby nature, under God’s oversight, eliminates 50-80% of naturally fertilized eggs. If fertilized eggs are truly individual humans, they observe, then it appears that God has created the reproductive process with a natural tendency to destroy a significant percentage of human life. Ibid., 121.
- 32 “Ensoulement” is perhaps a loaded term, but the writers use the term to suggest that ensoulement occurs at implantation rather than fertilization. Ibid., 149.
- 33 Ibid., 96ff.
- 34 It is not within the scope of this paper to respond in any detail to P2. Accordingly, my comments will be brief.
- 35 Ibid., 71.
- 36 Ibid., 74. In their notes they state that although “eternal life” is the common translation, it can also be translated “abundant life,” 83. *The Expositor’s Bible Commentary* agrees that “‘eternal,’ the new life God gives, refers not solely to the duration of existence but also to the quality of life as contrasted with futility.” Still, I think it is a hermeneutical stretch to link Jesus’ promise of abundant life with the benefits of hES cell research. Frank E. Gaebelien, general ed., *The Expositor’s Bible Commentary* (Grand Rapids, Michigan, Zondervan Publishing Co., 1976-1992).
- 37 Ibid., 76.
- 38 I realize that I could be accused of an argument from silence. Still, Peters, et al, use faulty hermeneutics when they imply that Jesus’ promise of abundant life justifies the use of technology on early embryos to provide future unproven benefit. I contend that they have the greater burden of proof in this instance.
- 39 Indeed, neither does Scripture teach that it occurs at preimplantation.



- 40 Moreland writes, “The psalmist describes himself as an ‘unformed substance,’ translated by the primary lexicon for the Old Testament as ‘embryo.’” J.P. Moreland and Scott B. Rae, *Body and Soul, Human Nature and the Crisis in Ethics* (Downers Grove, IL, InterVarsity Press, 2000) 232.
- 41 “Even when unborn (“when I was made in the secret place,” v.15) and little more than a physical being (“my frame”; lit., “my bone”) in the womb (“when I was woven together in the depths of the earth”), the Lord had a purpose for the undeveloped embryo (“my unformed body,” v.16).” *The Expositor’s Bible Commentary*.
- 42 *The Expositor’s Bible Commentary*.
- 43 Peters, et al., 81.
- 44 *Ibid.*, 81.
- 45 Some individuals (e.g., Michael Tooley, Peter Singer, etc.) take the matter a step further and argue that self-consciousness is the criterion of value with the right to life. However, if this is true, then “[n]ewborns and young infants do not possess the neurocognitive capacity required to recognize themselves as continuing entities.” John Kilner, Paige Cunningham, and W. David Hager, *The Reproductive Revolution* (Grand Rapids, Michigan, Wm. B Eerdmans Publishing Co., 2000) 61-62. Then again, Peter Singer is not necessarily disturbed by this implication.
- 46 Peters, et al., 148.
- 47 George and Tollefsen, *Embryo: A Defense of Human Life*, 32. A very detailed and helpful description of the process of fertilization can be found in the aforementioned book. See 28ff.
- 48 *Ibid.*, 160-161.
- 49 *Ibid.*, 161.
- 50 *Ibid.*, 161.
- 51 *Ibid.*, 163.
- 52 *Ibid.*, 37.
- 53 *Ibid.*, 37-38. George and Tollefsen believe that the “definitive moment” actually transpires earlier when the sperm enters the egg. 38.
- 54 *Ibid.*, 38.
- 55 Moreland, 269. I am using “person” in a general sense. I do not attach additional criteria to this term such as “psychological functions.”
- 56 I find Aristotle’s “four Causes” applicable to understanding the essence of the human embryo. The early embryo’s *material* cause (what does it consist of?) is a fusion of male and female gametes forming a genetically unique human zygote. The *efficient* cause (what caused it?) is human fertilization. The *formal* cause (what is it?) is a human embryo. Lastly, its *final* cause (what is its purpose?) is to grow into a mature *human* adult. Simple answers to these four questions make it possible to identify the zygote as an individual human.
- 57 Edwin Hui, *At the Beginning of Life, Dilemmas in Theological Bioethics* (Downers Grove, IL, InterVarsity Press, 2002) 59-61.
- 58 *Ibid.*, 59.
- 59 William Cheshire, “Human Genetic Research After The Genome,” The Center for Bioethics and Human Dignity <http://www.cbhd.org/content/human-embryo-research-after-genome> (accessed July 23, 2009).
- 60 *Ibid.*, 59.
- 61 Quoted in Moreland, 284.
- 62 Cheshire, CBHD, <http://www.cbhd.org/content/human-embryo-research-after-genome> (accessed July 23, 2009).
- 63 Hui, 60.
- 64 As J. P. Moreland observes, “Being in the wrong environment does not result in loss or non-possession of these [higher-order] capacities.” Moreland, 270-272.
- 65 Hui, 60.
- 66 Moreland, 274.
- 67 *Ibid.*, 274.
- 68 Hui, 61.

- 69 Ibid., 63.
- 70 Ibid., 63. It should be noted that some researchers believe that genetic individualization occurs *after* three weeks.
- 71 It is beyond the scope of this paper to provide details of those who disagree with the point of the counter-argument. I refer the reader to Hui's chapter, "The Biological Dimension of Human Personhood" in, *At the Beginning of Life*, 58ff.
- 72 Ibid., 64.
- 73 Hui suggests that the zygote is not passive but actually "controls" the maternal molecules. Ibid., 65.
- 74 Cheshire, "Human Genetic Research After The Genome," CBHD, <http://www.cbhd.org/content/human-embryo-research-after-genome> (accessed July 23, 2009).
- 75 George and Tollefsen, *Embryo: A Defense of Human Life*, 3-4.
- 76 One single totipotent cell has "total potential; it has the capacity to form a whole organism." A pluripotent cell "can give rise to most, but not all, of the tissues necessary for fetal development." MedicineNet.com <http://www.medterms.com/script/main/art.asp?articlekey=18261> (accessed July 28, 2009).
- 77 Hui, 66.
- 78 Ibid., 66.
- 79 Diane Nutwell-Irving, "Scientific and Philosophical Expertise: An Evaluation of the Arguments on Personhood." *Linacre Quarterly* 60 (1993): 18-46, quoted in Hui, 67.
- 80 Hui, 67.
- 81 From p. 6 of this paper.
- 82 Ibid., 69.
- 83 The phenomenon of "fetal waste" does not necessarily prove that the early embryo is not an individual. First, it should be said that miscarriages are common before *and after* implantation. So if the point is to deny individualization due to the number of early miscarriages, then why stop at implantation? If one follows the logic of Peters, et al, then one could argue that individualization does not happen until after 8 weeks (It is estimated that 1/3 of the miscarriages occur during the first 8 weeks). Second, there are a variety of causes of miscarriages. For example, sometimes a "pregnancy sac" appears in the first 8 weeks, but there is no embryo inside the sac. For whatever reason, the egg was fertilized, the cells began to divide, but the embryo did not form. Other causes are health-related. Smoking, excessive use of alcohol, drugs, sexually transmitted diseases, diabetes, fever, age, levels of progesterone, and even caffeine may adversely affect the pregnancy. Frequently there are random "chromosomal abnormalities" in the embryo (One study found that of more than 8000 miscarriages, 41 percent had chromosomal abnormalities. "Patient Information: Miscarriage," UpToDate For Patients, <http://www.uptodate.com/patients/content/topic.do?topicKey=pregnan/5386> (accessed July 24, 2009). In any case, it is difficult to make the case that preimplanted embryos are not individual humans based on the extreme number of miscarriages when many miscarriages occur after implantation.
- 84 Peters, et al., 148.

# HOW MUCH RESPECT DO WE OWE THE EMBRYO? LIMITS TO EMBRYONIC STEM CELL RESEARCH

DENNIS L. SANSOM, PHD

## Introduction

I want to show that, because the embryo, whether *in vitro* or *in utero*, is a human, we owe it enough respect not to create it or interrupt its natural growth so as to destroy it for its stem cells. To make this case, I will argue that the embryo is human and has a moral status.<sup>1</sup>

Until 2007, the issue was whether we seek to further beneficence for human wellbeing by using embryonic stem cells or to respect the embryo's right to life. We had four options:

- A. The actual beneficence of using stem cells for medical therapies versus the actual moral worth of the embryo (i.e., inherent dignity);
- B. the potential beneficence of using stem cells versus the actual moral worth of the embryo;
- C. the actual beneficence versus the potential dignity of the embryo; and
- D. the potential beneficence versus the potential dignity of the embryo.

However, we no longer have these four options. Two facts have changed the considerations. First, as of today, there has not been a successful therapeutic use of an embryonic cell from a zygote or embryo.<sup>2</sup> Though U.S. President Obama recently expanded the use of federal research money, hundreds of millions of dollars have already been spent in research in the US alone.<sup>3</sup> Researchers have encountered two major problems—first, the bodies (of research mice) usually reject the stem cells and, second, the stem cells tend to form tumors (called teratomas), some becoming cancerous. Thus, embryonic stem cells have not proven to be actually beneficial for medical therapies, though they may in the future.

Second, new technology, called de-differentiation, programs cells to reverse the development back to the embryo-like stem cells without creating an embryo.<sup>4</sup> De-differentiation develops a stem cell as though it had come from an embryo. These cells are autologous, that is, from a person's own DNA, and can possibly bypass the rejection issue. Yet, it is not determined whether they will turn into tumors. If de-differentiated stem cells prove successful, then we can achieve beneficial therapies without destroying embryos to obtain their stem cells. The previous issue of whether we should use embryonic stem cells for human wellbeing or we should respect the dignity of the embryo is not as pressing as it was before 2007. We can respect the embryo's dignity and also promote embryo-like stem cell therapies.

Some people still believe we should pursue traditional embryonic stem cell research because of the potential therapeutic benefits. They reason that we may be able to solve

the two problems in the future and establish successful therapies. If that is the case, then we are left with two of the above choices—B and D.

Someone could say that we have another choice—the embryo is not human at all, and thus we should pursue beneficial therapies regardless of the damage done to the embryo. However, this choice does not recognize a clear point. Since a normal zygote has the organic capability of developing into an embryo, and the embryo into a fetus, and the fetus into a newborn human, we must say that the zygote is at least a potential human. We assume it is human because we want its human stem cells for human therapies. Hence the choice is whether the zygote or embryo is a potential human or an actual human, which would consequently be owed some level of moral respect.

I want to argue that the distinction between a potential human and an actual human worthy of being treated with human dignity is not really all that clear. In fact, I will try to show that it is a distinction that really does not make an ethical difference for us, because we owe a certain duty to a potential human the same way as to an actual human.

### **The Distinction Between a Potential and Actual Human Being**

James C. Patterson contends that because the pre-implanted embryo lacks a clear moral status, we should use its stem cells to develop therapies. “How can we let patients who are unmistakably people die to protect embryos that, even if implanted, may or may not turn out to someday become persons?”<sup>5</sup> He feels that it is intuitively evident that the embryo lacks such a moral status, and he uses a thought experiment borrowed from George Annas to make this point. “If a fire broke out in a fertility lab and there was only time to save a visiting two-month-old baby in a bassinet or a test tube rack containing seven embryos, most people would save the baby without hesitation.”<sup>6</sup> For Patterson, this scenario indicates that we see a clear distinction between an embryo, which is potentially human, and a baby, which we know is actually human. In fact, he reasons that there is not a fundamental difference between an embryo and a human cell, because both are potentially human in that each has the necessary DNA instructions to become a human.

However, Patterson’s argument is counterintuitive to what we know to be the difference between human cells and a human embryo. Consider another thought experiment. Suppose a fire breaks out in a fertility clinic, and we have the chance to save a rack of human embryos and a rack of skin cells. We should naturally save the rack of human embryos, because we know there is a fundamental difference between an embryo and a typical cell. It may be possible through somatic cell nuclear transfer and cloning to engineer an embryo from a skin cell. But the skin cell on its own is not potentially a human embryo, whereas we know that the embryo (whether pre-implanted or implanted) is already human and is thus a potential fetus and a potential newborn. Thus, it is confusing to claim there is no real difference between a skin cell and an embryo.

I believe that Brent Waters is closer to understanding the real choice over the moral status of the embryo when he says, “The most troubling aspect of the rhetoric employed by both camps, however, has been their misdirection over what is purportedly the principal object of their dispute, namely, that the human embryo is surely something more than a speck of cells but that it is also clearly something less than a child. It is precisely by entering this ambiguous stage of human life to deliberate on the moral status

of the embryo that would transform the current exercise of political maneuvering into a public debate.”<sup>7</sup> Waters’ recognition highlights the obvious point that we do not treat an embryo in the same way we do a newborn, toddler, adolescent, teenager, young adult, middle-aged adult or senior adult. Each stage of human development is owed requisite duties relative to the level of physical and social maturation. For instance, we allow adults to vote and drive but not toddlers, and this distinction does not violate the basic duties we owe toddlers. Also, we typically give family inheritance rights to infants and not to embryos, and we do not see this difference as a denial of the embryo’s humanity. Thus, I think it is consistent with our basic intuitions to treat the embryo not as just a clump of cells but as a human that is potentially a fetus, infant, toddler, etc.

There are other ethicists who argue that, though the zygote (i.e., the pre-implanted embryo) has the genetic distinctiveness of a human, we should still not call the zygote a human. D. Gareth Jones maintains, “Within a laboratory environment, blastocysts are ‘potentially totipotent’ rather than ‘actually totipotent’. In this they stand in stark contrast to their counterparts within a woman’s body . . . . In neither case is there an opportunity for these blastocysts to give rise to new individuals; their future life-giving role is non-existent. There is no intention that they should do so, while their laboratory environment ensures they will not do so.”<sup>8</sup> To Jones, the embryo *in vitro* lacks the necessary environment to become human, and hence, we can extract its stem cells. If successful, we “glorify God and enhance the lives of human beings. As long as the aim of therapy is the alleviation of human illness, it has the potential to elevate God’s images.”<sup>9</sup> Jones may be right about what we potentially can do with embryonic stem cells, but he is wrong in his assessment of the status of the pre-implanted embryo.

Jones’s major premise is that the embryo *in vitro* cannot mature into a full embryo and consequently a fetus, infant, etc. because the environment will not provide the necessary conditions for such maturity. The point is that a pertinent environment is necessary for an embryo to mature to the next stage. This point could also be applied to the implanted embryo that could not mature because of some problem in the uterine environment. If the umbilical cord does not form from the mother’s uterine wall, then the embryo will not mature. If the mother cannot provide nutrients through the cord, then the embryo will die. The environment of the pre-implanted embryo in a petri dish may be enough to sustain its life, but it is not enough to allow the embryo to mature. The same could be said about the newly-implanted embryo. Environmental changes are necessary for the embryo to mature. Thus, if we maintain that the implanted embryo is human because it is in an environment in which it can mature into the next stage if the new environment matures with it, then, by the same reasoning, we should say that the pre-implanted embryo kept alive *in vitro* is also human.

Another group of ethicists argues that, since the pre-implanted embryo does not have the necessary relationship with the mother, it is not wrong to destroy the embryo for its stem cells. Ted Peters, Karen Lebacqz, and Gaymon Bennett make this argument.<sup>10</sup> They maintain that much of the resistance to embryonic stem cell research rests on a fundamental mistake—substance dualism. This view maintains that God gives the soul to the body at conception, and hence it should be respected as having inherent dignity and consequently should not be destroyed for its stem cells.

However, they believe that this dualism lacks clear philosophical and biblical support, because it fails to acknowledge that human essence depends on a relationship

with God, not on an immortal substance given at the point of ensoulment. Rather, human essence results from relationships with God and others. They then conclude, “The random fertilization and flushing of ova within a women’s body does [sic] not qualify as such a relationship; nor does the appearance in a petri dish of a zygote produced either by *in vitro* fertilization (IVF) or somatic [sic] cell nuclear transfer (SCNT) qualify. What counts is the day a woman realizes that living within her body is the seed of a new life, a new life that she (and her partner) will welcome into this world, a nascent person whom the angels will ferry into everlasting life with God.”<sup>11</sup> In this view, God forms a relationship with the embryo through the mother’s acknowledgement that she is a mother. They furthermore reason that since personal identity forms only after the possible twinning of the embryo occurs and with the development of a primitive cerebral streak, it makes sense to say the soul forms around day fourteen of conception. “When this relationship between a mother and future individual child is established, to think of the possibility of personhood and the prospect of a future destiny with God makes sense.”<sup>12</sup> They thus maintain human identity is relational, derived from the parents and God.

Peters et al. correctly maintain that human identity is not an abstract reality unrelated to people’s necessary relationships to other persons and God. We are not just humans, but children of parents and parents of children and ultimately children of God. However, this view has several major problems. First, this view implies that God’s relationship with the embryo depends on the mother establishing a relationship with the embryo. It is right to say that the embryo is a child only in the sense that it has a mother, but we could just as well reason that in God’s omniscient, providential care, God establishes a parental relationship with the embryo before the mother acknowledges she is carrying her baby. In fact, there is biblical support for such a notion in the various passages where God gives a child to a woman.<sup>13</sup> Our human identity arises from the relationships that cause us to become a human, and, inferentially, we could reason that God creates our childhood before the woman recognizes or acknowledges that she bears a child.

Second, the view of Peters et al. emphasizes only the external aspects of the necessary relationships and ignores the internal aspect. This distinction between external and internal is important for understanding what makes a human relationship possible. The external aspect refers to the necessary environment for maturation. The internal aspect refers to the organic reality of the embryo. It would not make any sense to maintain that whatever the woman defines as a child indeed would be a child. For instance, a tumor or a clump of cells would never be called a child *in utero*. There has to be something unique about the embryo before the woman can acknowledge it as her child.

What is this unique quality of the embryo that compels us to call it a human embryo? Robert P. George and Christopher Tollefsen give insights into this unique quality.<sup>14</sup> They contend, “from the zygote stage forward the major development of this organism is controlled and directed from within, that is, by the organism itself.”<sup>15</sup> They base this claim on the following facts (the following is a brief summary of their complicated analysis of embryology):

1. Although the sperm and egg have the DNA of a biologically whole person, they cannot grow into different forms; their nature is haploid whereas the zygote is diploid, which enables it to grow.
2. The zygote at fertilization is genetically distinct from the parents in that its DNA and twenty-three pairs of chromosomes are unique, and the DNA of the sperm and egg break up in the act of fertilization.
3. A unique individual arises when there is a single, unified, and self-integrated biological system; this occurs at syngamy-- the lining up of the twenty-three pairs of chromosomes.
4. Implantation enables the embryo to receive oxygen and nutrition from the mother, which is necessary for it to mature.
5. Even though twinning is possible at the development of the primitive streak at fourteen days, nonetheless an embryo exists prior to the fourteen. Thus, if an identical twin emerges, it most likely evolves from an existing embryo.
6. Although the embryo is dependent on its environment (whether in a petri dish or mother's uterus), it is an organic whole, a distinct human organism, though immature.
7. Therefore, we should not say that the zygote is a potential human being; we should say that the human zygote is a potential human embryo, a potential fetus, and a potential newborn child.<sup>16</sup>

I summarize George and Tollefsen's findings in embryology to show that the claim of Peters et al. is only partially correct. It is true that a developing zygote must have an appropriate environment in which to mature and that human identity entails relationships with parents and God, but we must also recognize that the embryo can mature into a fetus, infant, etc. and can be called a child by a mother because it has the organic wholeness of a human, just as the mother does.<sup>17</sup> Due to its self-integrated biological wholeness, or as Thomas Shannon describes it—the “biologic expression of human nature,”<sup>18</sup> the embryo has an organic destiny to develop, dependent upon the appropriate environments. In fact, at all levels of human maturation we could say that we grow relative to the nutritional resources and safety of the environments, from zygote to adulthood. The external environment and internal organic wholeness are both necessary.

Because we know that the embryo has the organic wholeness of a human, the distinction between a potential and an actual human becomes even more untenable. It is tautologically obvious to say that only a human can become a human embryo, a human fetus, human newborn, etc., but Peters et al. seem to make the point that if the embryo is only potentially human, then it is not as human as is the fetus or newborn. Such a claim is conceptually confused. If the embryo is human in any way, then it is actually a human. The embryo's potentiality does not refer to what it already is (i.e., a human), but to what it can become—a fetus, newborn, etc. The embryo's actuality as a human precedes its potentiality to become a fetus, newborn, etc. Thus, if we think the fetus is human, we have to think the embryo is also human.

However, Peter et al. use the concept of potentiality as though the organic wholeness of the embryo is unrelated to its organic wholeness when it becomes a fetus, newborn,

etc. If that were possible, then the embryo would not develop into a fetus because there would not be any organic continuity between them. The fetus would be human at the point of becoming a fetus. Yet this claim contradicts the embryological facts about the embryo's organic wholeness. In the right environment, fetuses organically develop from embryos, and if we think the fetus is human (as do Peters et al.), then to say that the embryo is not as human as the fetus creates conceptual confusion.<sup>19</sup>

### What Kind of Respect Is Owed Human Embryos

Although Lebacqz calls the embryo a potential human, I believe she tacitly recognizes that the embryo should be treated as a human. In an article titled "On the Elusive Nature of Respect" she emphasizes the Latin root of "respect"—*re-specere*--to look again, to look deeper. If we look deeper at the embryo, we should respect it for its particular stage in human development. The embryo has value as a human. "To value something is to believe that it has moral worth in itself, apart from its usefulness to us. To respect the embryo is to affirm that the value of the embryo or tissue is *not* dependent on its usefulness to us. Respect sees a value in itself beyond usefulness."<sup>20</sup> She hence argues that if we destroy the embryo for its stem cells, we should not treat it cavalierly as though nothing of value is lost in the destruction. She believes that if we use the embryo's stem cells to further medical science, which would benefit many more people, we would show it respect (though we destroy it). Viewed in this light, embryonic stem cell research does not violate the embryo's worth as a potential human being. Lebacqz then concludes, "They can show respect toward early embryonic tissue by engaging in careful practices of research ethics that involve weighing the necessity of using *this* tissue, limiting the way it is to be handled and even spoken about, and honoring its potential to become a human person by choosing life over death where possible."<sup>21</sup>

Lebacqz rightly appeals to the respect owed the embryo, but I think her argument is inconsistent. To show this problem, I use a point Robert Song makes in his article "To Be Willing to Kill What for All One Knows is a Person Is to be Willing to Kill a Person."<sup>22</sup> Song raises concern about the way the Human Fertilisation and Embryology Act of 1990 in Great Britain justified stem cell therapies. It argued that although we cannot be certain that the embryo is a person, the embryo should be given the benefit of doubt that it is a person. However, since the embryo's personhood is not totally certain, if we can use its stem cell to help others whom we know are persons, it is more ethically compelling to err on the side of beneficence. It is a choice of probabilities.

Song thinks this reasoning is unconvincing. The argument should not be about probabilities, because "the force of the possibility that someone might be *killed* is lost."<sup>23</sup> He feels that the standard is too high to insist that we must know for certain the embryo is a person before we stop the research. He gives two illustrations to make this point. A supervisor of a demolition team who gives the order to destroy a building would be culpable if he believed the probability of children playing in it would even be low. Also, a surgical team would be culpable if they stopped trying to resuscitate a patient whom they thought was only probably dead. "Similarly, in the case of destructive research on embryos, the standard of proof required is much higher than a mere balance of probabilities: it must be shown beyond a reasonable doubt [though beyond an absolute doubt is not required] (or something like this) that the embryo is not a person."<sup>24</sup>



Because the embryo has much more at risk than the possible beneficial uses of its stem cells, namely its life and future, we should respect it as though it were a person. Its humanity is certain, even if we think it is only potentially human (as do Peters and Lebacqz). Consequently, to justify destroying it, we also justify killing what is potentially a human fetus, newborn, toddler, etc. We typically acknowledge that these stages have moral status. We are thus faced with this decision: is the moral status of the embryo more morally compelling to us than the potential therapies that might result from its stem cells? If the embryo is a human (which its organic wholeness shows), then the answer is yes, because the embryo actually has something to lose (i.e., its future as a fetus, newborn, toddler, etc.), whereas the therapies are only potentially beneficial so far. It is counterintuitive to our commitments to respect persons to destroy what we know will become (in the right external conditions) what we obviously do respect (i.e., a newborn) to pursue a therapy that has not yet yielded any success.

Lebacqz makes the confusing claim that we should respect the embryo's value and that we can also destroy it to possibly benefit others. Yet, according to Song's line of reasoning, the logic of her argument is that it is morally permissible to kill a person to therapeutically benefit the life of another person. This seems inconsistent because, if we respect an embryo as a person, then we should not destroy it for the possible benefit of someone else.

Lebacqz and Peters could argue that, though the embryo is potentially a human and should be respected as having value, the possible beneficial value of its stem cells for others is more morally important than the respect owed to it. In fact, they reason:

Where it is not clear that there is a harm involved, we can—and possibly must—move forward. Opportunity waits for helping suffering people [whose dignity should be respected and] who could benefit from stem cell therapies. In the face of the uncertainty concerning the moral status of the embryo, those concerned about speeding up the arrival of medical benefits elect to pursue research in spite of their uncertainty. Doing nothing—or worse, shutting down stem cell research—passively violates the principle of non-maleficence as it pertains to those now suffering who could eventually benefit.<sup>25</sup>

Peters even argues that a real moral choice does not exist between the value of the *ex vivo* blastocyst and the possible beneficial value of its stem cells, because the *ex vivo* blastocyst does not have dignity and hence does not have value, because it does not have a relationship with a mother.<sup>26</sup> However, I think Peters' position is problematical.

First, since we can now obtain embryo-like stem cells without lethal research, the choice is not between the embryo's life and the possible beneficial value of embryonic stem cells. Second, since embryology indicates that the *ex vivo* blastocyst is also a human, though a human in an immature stage, it should be treated as though it has potential human value. Furthermore, according to Song's principle, even if the embryo is only a potential person, we still are justifying the destruction of a person, and frankly, that is problematic.

To more fully understand why Peters' view is ethically problematic, consider the relationship between a duty and a right. In *The Right and The Good*, David Ross points out that moral rights imply duties but that duties do not necessarily imply rights.<sup>27</sup> For instance, "a right in one being against another is a right to treat or be treated by that

other in a certain way, and this plainly implies a duty for the other to behave in a certain way.”<sup>28</sup> The moral right does not depend on others recognizing the right or feeling that they have a duty to honor it. Rather, the right comes from the nature of that which possesses it. “[O]nly that which has a moral nature can have a right.”<sup>29</sup> However, according to Ross, we have some duties that do not necessitate a moral right. Although we have a duty to treat animals humanely and to respect the environment, they do not need to make a claim of rights upon us in order for us to have these obligations. We have them because we are moral agents. However, if something has a moral nature, then we are obliged to show just and beneficent treatment toward it.

In this light, we can then reason that, first, if the zygote is at least a potential human being that should be treated with respect, and that, second, if we try to justify killing it, we are in fact justifying killing a human, then we should conclude that the zygote has a moral claim to which we should feel obliged to act beneficently. Obviously, destroying the zygote, even in a non-cavalier way, to help someone else would violate the duty we have toward it. Peters may be right that our recognition of the respect of dignity owed a newborn and an adult is different than what we recognize in the *ex vivo* blastocyst, but this difference does not nullify the humanity of the blastocyst. It has a human destiny which requires external conditions for it to mature, just as every stage of embryonic development requires. The fact that the blastocyst needs a uterine environment does not invalidate its claim of right upon us just as the implanted embryo’s need for the development of an umbilical cord does not take away its claim of right upon us.

We are obligated to respect the value of the zygote because its humanity has a right to be respected. If we were to argue that our duty to respect the zygote creates its value, that is, it has value because we respect it, then we fail to recognize its humanity, which is a claim of right on us. Its right to be respected precedes our recognition of it, and the obligation we have toward it comes not from a possible value we may derive from it or impute to it, but from its human nature as a zygote.

To understand this level of respect, Brent Waters claims we should call the embryo a neighbor:

I propose that we explore an alternative, or perhaps parallel question: is the human embryo my neighbor? The principle reason why this question may offer a more promising starting point for moral deliberation is, following Karl Barth, that it is much more difficult to think about neighbors in an abstract manner. We cannot contemplate a neighbor in isolation, but only in relationship to and with other neighbors. . . . We have neighbors who are our friends and neighbors who are our enemies. Moreover, when encountering unfamiliar neighbors, we presume, or at least should presume, that we share a mutual bond by the fact that we both exist, however qualitatively different that existence might prove to be. In short, in order to learn what being human means requires that we treat our fellow human beings as neighbors, and we must always remember that this treatment is predicated on God’s command that we love our neighbor, whoever they might be.<sup>30</sup>

The command to love our neighbors as ourselves does not create the value in the person. Rather, love is the proper response to one who has the rightful claim on us as a neighbor. This notion of love of neighbor articulates well the relationship of our duty to respect

the humanity of the zygote with its right to be treated as a human. If the zygote is our neighbor, then it is not just an artifact of our making, valuable to us because of its stem cells or because we deem it valuable, but is one who is owed the ethic of neighbor-love.

If we owe the ethic of neighbor-love to the embryo because it is a human with a future as a fetus, newborn, toddler, etc., then we must also recognize the implications that the ethic of neighbor-love has for how we estimate the moral status of others. All persons have the right to their future as humans. There may be instances in which it is ethically justifiable to kill others (for example, self-defense), but, whatever justification we give, we cannot deny the humanity of the other. For instance, to be consistent with this principle, we cannot justify capital punishment or war based on the assumption that the criminal or enemy is not due some level of respect. If it is ethically possible to justify these acts, then we would need to show that killing them is more ethically compelling than their right to be recognized and respected as humans. There may be such justifications, but I cannot pursue them here. My point is, if we are obligated by neighbor-love to respect the embryo's right to its future because it is a human, then this obligation carries over to all our human neighbors—criminals and enemies alike.<sup>31</sup>

### What To Do With “Spare” Embryos?

A question that now follows is “can we use lethal research on redundant embryos from *in vitro* fertilization?” “Are these embryos our neighbors as well?” My concern here is not with the morality of IVF, even though the practice of fertilizing more embryos than may be necessary for a successful pregnancy is ethically problematic. My concern is, if we were to destroy a redundant embryo from IVF for its stem cell, would we violate its neighbor status, and hence violate our duty to the embryo?

George and Tollefsen maintain that it is immoral to use the redundant embryos. They argue that “it is typically not right—because not fair—to ask someone to share the burdensome effects of an act that will exclusively benefit others. So even if the removal of vital organs from a homeless vagabond, for the sake of saving many, was not an instance of direct killing of the vagabond, still, it is manifestly unfair to demand of him the sacrifice of his organs, or his life, for people to whom he has no obligations, and from whom he will receive no benefits.”<sup>32</sup> Such an ethical principle keeps society from demeaning the value of others, no matter their situation, because they may be beneficial to others. George and Tollefsen then apply the same ethical principle to the “spare” embryos. “[I]t would be wrongful because it is an unfair imposition of burden on an innocent human being. We conclude then that destructive research on [spare] human embryos cannot be morally justified.”<sup>33</sup> For them, even if we did not intentionally create the embryo for lethal research, we would be treating it as though we had intentionally created it to destroy it for its possible benefits for others.

However, John A. Robertson takes another approach. He believes it is wrong to profit from an original immoral derivation, if it were intended in the first place, but that the “no benefit from another's wrongdoing” theory of complicity seems much too broad to be a guide to moral or social practice.”<sup>34</sup> He gives several illustrations. We would not condone or perpetuate the wrongness of murder, if we were to use the victim's organs to possibly help others once the victim is dead. Also, we would have an ethically difficult time with most of our land transactions today since much of it was taken from the Native Americans. He then concludes that “persons who think that induced abortion

is immoral [or creating ‘spare’ embryos for IVF] could support the use of fetal tissue or ES cells derived from abortions as long as the derivation or later research or therapy had no reasonable prospect of bringing about abortion [or IVF], just as they could support organ donation from homicide victims without approving of the homicide that made the organs available.”<sup>35</sup>

Both make good points. George and Tollefsen rightly emphasize that since the embryo is human, we are obligated to respect its right to life in all possible situations. Robertson is also correct in that the “no benefit” principle does not make sense in all cases in which derivative value may occur from originally immoral acts (e.g., his illustrations). I think we can reconcile both views by maintaining that we can take the stem cells from the embryos past the point of viability, but we may not take the ones that can be viably implanted.<sup>36</sup> Those past viability can no longer be successfully transplanted and hence do not have an organic destiny. They are kept alive but do not have the potential to mature into an implanted human embryo, fetus, newborn, etc. Just as we take the organs of the recent dead without causing their death, we can take the stem cells from the embryos devoid of an organic destiny. They remain neighbors, though neighbors without a future as a human embryo, fetus, newborn child, etc.

Although I believe this solution is ethically legitimate, it is an imperfect one, and people can reasonably differ with it. The problematic aspect is consent. To respect a person’s right of self-determination, we require informed consent before we take viable organs once she or he dies. Obviously, the spare embryo cannot give an informed consent. However, parents give informed consent for their infants, because they are responsible for the infant’s maturation until she or he has the capacity of self-determination. In the use of stem cells from spare embryos the comparison is with the latter, not former, use of informed consent. Thus, to justify taking stem cells from non-viable embryos, we should require the parents of the embryo to give informed consent.

## Conclusion

I have wanted to show that we should feel a profound obligation to respect the humanity of the embryo as our neighbor. This respect is not arbitrary or superficial. It logically follows from the deepest sense of obligation we owe to the rights of others to be the humans they are. As adults we share with embryos an organic destiny as humans, and, theologically speaking, God commands us to love our neighbors, even when our neighbor is in the stage most unlike our stage and when it is in the most vulnerable stage of human development. Because of the tremendous technological advance which allows us to create embryo-like stem cells, we can also pursue beneficence through stem cells therapies to our neighbors who are infants, toddlers, etc. and additionally acknowledge the duty we owe the humanity of the embryo. It is a great time in which we can do both.

## Endnotes

- 1 There is sloppiness in the public discussion about the embryo’s developmental chronology. More often than not the word “embryo” refers to the stages before and just after implantation. The embryonic process starts with the zygote, when the oocyte and sperm merge to create a new genetic code, to the blastocyst which forms stem cells around day three when it has about sixteen cells, and then at day six, the embryo implants onto the uterine wall. In this paper I will use

- the word embryo on occasion to refer to all the stages before implantation and at other times, according to the context, only to the implanted embryo.
- 2 In November 2009, Advanced Cell Technology of Santa Monica, CA announced that the US Food and Drug Administration gave it permission to conduct a Phase I/II (that is, establishing the safety of the drug) on using embryonic stem cells to cure Stargardt, a photoreceptor degenerative disease which causes blindness. It will enroll twelve patients in three sites. The company had success using animals and is now exploring the safety of the drug on humans. It has therapeutic promise, but this will not be known till the protocol moves into Phase III and IV trials. Moreover, in December 2009, the journal *Stem Cells* reported that the North East England Stem Cell Institute successfully treated eight patients for Limbal Stem Cell Deficiency (a blinding disease) using the patients' own stem cells.
  - 3 In 2008, the National Institute of Health spent \$88 million (and this number will rise in 2009 due to government stimulus spending). California has spent approximately \$300 million a year since 2004 on embryonic stem cell research and will till 2014. Massachusetts spent approximately \$100 million in 2008 and will each year till 2018. These figures do not count the private money spent in embryonic stem cell research.
  - 4 This breakthrough occurred in separate labs—first by Shinya Yamanaka of Kyoto University (published in *Cell*, 25 August 2006) and then by James A. Thomson of University of Wisconsin (published in *Science*, 20 November 2007). “Successful reprogramming of differentiate human cells into a pluripotent state would allow creation of patient- and disease specific stem cells. We previously reported generation of induced pluripotent stem (iPS) cells capable of germ line transmission, from mouse somatic cells by transduction from four defined transcription factors. Here we demonstrate the generation of iPS cells from adult human dermal fibroblasts with the same four factors. . . . Furthermore, these cells could differentiate into cell types of three germ layers in vitro and in teratomas. These findings demonstrate that iPS cells can be generated from adult human fibroblasts,” Takahashi et al., Induction of Pluripotent Stem Cells from Adult Human Fibroblasts by Defined Factors, *Cell* (2007), doi:10.1016/j.cell.2007.11.019.
  - 5 James C. Patterson, “Is the Human Embryo a Human Being?” in *God and the Embryo: Religious Voices on Stem Cells and Cloning*, edited by Brent Waters and Ronald Cole-Turner, Washington D.C.: Georgetown University Press, 2003, p. 85.
  - 6 *Ibid.*, p. 82.
  - 7 Brent Waters, “The Appropriate Contribution of Religious Communities,” in *God and the Embryo*, p. 27.
  - 8 G. Gareth Jones, “Why Should Cloning and Stem Cell Research Be of Interest to Theologians,” in *Stem Cell Research and Cloning: Contemporary Challenges to our Humanity*, edited by Gareth Jones and Mary Byrne, *Interface: A Forum for Theology in the World*, volume 7, number 2, October 2004, pp. 88-89.
  - 9 *Ibid.*, p. 79.
  - 10 Ted Peters, Karen Lebacqz, and Gaymon Bennett, *Sacred Cells? Why Christians Should Support Stem Cell Research*, New York: Rowman & Littlefield Publishers, Inc. 2008, pp. 214-218.
  - 11 *Ibid.*, p. 216.
  - 12 *Ibid.*
  - 13 For example, the children given to Sarai, Hannah, Elizabeth, and Mary.
  - 14 Robert P. George and Christopher Tollefsen, *Embryo: A Defense of Human Life*, New York: Doubleday, 2008.
  - 15 *Ibid.*, p. 54.
  - 16 *Ibid.*, pp. 36-54.
  - 17 In this light, it is difficult to imagine the embryological reasons Philip J. Nickel could give when he claims embryos are “like human body parts or recently deceased persons”; in “Ethical Issues in Human Embryonic Stem Cell Research”, in *Fundamentals of the Stem Cell Debate*, edited by Kristen Renwick Monroe, Ronald B. Miller and Jerome Tobis, Berkeley: University of California Press, 2008, p. 71.

- 18 Thomas Shannon, "From the Micro to the Macro," in *The Human Embryonic Stem Cell Debate: Science, Ethics, and the Public Policy*, edited by Suzanne Holland, Karen Lebacqz, and Laurie Zoloth, Cambridge, Massachusetts: The MIT Press, 2001, p. 178.
- 19 Behind this line of reasoning is Aristotle's well-known metaphysical principle that "it is clear that actuality is prior to potency. And I mean by potency not only that definite kind which is said to be a principle of change in another thing or in the thing itself regarded as other, but in the general every principle of movement or of rest;" *Metaphysics IX*, 8. 4-9. Obviously, Aristotle's metaphysics does not answer all our questions about the nature of reality, but he insightfully explains a necessary aspect of the reality of things that organically grow—they grow because they already exist as things that can grow as they do. For Aristotle, form and matter compose an object. The form gives actuality (not to be equated with its structure) to an object and remains the same during change. The matter provides potentiality and enables the object to become what it will be during the change. Form is the ontological principle, which develops the matter into its functions and states of being, and it is the "why" of the object's actuality. For our concerns, an embryo's actuality (as the form of a human) enables the embryo potentially to be a fetus, newborn, etc. For two good discussions on this aspect of Aristotle's explanation of the relationship between form and matter see Vasilis Politis, *Aristotle and the Metaphysics* (London: Routledge, 2004), chapter two, and Jonathan Lear, *Aristotle: The Desire to Understand* (Cambridge: Cambridge University Press, 1988), chapter two.
- 20 Karen Lebacqz, "On the Elusive Nature of Respect," in *The Human Embryonic Stem Cell Debate*, p. 159. Andrew Dutney makes a similar point, "In my view the embryo *in vitro* is not a human being, but it is still morally significant and should be treated with respect" by respecting the couple, the embryo's symbolic value, and those who ethically differ; "A Christian Case for Allowing the Destruction of Embryos," in *Stem Cell Research and Cloning: Contemporary Challenges to our Humanity*, p. 99.
- 21 *Ibid.*, p. 160.
- 22 Robert Song, "To Be Willing to Kill What for All One Knows is a Person Is to be Willing to Kill a Person," in *God and the Embryo*, *ibid.*
- 23 *Ibid.*, p. 100.
- 24 *Ibid.*, p. 101.
- 25 *Sacred Cells*, p. 78. Elsewhere Peters and Gaymon Bennett argue that since human dignity, especially for the embryo, is eschatologically found in God's final affirmation of humanity, we should emphasize the ethic of the Good Samaritan and show beneficence in all possible cases—"Our fundamental commitment is to beneficence" in "A Plea for Beneficence: Reframing the Embryo Debate," in *God and the Embryo*, p. 128.
- 26 Ted Peters, *The Stem Cell Debate*, Minneapolis: Fortress Press, 2007, p. 108.
- 27 Sir David Ross, "Rights" in *Readings in Ethical Theory*, second edition, edited by Wilfrid Sellars and John Hospers, New York: Appleton-Century-Crofts, 1970.
- 28 *Ibid.*, p. 573.
- 29 *Ibid.*, p. 575.
- 30 Brent Waters, "Does the Human Embryo Have a Moral status?" in *God and the Embryo*, pp. 71-72.
- 31 Behind this line of reasoning is Don Marquis' well-known and highly debated claim that what makes killing wrong is that it deprives another of his or her future, which would be a future like ours. "Why Abortion is Wrong," *The Journal of Philosophy*, 86 (4), April 1989: 183-202.
- 32 George and Tollefsen, *Embryo: A Defense of Human Life*, pp. 200-201.
- 33 *Ibid.*, p. 201. Don Marquis makes a similar point—"Age discrimination is morally wrong. When we were very, very young, we were mere embryos. Therefore, destruction of human embryos for the purposes of scientific research is wrong," in *Stem Cell Research*, in *The Stem Cell Controversy: Debating the Issues*, second edition, edited by Michael Ruse and Christopher A. Pynes, Amherst, New York: Prometheus Books, 2006, p. 196.
- 34 John A. Robertson, "Ethics and Policy in Embryonic Stem Cell Research" in *The Stem Cell Controversy: Debating The Issues*, p. 135.
- 35 *Ibid.*, p. 136.

- 36 It is unclear exactly when non-viability occurs. It may be possible to keep an embryo in liquid nitrogen at -195.8 degrees centigrade indefinitely. Though the record is thirteen years for a successful birth, most clinics recommend not keeping an embryo frozen past five years for fear of losing its viability, according to the Tennessee Reproductive Medicine Clinic.





# DOES PHARMACOLOGICALLY-ALTERED MEMORY CHANGE PERSONAL IDENTITY?

SISTER RENÉE MIRKES, OSF, PHD

The National Institutes of Health reports that some 7.7 million American adults are diagnosed with post-traumatic stress disorder (PTSD) annually.<sup>1</sup> The debilitating symptoms of this disease hinder daily living, diminish quality of life, and, sometimes in chronic cases, last the lifetime of the traumatized individual. Unfortunately, a large population of PTSD patients receives little or no relief from the conventional treatment of psychotherapy and/or antidepressants.<sup>2</sup> It is understandable, then, that these patients and their caregivers welcome the “potential lifeline”<sup>3</sup> of a reliable and cost-effective drug like propranolol that could attenuate the hyper-emotionality of traumatic memory.

However, despite encouraging results from preliminary clinical studies, some have raised ethical concerns about using propranolol to treat PTSD. Here I respond to what I consider the most substantive of these ethics objections, viz., that attenuating fear memory pharmacologically could alter the personal identity of the PTSD patient. I postulate that the personal identity objection to drug-induced memory alteration in the context of PTSD lacks medical, ethical, and philosophical ballast for several reasons. First, the emotional and physiological reactions, as well as the neurological profiles, of PTSD patients differ dramatically from those of healthy trauma survivors and are oftentimes resistant to traditional psychotherapy. Second, propranolol alters a solitary traumatic memory and its hyperemotional expression in a way that biochemically mimics the memory extinction process of healthy trauma survivors. And, third, propranolol-induced attenuation of a traumatic memory constitutes a positive accidental change to the personality of PTSD patients, enabling them to integrate their life-changing experience into their personal pursuit of happiness and fulfillment.

## The Emotional and Behavioral Profile of a PTSD Patient

In 1980, the American Psychiatric Association recognized PTSD as a diagnosable disorder in its *Diagnostic and Statistical Manual of Mental Disorders* [3<sup>rd</sup> edition].<sup>4</sup> The first criterion for the diagnosis of PTSD is that the person has experienced, witnessed, or been confronted with a traumatic event—military combat,<sup>5</sup> rape, murder, mugging, suicide bombing, car accident, natural disaster,<sup>6</sup> abduction, or terrorism<sup>7</sup>—that involved “actual or threatened death or serious injury . . . to self or others.”

Second, those who are emotionally traumatized respond to the original incident with “fear, helplessness or horror” and, subsequent to the initial disturbance, re-experience the episode and its emotional fear in one (or more) of the following ways:

- 1) recurrent and intrusive distressing recollections of the events, including images, thoughts, or perceptions;
- 2) recurrent distressing dreams of the event;
- 3) acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback

episodes, including those that occur on awakening or when intoxicated); 4) intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event.

Third, the behavioral pathology of the PTSD patient manifests itself in persistent avoidance of “thoughts, feelings or conversations” associated with the original trauma and in “numbing of general responsiveness” by three (or more) of the following:

1) efforts to avoid thoughts, feelings, or conversations associated with the trauma; 2) efforts to avoid activities, places, or people that arouse recollections of the trauma; 3) inability to recall an important aspect of the trauma; 4) markedly diminished interest or participation in significant activities; 5) feeling of detachment or estrangement from others; 6) restricted range of affect (e.g., unable to have loving feelings); 7) sense of a foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span).

Fourth, those diagnosed with PTSD also persistently manifest behavioral symptoms of increased arousal as indicated by two (or more) of the following: “difficulty falling asleep; irritability or outbursts of anger; difficulty concentrating, hyper-vigilance, or exaggerated startle response.”

Fifth, trauma survivors are diagnosed with PTSD if the duration of the disturbance is more than one month and if “[t]he disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of interpersonal behavior.” The personal and social impairment can take many forms: drug abuse, alcoholism, marital problems, unemployment,<sup>8</sup> and suicide.<sup>9</sup>

Firemen and policemen, rescue workers,<sup>10</sup> SWAT teams, members of the military, and individuals whose jobs directly involve them in traumatic incidents are most at risk for PTSD.<sup>11</sup> For anyone within this “high risk” profile, the three most important factors affecting the likelihood of being diagnosed with the disorder<sup>12</sup> are “the severity, duration, and proximity of [the] individual’s exposure to the [emotionally-charged, life-threatening] event.”<sup>13</sup> A trauma survivor has acute PTSD if the symptoms just described last less than three months, or chronic PTSD if the symptoms last three or more months. Sometimes, the onset of PTSD is delayed, in which case the symptomatic behavior outlined above occurs six or more months after the horrific event.

Various forms of cognitive therapy involving memory extinction training<sup>14</sup> are the traditional means of enabling PTSD patients “to build new [mental] associations and extinguish the bad memory link.” Unfortunately, the traditional therapeutic approach does not help a third of PTSD patients and does not produce consistent results in the remaining two-thirds of stress disorder patients. Old, bad memories return and often are as virulent as when previously experienced.

### **How the Brains of PTSD Survivors Process Life-threatening Events**

A medieval custom provides an unusual bit of historical evidence for the direct way in which highly emotional experiences lead to long-term memory formation.<sup>15</sup> In lieu of keeping written records of important events—land grants, weddings, funerals, negotiations between landed gentry—the feudal lords of the 5<sup>th</sup> to the early 16<sup>th</sup> century selected a young child around seven years of age, instructed him to observe carefully

the important political/legal/social event at hand, and then threw the child into a river. With this rather grisly—and definitely traumatic—custom, “the memory of the event would be impressed on the child and the record of the event maintained for the child’s lifetime.”<sup>16</sup>

The focus of a significant portion of the last fifty years of neural and memory research is its investigation of the neurobiological processes that explain why this medieval memory-aid worked so effectively. (Or, apposite to us 21<sup>st</sup> century Americans: why the events of 9/11 are so indelibly imprinted on our individual and collective long-term memory.) In sum, a considerable segment of memory research<sup>17</sup> has sought to explain how and why highly emotional events make for strong experiential memories.

Roger Pitman, a psychiatrist at Harvard Medical School and a memory researcher, describes the “promiscuous [brain] system”<sup>18</sup> that encoded the lasting memory of the medieval child<sup>19</sup> and your enduring memory of 9/11.

Stimuli from your sense organs are continuously entering your brain and converging on the thalamus, a clearing house for the senses. From there, the information is quickly dispatched along an express route to an almond-shaped region of the forebrain called the amygdala for a crude assessment of the ‘emotional quality’ of the stimuli. If the amygdala recognizes a potentially threatening component—such as the screeching brakes of a large vehicle or a curved shape on the ground that could be a snake—it triggers the body’s stress responses: a typical “fight or flight” rush of adrenaline and noradrenaline. . . . The amygdala triggers a rapid fear response to allow the body to take evasive action. Simultaneously, . . . other paths take signals from the thalamus to higher areas of the brain for more considered analysis of whether the stimuli represent a threat. If, for example, the curve turns out to be a piece of hosepipe in the grass, then the prefrontal cortex reins in the amygdala response. But if the stimuli turn out to represent a genuine threat, adrenaline and noradrenaline trigger a cascade of reactions in the amygdala, which then instructs the hippocampus—the brain’s memory centre—to process the memory of those fear-inducing stimuli in a special way, imprinting them deeper than usual.<sup>20</sup>

But what occurs in the brains of people prone to PTSD when they experience highly emotional events? For this at-risk population, memory research has helped to identify the direct causal links between (1) their malfunctioning neuromodulatory processes that *over*-imprint emotionally charged events into their long term memory, (2) their *hyper*-emotional/physiological arousal responses, and (3) their *pathological* behavioral profile that is consistent with the eventual diagnosis of PTSD.

After the research dust settles, we learn that at least two neural mechanisms are malfunctioning during and after a traumatic experience in the brain of a person predisposed to PTSD.

First, there is a problem with consolidation of the highly emotional memory—the process of strengthening the original memory trace and moving it from short-term to long-term storage.<sup>21</sup> As Pitman explains, the neural site for the psychiatric pathology of PTSD starts deep in the limbic system of the brain, in the almond-shaped region called the amygdala. For the person predisposed to a traumatic stress disorder, the life-threatening event *overstimulates* the brain’s endogenous stress hormones; the excessive

release of adrenaline (epinephrine) from the adrenal gland triggers the excessive release of noradrenaline (norepinephrine) in the amygdala. As this “noradrenergic hyperactivity”<sup>22</sup> floods the basolateral amygdala,<sup>23</sup> it produces *hyperemotional* arousal in the PTSD-prone victim. In other words, over-activation of the amygdala by stress hormones during highly emotional events causes a serious problem in the way the hippocampus of PTSD-prone trauma victims encodes the tragic event. The traumatic memory is *overconsolidated*, that is, *over-imbedded* in the long-term memory of the PTSD subject.

As it turns out, the traumatic memory is not only persistent, but also self-reinforcing. Any number of internal or external stimuli may “trigger” the return of the memory. Research has shown that, during its reconsolidation phase, the memory assumes a labile or unstable state and, as such, is disposed to being altered, i.e., re-made or re-consolidated by the neurotransmitters epinephrine and norepinephrine. Unfortunately, every retrieval of the traumatic memory in response to a sound, a smell, a weather pattern, an anniversary of the event, or the place where the original trauma occurred, sets up a *vicious* “feedback loop”<sup>24</sup> in the brain of a PTSD patient. Remembering the life-changing event causes a *further* release of stress hormones that, in turn, causes *further* overconsolidation of the memory. Just as in the memory’s original encoding, so in its reconsolidation phase: repeated stress hormone *hyperactivity* in the brain of the person prone to PTSD orchestrates the memory’s pathological imprinting. And, the accumulative effect of repeated intrusive flashbacks or debilitating nightmares—in short, *overconsolidated-fear-memory-upon-overconsolidated-fear-memory*—transmutes the survivor’s subclinical stress disorder into clinical PTSD.

Second, from observation of the abnormal behavior patterns of PTSD patients, we deduce that the natural memory extinction process—the neurologically-based mechanism that, over time, tempers the emotional impact of the traumatic memory and weakens the memory of the event itself—is either malfunctioning or arrested by the overstimulation from stress hormones. In short, the excessively strong fear memory of the PTSD patient, resistant as it is to the normal memory attenuation process, becomes “a ‘black hole’ in the mental life of the PTSD patient, attracting all associations to it.”<sup>25</sup> Predictably, PTSD survivors, crippled by fear and anxiety and paralyzed by intrusive memories of the event, “become ‘stuck’ on their trauma, ‘reliving it in thoughts, feelings, actions or images.’” Developing a sense of helplessness that can permanently change their ability to deal with stress and human relationships, PTSD patients undergo a negative alteration not only of their self-concept but also of “[their] view of the world as a manageable place.”<sup>26</sup> The unhealthy trauma survivor, unable to get beyond the original disturbance and its concomitant mental pain, lacks the power to return to a normal personal and interpersonal life.

### **How the Brains of Healthy Trauma Survivors Process Life-threatening Events**

Why do healthy trauma survivors not evince the abnormal behavioral profile of PTSD survivors?<sup>27</sup> The short answer is that they have learned to cope. That is to say, they have learned to manage the fear and a myriad of negative emotional reactions not only to memories of the original trauma but also to subsequent events of their life that are highly stressful.

Recent research in the neurochemistry of memory formation helps us understand the chain of neural-coping mechanisms that account for the emotional behavior and physiological reactions of persons who outlive their traumatic events. First, their basolateral amygdala is not over-stimulated by the cascading release of excessively strong stress hormones at the memory's consolidation or reconsolidation phase. Second—and as a direct result of the first—the healthy survivor does not evince the hyper-physiological reactions (greatly increased heart rate and blood pressure) and their psychic correlate (excessive emotional arousal), whenever the original event is recalled in response to trigger events. Third, with the passage of time, healthy survivors of trauma learn that the internal and external stimuli of trigger events are not a threat. Their normally functioning memory extinction process helps their brains “make new pathways that override the old one, though they don't erase it.”<sup>28</sup> And their prefrontal cortex consistently reigns in the amygdala. Over time, then, with functional reconsolidation and memory extinction processes in place, healthy survivors tend to experience less emotional arousal when recalling the original trauma and to remember the event itself with less clarity and force.<sup>29</sup>

In other words, trauma survivors who are not prone to PTSD are able to conserve and to reinforce their traumatic memory at just the “right pitch”:

Neither *too much*, engulfing [them] in trivia or imprisoning [them] in the past, nor *too little*, losing track of life's defining moments or of knowledge needed for everyday life; neither with *too much emotion*, allowing past misfortunes to haunt or consume [them], nor with *too little emotion*, recalling what is joyful, or horrible, or inconsequential, all with the same monotone affect.<sup>30</sup>

## **Propranolol-Induced Alteration of Traumatic Memories in PTSD Patients**

Neuroscientists have been investigating two critical questions regarding memory alteration in PTSD patients. The first question: Would a course of propranolol administered shortly after an acute traumatic event have the same secondary preventive effect as it did on the memories of rats,<sup>31</sup> viz., to reduce or prevent the physiological symptoms of PTSD?

Before we answer, we need to review relevant neurological facts. In the nucleus of the amygdala of the PTSD-prone brain, there is excessive noradrenergic activity during a highly emotional, life-threatening event. This abnormal neurochemistry is responsible for enhanced memory consolidation that begins shortly after the life-changing experience. It was precisely during the consolidation phase that researchers saw their first window of opportunity for the use of memory-blunting drugs such as propranolol.

A small,<sup>32</sup> but important, randomized, double blind human study<sup>33</sup> provides a positive answer to the first question. Propranolol (40 mg, four times daily for ten days) was randomly administered within six hours of the traumatic event to half of the forty-one initial trauma-survivor participants; a placebo was given to the remaining half. Afterward, each participant was taped while verbally describing his/her trauma. Three months later, as each completer-participant listened to the taped account and simultaneously imagined his/her traumatic event, investigators monitored the participant's heart rate and other physiological reactions. None of the eight propranolol

subjects, but six of the fourteen placebo subjects, “were physiologic responders during script-driven imagery of the traumatic event.” It appears that, in the former group of trauma survivors, propranolol blocked over-consolidation of the traumatic memory (by blocking the noradrenergic hyperactivity in the amygdala) with the end result that the propranolol users (just like the rats in previous animal studies) did not present with the physiologic symptoms of increased heart rate and blood pressure typical of PTSD. This and other studies suggest that “acute, post-trauma propranolol may have a preventive effect on subsequent PTSD.”

The second question: Would the use of propranolol to block the noradrenergic stimulus in PTSD patients following reactivation of a fear memory have the same result as it did in studies involving rats,<sup>34</sup> viz., to disrupt the reconsolidation of the fear memory? The idea of using beta-blockers to attenuate traumatic memories originated in animal studies that demonstrated the surprising pliability of consolidated memories when recalled.<sup>35</sup> This discovery prompted memory investigators to conduct human trials to test the hypothesis that memories assume a labile state (reconsolidation) when “recalled under emotive conditions.”<sup>36</sup> Human test results suggest that when propranolol is administered while the participant is recalling the memory in response to internal or external stimuli the beta-blocker interferes with the memory’s reconsolidation “such that an altered version is put back in storage. . . .” all the while blocking “the neurotransmitters [epinephrine and norepinephrine] involved in laying down memories.”<sup>37</sup> In a Dutch trial,<sup>38</sup> propranolol not only attenuated the behavioral expression of the fear memory but also prevented its return. Another study<sup>39</sup> concluded that blocking “pre-synaptic norepinephrine release with a beta-adrenergic antagonist such as propranolol [administered after a PTSD patient recalls a consolidated memory] may be useful in attenuating traumatic memories, *even well-consolidated old memories* [emphasis added].”

Answering the second question in the positive, then, the results of memory alteration studies in humans have led researchers to postulate that PTSD patients could experience the same kind of propranolol-induced fear attenuation at the memory’s reconsolidation phase as evidenced in animals.

### **Effects of Pharmacologic Memory Alteration on Personal Identity**

The following citations [emphasis added] are representative examples of what I consider to be the most substantive moral objection to pharmacologically-induced memory attenuation, viz., it threatens the integrity of the traumatized person’s identity.

To some extent, these unchosen memories constrain us; though we may regret the shadows they cast over our pursuit of happiness, we cannot simply escape them while remaining *who we really are*.<sup>40</sup>

The pattern of our personality is like a Persian rug. It is built one knot at a time, each woven into the others. There’s a continuity to self, a sense that who we are is based upon solid, reliable experience. We build our whole interpretation and understanding of our world based upon that experience or on the accuracy of our memories. If you disrupt those memories, remove continuity, what you have is *an erosion of personhood*.<sup>41</sup>

With altered memories we might feel better about ourselves, but it is not clear that *the better-feeling “we” remains the same as before.*<sup>42</sup>

The capacity to alter or numb our remembrance of things past cuts to the heart of what it means to remember in a human way, and it is this biotechnical possibility that we focus on here. Deciding when or whether to use such biotechnical power will require that we think long and hard about what it means to remember truthfully, to live in time, and to seek happiness *without losing or abandoning our identity.*<sup>43</sup>

But to construct the narrative of one’s life, not through thought and conversation, struggle and prayer, but simply by erasing some of the materials of that life is to *risk losing what is essential to being human.*<sup>44</sup>

Removing bad memories is not like removing a wart or a mole. It will *change our personal identity* since who we are is linked to our memories.<sup>45</sup>

In modulating a person’s memories, we are talking about nothing less than *altering the central part of what it means to be a human being.*<sup>46</sup>

In neglecting to state what they mean by personal identity or essential humanness, these citations have the unfortunate effect of conflating two very distinct realities: a person’s essential identity (that which characterizes his personhood) and a person’s accidental identity (that which characterizes his personality). Strictly speaking, the etymology of the word ‘identity’ dictates that the term ‘personal identity’ should only be used to designate the essential nature of the human person. At the root of the English word ‘identity’ is *idem*, a Latin word meaning “the same,” as in the “state or fact of being the same” person. This etymological background suggests that one’s identity—one’s being, substance, or essential features—remains the same<sup>47</sup> despite undergoing many changes or alterations to one’s accidental features, including those to one’s memories, that occur over a lifetime. A person’s identity, then, refers to his or her unchanging substance—a composite being who is at once *embodied, intelligent, and free*—that endures throughout a lifetime of accidental changes to his or her personality.

To avoid confusion between essential and accidental changes in the remainder of my analysis, whenever I refer to Mr. Y, a chronic PTSD sufferer and propranolol trial participant, I will use the term “personal identity” to denote his essential identity and the term “personality” to describe his accidental characteristics.

Mr. Y has undergone only one substantial or identity “change” to date, and that was at his conception, when his substance and identity came into being. And Mr. Y has only one essential identity change yet to undergo—at his death<sup>48</sup>—when his body will cease to be part of him, and only his spiritual soul will survive. Aside from his conception and death, all other changes, including that of propranolol-induced memory attenuation, alter Mr. Y accidentally, i.e., alter his personality.

Keeping this in mind, we can say, to the extent that any of the opening citations imply that drug-induced memory alteration is unethical because it changes Mr. Y’s essential identity, the opening citations are completely in error. No drug—or, more accurately, no effect of a drug, including memory alteration—could substantially change the person taking the medication. However, if any of the opening statements object to memory

alteration because it threatens the integrity of Mr. Y's non-essential characteristics, or personality, then the validity of the claim deserves further adjudication.

Just because accidental characteristics, such as memories, are not a part of Mr. Y's personal identity does not mean they are unimportant. Nor does it mean that we need not be concerned about their deliberate and selective alteration through, for example, pharmacological means. First, Mr. Y's experiences and memories are metaphysically significant in the sense that they set him apart—individualize him—from every other person who has ever lived, who is now living, or who will ever live. It is safe to say that Mr. Y's experiences and memories of them contribute more decisively to his individuation than do physical accidents such as his hair color and skin color. Second, Mr. Y's ability to recall his experiences truthfully also has ethical implications. When Mr. Y remembers his unique experiences at just the “right pitch,” he puts flesh on the bones of his individual quest to do good and avoid evil. Mr. Y strengthens his habit of prudence, for instance, by remembering his past actions that were too hasty and resulted in increased difficulties and, thus, learns to exercise more foresight in the future. A clear recall of an experience where he failed to respond appropriately to basic human drives for food, drink, or sex could contribute to Mr. Y's virtue of temperance by preparing him to respond more temperately in the future. When Mr. Y remembers that he lied to someone and realizes that, as a direct result, he has lost the person's trust, Mr. Y would be inclined not to lie again. In fact, Mr. Y has acquired all the natural virtues, those habits that make him uniquely able to do good consistently in the various aspects of his life, as a direct result of reflection on his experiences recorded in his long-term memory.

As a matter of principle, then, every effort should be made to preserve Mr. Y's memories, good and bad, pleasant and unpleasant, because from and through them Mr. Y learns to advance in his quest for happiness or self-fulfillment. But the issue at the heart of the opening citations is not whether some kind of wholesale alteration of memory is ethical, nor whether drug-induced memory alteration should be used by a healthy person, nor whether it should be used frivolously. No responsible ethicist, psychiatrist, or memory researcher is suggesting that propranolol be used now (or in the future) to alter the whole fund of Mr. Y's long-term memories. Nor do medical personnel envision propranolol for healthy trauma survivors or for persons wanting to alter memories for superficial reasons. Rather, clinicians are looking to use propranolol only in chronic cases, like that of Mr. Y, in which the fear memory is harmful and maladaptive, and the psychological weight and intensity of the emotional component of a *single* traumatic memory is excessive and obsessive, barring him from remembering the event at the “right pitch” and, consequently, from personality maturation and reentry into a normal personal and social life.

So, proposing the question one more time: Does propranolol-induced alteration of a traumatic memory threaten the integrity of the personality of Mr. Y, who is diagnosed with chronic PTSD? As we have already shown, the change involved in the blunting of the pathological fear and anxiety that formerly accompanied his every recall of the traumatic experience has no effect whatsoever on Mr. Y's essential identity. Mr. Y is the same person after his participation in the clinical trial that resulted in memory alteration as he was before. And, with respect to the accidental change to Mr. Y's personality through propranolol-induced memory modulation, I have demonstrated that it is consistent both with that occurring in any healthy trauma survivor and with that occurring in PTSD



patients who are helped by traditional psychotherapy. The truth of the matter is that, freed from the shackles of excessive fear and angst, Mr. Y's personality may actually be changed for the better. Memory attenuation could restore his former healthy self-concept,<sup>49</sup> enabling Mr. Y to recall the traumatic incident more realistically, to assess its moral meaning more astutely, and to apply its lessons more effectively. Pharmacological alteration of his traumatic memory is no more a threat to Mr. Y's personality or character development than the natural neuromodulatory processes are to the personality of a healthy trauma survivor. Thus, whether achieved naturally, pharmacologically, or psychotherapeutically, one could argue that memory alteration is supportive of, rather than a threat to, the health and integrity of the individual's personality.

Finally, what a difference it could make if Mr. Y, as a prospective participant in a clinical trial, was exposed to the important distinction between essential and accidental identity and, then, to the reality that the accidental change that might result from his participation mimics that which occurs naturally in the brains of healthy trauma survivors. Only when Mr. Y understands that drug-induced memory attenuation does not pose a threat to the developmental integrity of his character, and might actually advance it, can he give a truly informed consent to his participation in propranolol trials.

## Conclusion

This article highlights conclusions and insights that should properly frame the debate about the question of whether memory alteration changes the identity of a PTSD patient. First, the emotional and physiological reactions, as well as the neurological profiles, of PTSD patients differ dramatically from those of healthy trauma survivors, and are oftentimes resistant to traditional cognitive therapy. Second, propranolol alters a solitary traumatic memory and its hyperemotional expression in a way that biochemically mimics the normal consolidation and memory extinction processes of healthy trauma survivors. And, third, propranolol-induced attenuation of a traumatic memory, because it constitutes an accidental change enabling PTSD patients to integrate the life-threatening experience into their pursuit of happiness, has the potential to improve rather than detract from the healthy maturation of their personality. Thus, when we apply the personal identity objection to propranolol-induced memory attenuation within the context of PTSD and the correct understanding of accidental change, it does not stand.

## Endnotes

- 1 National Institutes of Health, Fact Sheet on Post-Traumatic Stress Disorder, July 2007.
- 2 Typically, cognitive therapy or exposure therapy (helping people change unproductive or harmful thought patterns) or cognitive behavioral therapy (helping patients to desensitize upsetting reactions to traumatic memories) and antidepressants (selective serotonin reuptake inhibitors) are the traditional treatment options for PTSD. The spectrum of cure varies: "More than half of patients experience some improvement; few achieve a complete cure and for a large proportion nothing works" [Vince Gaia, "Rewriting your past," *New Scientist* 188(2005):3].
- 3 Ibid.
- 4 NIH Fact Sheet.
- 5 A Vietnam veteran eventually diagnosed with PTSD describes the initial and the immediate physiological effects from hyperemotional arousal that precipitated onset of the emotional disorder: "You have just received a signal for a hasty ambush. You sit in the elephant grass

- trying to figure out your field of fire. Then you hear them coming, talking and laughing and making jokes. You hold your breath, and your heart stops. You freeze, like you can't move. These voices get louder and louder. When they get right in front of you, you can see them from the waist down, with their AKs slung. You count them as you pass. When you get to four, all shit breaks loose. You pull your trigger and hold it down. The next thing you know, you're staring at a dead Gook's feet. Your teammates are yelling, 'Get up. We gotta go!' Now your heart is pounding and you feel jittery all over, like you want to run, but there's no place to go. You stand up and see the top of the Gook's head blown off, his brains glaring in the sun. You've never seen blood and guts before. You feel sick to your stomach and in a state of shock" [cited in James L McGaugh, *Memory and Emotion* (New York: Columbia University Press) 2003:122].
- 6 The Asian tsunami of 2004 and Hurricane Katrina of 2007 are recent examples of traumatic natural disasters.
  - 7 Perhaps the best perspective for understanding PTSD is through the lens of 9/11. Chances are most of us remember exactly where we were, who we were with, and from which room we viewed the first TV reports of the event. On the other hand, few of us have distinct memories about our life experiences on September 10, 2001. In the first case, the emotional fear and anxiety linked to the event of a terrorist attack on U.S. soil guaranteed that the 9/11 memory was indelibly recorded in our long-term memory bank. In the second case, our experiential memories of 9/10 were written in pencil (as short-term memory) and subsequently erased. Although feelings of sorrow, fear, and anger made it difficult for most Americans to carry out their life-as-usual activities post-9/11, most of us learned to get beyond it, learned to integrate its lessons into our long-term memory bank and to return to life's duties and responsibilities. But persons with a propensity for PTSD, or those diagnosed with PTSD—and this is the tragedy of their disease—cannot get over or beyond a seriously traumatic event such as a terrorist attack, rape, or murder.
  - 8 One study estimates that "a person with PTSD will endure 20 years of active symptoms and will experience almost 1 day a week of work impairment, perhaps resulting in a \$3 billion annual productivity loss in the U.S." [Adam J. Kolber, "Therapeutic Forgetting: The Legal and Ethical Implications of Memory Dampening," 59 *Vand L Rev* 1561(2006):4]. The Department of Veterans Affairs has raised similar concerns about the cost of treating PTSD in soldiers. It reports that veterans received PTSD benefit payments "totaling 4.3 billion in 2004, up from 1.7 billion in 1999" [last accessed on 30 July 2009 at [www.ncptsd.va.gov/ptsd101/modules/Friedman%20PTSD%20Transcript.pdf](http://www.ncptsd.va.gov/ptsd101/modules/Friedman%20PTSD%20Transcript.pdf)].
  - 9 DSM-IV: 309.81, PTSD.
  - 10 Perhaps one of the most tragic incidents leading to severe cases of PTSD involved desk people and baggage handlers who were sent to clean up body parts after the 1978 PSA plane crash. Having no formal training in rescue work and lacking the necessary coping skills to deal with a trauma of that magnitude, a large percentage of these airline personnel were subsequently diagnosed with such severe cases of PTSD that many of them were unable to work for the rest of their lives [Scott LaFee, "Blanks for the memories," *San Diego Tribune* Feb. 11, 2004 last accessed on 2 June 2009 at [http://www.cognitiveliberty.org/neuro/memory\\_drugs\\_sd.html](http://www.cognitiveliberty.org/neuro/memory_drugs_sd.html)].
  - 11 DSM-IV: 309.81, PTSD.
  - 12 There are other factors predisposing an individual to PTSD: the neurological pathologies—first, the abnormal release of the adrenal stress hormone, adrenaline, that, in turn, triggers the over-release of noradrenaline within the amygdala both at the time of consolidation of the traumatic memory and at its reconsolidation when the memory is retrieved and, second, the memory extinction process that fails to function normally. Then there are personal and sociological factors suggesting that persons who are female, are younger to middle-aged adults, are poor and have a history of depression, drug addiction, or alcoholism are more apt to experience PTSD [DSM-IV-TR 309:81, PTSD].
  - 13 Ibid.
  - 14 Memory extinction training teaches PTSD patients how to replace fear memories with fearless memories. They learn to link a noxious stimulus [desert-like heat—which formerly was associated with human destruction in the Iraq conflict caused, say, by a roadside bombing] to a pleasant stimulus [flowering cactus, peaceful sunset]. This kind of training is similar to traditional treatment of human phobias where the subject is presented with the feared object, but without its associated danger ["Brain cells Related To Fear Identified, Paving The

- Way For More Effective Treatment Of Post-Traumatic Stress And Other Anxiety Disorders,” *Science Daily* July, 2008 last accessed on 23 June 2009 at <http://www.sciencedaily.com/releases/2008/07/080710173007.htm>].
- 15 Any information that we glean from our experiences “that may help us in the future (for instance, the downwind smell of a saber-toothed tiger) goes into long-term memory where it can last a lifetime. Long-term memory involves three processes: encoding, storage and retrieval. First, we break new concepts into their composite parts to establish meaning. Furthermore, we include the context around us as we learn a new concept, or experience another episode in our life. For example, I might encode the phrase ‘delicious apple’ with key descriptive ideas—red color, sweet taste, round shape, the crisp sound of a bite—and then such contextual items as ‘I’m feeling good because it’s a happy fall day and I’m picking apples.’ Second, as we store the memory, we attach it to other related memories, like ‘similar to Granny Smith apples but sweeter,’ and thus, consolidate the new concept with older memories. Third, we retrieve the concept, by following some of the pointers that trace the various meaning codes and decoding the stored information to regain meaning. If I can’t remember just what ‘delicious apple’ means, I might activate any of the pointer-hints, such as ‘red’ or ‘picking apples.’ Pointers connect with other pointers so one hint may allow me to recover the whole meaning” [April Holladay, “How does human memory work?” *USA Today* May 15, 2007 last accessed on 4 June 2009 at [http://www.usatoday.com/tech/columnist/aprillholladay/2007-03-12-memory-first\\_N.htm](http://www.usatoday.com/tech/columnist/aprillholladay/2007-03-12-memory-first_N.htm)].
- 16 McGaugh, *Memory and Emotion*, ix.
- 17 In his book, *Memory and Emotion*, Dr. James McGaugh explains the strides that have been made in the century-long history of memory research: “. . . much has been learned about the workings of memory and the brain processes that enable them. First, it was important to learn, despite centuries of skepticism, that memory can be studied objectively, using the general methods and techniques appropriate for any scientific inquiry. Next, it was essential to develop the specific methods required for investigating animal and human memory. It was also essential to discover the critical lessons provided by disorders of human memory. Finally, the development of many kinds of research techniques has enabled investigations of the brain systems and neurobiological machinery that coordinate and create fleeting or lasting representations of our experiences” [p. 138].
- 18 “Promiscuous system” is a term coined by neuroscientist McGaugh to explain the fact that “we do not have a single general system in our brains that is responsible for our learning and memory but many systems” [*Memory and Emotion*, x]. Cf. also JL McGaugh, “Memory consolidation and the amygdala: a systems perspective,” *TRENDS in Neurosciences* 25(2002): 456-461.
- 19 McGaugh, *Memory and Emotion*, ix.
- 20 Gaia, “Rewriting your past,” 4.
- 21 Another way of appreciating the “promiscuous” nature of the brain’s capacity to encode, store, and retrieve memories is to examine the complex orchestration between various parts of the brain involved in the process of memory consolidation. “How does our brain consolidate a new short-term memory like ‘delicious apple’ and place it into long-term memory? We use the hippocampus, an ancient part of the cortex, to consolidate new memories. An event creates temporary links among cortex neurons. For example, ‘red’ gets stored in the visual area of the cortex, and the sound of a bitten apple gets stored in the auditory area. When I remember the new fact, ‘delicious apple,’ the new memory data converges on the hippocampus, which sends them along a path several times to strengthen the links. The information follows a path (called the Papez circuit), starting at the hippocampus, circulating through more of the limbic system (to pick up any emotional associations like ‘happy fall day,’ and spatial associations like ‘apple orchard’), then on to various parts of the cortex, and back to the hippocampus. Making the information flow around the circuit many times strengthens the links enough that they ‘stabilize,’ and no longer need the hippocampus to bring the data together . . . . The strengthened memory paths, enhanced with environmental connections, become a part of long-term memory” [Holladay, “How does human memory work?” 1-2]. Memories are certainly not made instantly but are consolidated slowly over time. Moreover, “our long term memories vary in detail and in length” [McGaugh, *Memory and Emotion*, 48].
- 22 Noradrenergic is the adjectival designate for noradrenaline or norepinephrine. The latter is a catecholamine that has the dual role of a hormone and a neurotransmitter.

- 23 J Debiec and JE LeDoux, "Noradrenergic signaling in the amygdala contributes to the reconsolidation of fear memory: treatment implications for PTSD" *Ann N Y Acad Sci* 1071(2006):521-4.
- 24 McGaugh, *Memory and Emotion*, 122.
- 25 Ibid.
- 26 Kolber, "Therapeutic Forgetting," 4.
- 27 I am using the term "healthy trauma survivor" to denote the person whose neuromodulatory processes of consolidation and memory extinction are functioning normally. And, conversely, I would define PTSD survivors as unhealthy insofar as their neuromodulatory processes are operating abnormally or subnormally. PTSD patients are also physiologically and emotionally unhealthy, but these last conditions are directly caused by the neurological pathology.
- 28 Gaia, "Rewriting your past," 4.
- 29 In addition to the natural memory extinction process, all of us, including healthy survivors, selectively reconstruct our remembered experiences, in the interest of creating "a coherent life story." "Nevertheless," Adam Kolber points out, "we do not worry whether our better-feeling naturally reconstructed selves remain the same as before. It is, thus, not at all clear why we ought to revere the selective rewriting of our lives that we do without pharmaceuticals, yet be so skeptical of pharmaceutically-assisted rewriting" ["Therapeutic Forgetting," 18].
- 30 President's Council on Bioethics, "Beyond Therapy: Biotechnology and the Pursuit of Happiness," Washington, D.C., October, 2003:10 last accessed 12 May 2009 at <http://bioethics.gov/reports/beyondtherapy/chapter5.html>.
- 31 The idea of intervening directly in the consolidation of a memory originated in the 1990s when researchers discovered that enhancement of fear memory consolidation could be reduced by beta-blockers. Cf. L Cahill, B Prins, M Weber, JL McGaugh, "β-adrenergic activation and memory for emotional events," *Nature* 371(1994):702-704 and L Cahill, CA Pham, B Setlow, "Impaired memory consolidation in rats produced with β-adrenergic blockade," *Neurobiol Learning Memory*. 74(2000):259-266.
- 32 Neuroscientists engaged in memory research are unanimous in calling for more and larger propranolol studies with PTSD patients.
- 33 R Pitman et al., "Pilot Study of Secondary Prevention of Posttraumatic Stress Disorder with Propranolol," *Biol Psychiatry* 51(2002):189.
- 34 JL McGaugh, "The amygdala modulates the consolidation of memories of emotionally arousing experiences," *Annu Rev. Neurosci* 27(2004):1-28; J Debiec & JE LeDoux, "Disruption of reconsolidation but not consolidation of auditory fear conditioning by noradrenergic blockade in the amygdala," *Neuroscience* 129(2004):267-272; CE Canal & PE Gold, "Different temporal profiles of amnesia after intra-hippocampus and intra-amygdala infusions of anisomycin," *Behav Neurosci* 121(2007):732-741.
- 35 K Nader, GE Schafe, JE LeDoux, "Fear memories require protein synthesis in the amygdala for reconsolidation after retrieval," *Nature* 406(2000):722-726; Y Dudai, "Reconsolidation: the advantage of being refocused," *Curr Opin Neurobiol* 16(2006):174-178; NC Tronson & JR Taylor, "Molecular mechanisms of memory reconsolidation," *Nat Rev Neurosci* 8(2007):262-275; Valerie Doyere, Jacek Debiec, Marie-H Monfils, Glenn E. Schafe & Joseph E. LeDoux, "Synapse-specific reconsolidation of distinct fear memories in the lateral amygdala," *Nature Neuroscience* published online 11 March 2007; doi:10.1038/nn1871.
- 36 Gaia, "Rewriting your past," 3.
- 37 "β-blockers tackle memories of horror," *Nature*.436(2005); JR Strawn & TD Geraciotti, "Noradrenergic dysfunction and the psychopharmacology of posttraumatic stress disorder," *Depress Anxiety* 25(2008):260-71.
- 38 Merel Kindt, Marieke Soeter & Bram Vervliet, "Beyond extinction: erasing human fear responses and preventing the return of fear," *Nature Neuroscience*, published online 15 February 2009; doi:10.1038/nn.2271.
- 39 J Debiec, JE LeDoux, "Noradrenergic signaling in the amygdala contributes to the reconsolidation of fear memory: treatment implications for PTSD," *Ann N Y Sci* 1071(2004):521-4.
- 40 PCOB, "Beyond therapy," 9.

- 41 LaFee, "Blanks for the memories," 5.
- 42 PCOB, "Beyond Therapy," 6.
- 43 Ibid.
- 44 Gilbert Meilaender, "Why Remember?" *First Things* August/September(2003): 24.
- 45 David Derbyshire, "Pill to erase bad memories: Ethical furore over drugs 'that threaten human identity,'" *Mail Online*, 16 Feb 2009 [last accessed 17 March 2009 at <http://www.dailymail.co.uk/news/article-1145777/Pill-erase-bad-memories-Ethical-furore-over-drugs.htm>].
- 46 Gaia, "Rewriting your past," 6.
- 47 The same perdurability of personal (essential) identity applies to persons who have been diagnosed with Alzheimer's or other kinds of dementia, especially in its final stages. Many caregivers, not realizing what they are saying, will declare something to the effect that "This is not my mother." Or, "my parent is not the same person he/she was before the devastation of the disease." It is very important to avoid language that implies, wittingly or unwittingly, that the cognitively impaired person has lost his or her personhood. The parent, spouse, or sibling with Alzheimer's is the same person after and during the disease, even in its end stages, that he or she was before. However, their personalities have changed, unfortunately, in ways that prevent them from consciously giving and receiving love. The test of caregivers, then, is to show genuine respect to those who, because they can no longer recall their life's experiences, are barred from normal social and familial relationships, and to continue to love them with every fiber of their being. And—this is important—they must do so not only because they intellectually understand the difference between essential and accidental identity, but also because they realize, despite the ravages of their loved ones' disease and the changes it has caused to their character, that dementia patients retain their personhood, and its correlative dignity, to the end.
- 48 Since the roots of Mr. Y's substantial nature are in his soul, not his body, he will not lose his personal identity even at death. Moreover, the separated human soul of Mr. Y, retaining an essential relation to his individual body, will be reunited to it at the final resurrection.
- 49 Leslie Stahl (CBS, 60 Minutes) interviewed the 52 year-old Louise O'Donnell-Jasmin who participated in a propranolol trial after having struggled with PTSD symptoms ever since she was raped at age 12. Her response to Stahl's question of whether the trial helped her was "Yes, the link, what held the emotions to the memories, it's like the umbilical cord has been cut. . . . And every day it gets better. . . . I have regained my identity. What was broken when I was 12 was fixed. They have given me back myself" [Daniel Shorn, "A Pill To Forget?" CBS News, 11 November 2006 last accessed on 17 June 2009 at <http://www.cbsnews.com/stories/2006/11/22/60minutes/main2205629.shtml>].

## BOOK REVIEWS

### **After Harm: Medical Error and the Ethics of Forgiveness**

Nancy Berlinger. Baltimore and London: Johns Hopkins University Press, 2005.

ISBN 0-8018-8176-6; 156 PAGES, PAPER, \$25.00

I loved this book! Nancy Berlinger, deputy director and associate for religious studies at The Hasting Center, writes a short but very engaging text on medical harm ‘from “error” to “forgiveness,” with stops along the way at “disclosure,” “apology,” and “repentance” (x), from a “religious studies perspective” (xi), looking particularly at Dietrich Bonhoeffer’s works regarding the question, ‘What does it mean to tell the truth?’ (xi)

The first three chapters focus on ‘how medical harm is experienced, remembered, and written about . . .’ (xiii) The mid-section of the book reviews sequentially the five topics above, and the final chapter offers a number of specific suggestions for engaging medical error while improving care for all affected by this problem (xv).

Particularly gripping is Berlinger’s discussion of Bonhoeffer’s disagreement with Kant regarding the theoretical ‘murderer at the door’ paradigm—dissecting the meaning of truth and Kant’s ‘categorical imperative’ (44-46). While Bonhoeffer concludes that one would not have an obligation to honestly answer the murderer regarding a pursued victim present in one’s house (44), neither would allow this choice of less than candid communication to serve as justification for anything but full disclosure regarding error and harm to patients.

Berlinger discusses three medical systems that have chosen to promote open disclosure and fair-compensation for injury (69-78). She highlights the Lexington, Kentucky Veterans Affairs Medical Center that, in a case of harm done but unrecognized by the patient and family, decided to alert the family, engage them in meaningful dialogue regarding the injury, and compensate them in a manner deemed appropriate by all parties.

She discusses the ‘I’m Sorry’ Laws (52) of a number of states, their discriminating factors, and her opinions regarding their distinctive points. She also reviews Charles Bosk’s *Forgive and Remember: Managing Medical Failure* (87-89) as well as Ann Fadiman’s *The Spirit Catches You and You Fall Down* (102-103) (two other books I highly recommend) and their assessments of disclosure, blame, and forgiveness.

Berlinger dissects forgiveness in Jewish and Christian social ethics (84), reviewing Bonhoeffer’s condemnation of ‘cheap grace’ (86) and Pamela Cooper-White’s indictment of “an ethic of instant forgiveness” among well-intentioned pastors and other counselors who encourage trauma survivors to forgive abusers who refuse to acknowledge or repent of their actions, and to do so even before “uncovering enough of the factual story to know what really happened.”(86)

I recommend this brief volume to physicians and other clinicians who deal with medical error and disclosure and to all believers who struggle with forgiving or seeking forgiveness. It is a tight, tasty, spiritual and intellectual morsel.

**Reviewed by Robert E. Cranston, MD, MA, FAAN**, who is an associate clinical professor (Neurology) at University of Illinois College of Medicine, a hospital ethicist at Carle Foundation Hospital in Urbana-Champaign and is medical director for medical subspecialties at Carle Clinic in Urbana, Illinois, USA.

## **Ethics in Electroconvulsive Therapy**

Jan-Otto Ottosson and Max Fink. New York: Routledge, 2004.

ISBN 0-415-94659-X; 127 PAGES, HARDCOVER, \$39.95

Here, in 127 pages, is the story of why one of psychiatry's most effective treatments has fallen victim to misunderstanding and stigmatization. If you were uncomfortable with *One Flew Over the Cuckoo's Nest*, or perhaps too comfortable, this might be a book to consider. Certainly, if you're someone influencing the care of sick or disturbed persons, you might appreciate this refresher course on the indications for electroconvulsive therapy (ECT), especially when it is the therapy of choice or could be lifesaving.

In *Ethics in Electroconvulsive Therapy*, Ottosson and Fink focus on the many strands in the stigmatization of ECT. After World War II, anti-psychiatry writers like Szasz and Kesey in the US, Laing in Great Britain, and Foucault in France asserted that psychotic patients were not receiving their citizen's right to march to their own individuality, meaning that any psychiatric treatment should be strictly voluntary. Believing that mental illness is a myth, they insisted that no one should be subjected to ECT, often associating ECT with the treatment received by special populations in Nazi Germany and Communist Russia.

The controlling group in American psychiatry during the 1950s was a group of analysts who felt that ECT was an assault to the brain and should therefore not be used. As psychiatry became increasingly dominated by pharmacology, ECT was only indicated after the failure of several drug trials.

The final chapter of this book provides summary statements about well-defined mental conditions in which ECT is the most effective treatment. The major indication for ECT, say Ottosson and Fink, is severe depressive mood disorder, especially when associated with psychotic symptoms. When the usual treatment of psychotherapy and antidepressants isn't working and suicidal ideation is getting a grip, more effective treatment needs consideration. To reduce suffering and expense, and in order to hasten a response, ECT may also be presented at an earlier stage as primary therapy in psychotic or suicidal depression – it is the most cost-effective treatment in these syndromes. Moreover, ECT is the treatment of choice early on in severe mania, lethal catatonia, neuroleptic malignant syndrome, acute delirious states, and with schizoaffective, cycloid, and postpartum psychoses.

There is no question that patients who most need ECT should have access to it without the barriers of ignorance and misinformation. In short, Ottosson and Fink review clinical indications of ECT and attempt to dispel some of the lingering biases that have arisen in the last fifty years.

**Reviewed by Charles R. Young, MD**, who is now retired and a member of the Christian Medical-Dental Society and serves in the Psychiatric Section of CMDS. Formerly employed as a psychiatrist by the University of Illinois, Champaign-Urbana Campus, McKinley Student Health Center, he also taught classes at the Department of Community Health and engaged in a part-time private practice in Urbana, Illinois, USA.

## **The Ethical Dimensions of the Biological and Health Sciences,**

### **2<sup>nd</sup> edition**

Ruth Ellen Bulger, Elizabeth Heitman, and Stanley Joel Reiser. Cambridge: Cambridge University Press, 2002.

ISBN 0-521-00886-7; 371 PAGES, CLOTH, \$112.00

*The Ethical Dimensions of the Biological and Health Sciences* is an outstanding and comprehensive overview of ethical considerations related to all phases of research in biology and medicine. It covers not only human and animal research, but also the importance of integrity and honor in science; responsible conduct of research, authorship and publication; ethics of epidemiologic research; management and access to scientific data; the roles and responsibilities of the researcher as an academic scientist and in

relationship to industry and society. The final section discusses the use of cases for ethical discussion and includes a small number of cases that deal with the books' major section topics. Each section begins with an excellent summary article of the topic. Landmark historical articles follow, allowing the reader to examine original writings that made major contributions to the field. Of special note are articles that deal with the subjectivity with which researchers can purposely or unintentionally bias their work, a topic rarely addressed in the literature.

The text should be considered a primer for all graduate students in the biological and health sciences as well as those pursuing training in bioethics. Since it was published in 2002, its main limitation is that recent writings and changes in requirements are not included. An updated edition is highly desirable, but, until published, educators using this text will need to add more recent readings if their goal is to insure that their students are up-to-date on the ethical dimensions and regulations in the field. However, Bulger et al., by collecting many landmark articles into this single volume, have done a great service to those interested in the ethics of research in medicine and the life sciences.

**Reviewed by Sharon A. Falkenheimer, MD (Aerospace Medicine), MPH, MA (Bioethics),** is a Fellow of the Aerospace Medical Association, is a Fellow at the Center for Bioethics and Human Dignity, and teaches at the International Academy of Aviation and Space Medicine, USA.

## **By Their Fruits: Eugenics, Population Control, and the Abortion Campaign**

Ann Farmer. Washington D.C.: The Catholic University of America Press, 2008.

ISBN 978-0-8132-1530-3; 421 PAGES, CLOTH, \$79.95

By 1937, fewer children were born to Britain's wealthy classes than to the poorer classes. The differential birth rate caused such concern that a Royal Committee of Enquiry was convened to investigate the contribution of illegal abortion to the diminishing birth rate. Giving evidence before what became known as the Birkett Enquiry were Social Darwinists who held that the larger family size of the poor was a testimony to their lack of intelligence, Neo-Malthusians who wanted to help the poor evolve further by educating them to use birth control, and Eugenicists who recommended marriage only among 'the fit.' Ann Farmer's aim in *By Their Fruits* is to contribute to 'more authentic historical research in this area.' (66) Her detailed volume is replete with acronyms of the groups involved and might profit from the addition of a pedigree web, given all the rather incestuous relationships described among the participants in these British debates over the previous two centuries.

Among those included in the book are Janet and Clinton Chance. Janet served as a lay worker in a birth control clinic and became a fellow of the Eugenics Society while her husband was its treasurer. With her husband's help, Janet's primary concern was funding the Abortion Law Reform Association (ALRA). The ALRA campaigned for loosening of the abortion laws, and, '[a]head of legalization, [it] helped introduce the suction method of abortion from the communist countries, where it was developed.' (192)

Dora Russell, ALRA supporter and birth control worker, was married to Lord Bertram, who 'warned against the racial deterioration of the European nations if "the worst half of the population [became] the parents of more than half of the next generation."' (100)

Julian Huxley, an abortion supporter, not only recommended government funds for population control but also advocated sterilization as a condition for giving unemployment relief to men during the Depression. Huxley later became the first director of UNESCO.

Sir Theodore Fox edited *Lancet* for 20 years before becoming the medical director of the Family Planning Association. In 1965, during a lecture to the Royal College of Physicians, he said, 'Being partly responsible for the recent multiplication of human beings, medicine should help to resolve the dangerous situation this has caused.' (164) In addition, he prescribed death for those whose lives are 'useless' in a letter to the *Times*.



The list of elites involved in at least two arenas of abortion support, eugenics, and population control is long and includes C. P. Blacker, Joan Malleson, Stella Browne, Alice Jenkins, and Sir Arnold Wilson, to name a few.

The Abortion Act of 1967 provided – for the first time – exemption from prosecution for doctors who performed abortions, certain conditions being present. This legislation was passed by Parliament without a referendum, and applied to England, Scotland, and Wales. (377-8)

The author carefully explores the saga of birth control and eugenics in the UK up to the present day, with careful explication of the roles of various persons involved. She also documents the societal impact of reproductive technologies, international funding, and the propagation of old prejudices. While the content of the footnotes is very helpful documenting the author's statement, their sheer volume and small font size make them hard to read and somewhat distracting. Though a daunting undertaking, Ann Farmer has woven a convincing treatise showing the relationship between abortion, population control, and eugenics in Britain.

**Reviewed by D. Joy Riley, MD, MA (Bioethics)**, who serves as the Executive Director of the Tennessee Center for Bioethics and Culture in Brentwood, TN, USA.

## **Alternative Medicine: The Christian Handbook, Updated and Expanded**

Dónal O'Mathúna, PhD and Walt Larimore, MD. Grand Rapids: Zondervan, 2006.

ISBN 9-780310-269991; 511 PAGES, PAPER, £22.99

Today, in the Western world, there is a strong and growing interest in alternative medicine. Many of these alternative means of healing come from the East and are new to and little understood in the West; many have a New Age flair. Some may be beneficial, while others may be harmful - from both a physical and a spiritual point of view. Welcome, therefore, is this book, which aims to guide the Christian reader through the vast field of alternative medicine.

Writing from a perspective that is at the same time Christian and scientific, the aim of the authors is to present the reader with a book that not only provides the latest and most accurate information about alternative medicine, but one that also offers guidelines for a Christian faith-based approach to health and healing.

Divided into three parts, the second edition of Dónal Mathúna's and Walt Larimore's work on alternative medicine is an updated and expanded version of their earlier edition. It begins by telling us how to evaluate different alternative therapies and remedies. It also warns Christians to be aware of certain spiritually based therapies, as the belief systems underlying some of these are incompatible with Christian teaching. Indeed, some alternative healing practices appeal to spiritual sources that are not benign. Having thus prepared the reader by spelling out the scientific as well as the Biblical understanding on which the book is based, the second and third parts of the book guide the reader through the vast field of alternative medicine, carefully evaluating individual therapies and remedies.

Holistic (treating body, mind and spirit by non-invasive methods), alternative medicine is an approach that emphasizes prevention. In itself, as Mathúna and Larimore note, this does not make it either better or worse than conventional medicine. They show that, while often sneered at by those who practice conventional medicine, alternative medicine is not necessarily unscientific. Benefits and risks of alternative therapies and remedies can be tested, just as the practices and medications of conventional medicine.

We are warned that many alternative therapies and remedies are far from risk-free; indeed, some can make you physically ill. In particular, the authors warn against using alternative medicine and remedies for children. Moreover, they castigate practitioners who, bad-mouthing conventional medicine, recommend against vaccination of children. Indeed, Mathúna and Larimore make the observation that

'most alternative therapies have little or no compelling clinical evidence to support their effectiveness or safety.' (25) But then, as they also note, not every conventional medicine is safe and effective either. Hence, they recommend that whether you are being treated by a conventional physician or by a practitioner of alternative medicine you should always ask: 'What is the evidence that supports what you believe or recommend?' (25)

Basing their arguments on the Bible, the authors also issue strong warnings against occult practices. Among these are divination (to discover information by supernatural means), the use of taro cards, the interpretation of omens and crystal gazing. Other un-Christian practices mentioned include astrology, witchcraft and attempts to call up the spirits of the dead. As Mathúna and Larimore explain, all these practices, and all practices that smack of magic, are effectively forms of idolatry - that is to say, they are based on worship of and appeal to false gods and unholy forces.

The first part of the book having thus provided general information, advice and warnings, the second and third parts offer a vast amount of detailed information, listing and evaluating hundreds of therapies and remedies. Herbal remedies, vitamins and dietary supplements are distinguished from therapies on the grounds that the former, unlike the latter, tend to be consumed orally and generally are regarded as mild ways of improving or promoting health. The therapies discussed range from acupressure to chiropractic, including dieting, hypnosis, light therapy, prayer for healing, reiki and therapeutic touch. All of these are carefully ranked in terms of the authors' confidence in the potential benefits or harms. Similarly, helpful advice and warnings are provided about remedies such as the use of aloe, bee products, elderberry, ginger and licorice, to mention but a few.

To be sure, the comprehensive listing and evaluation of therapies and remedies found in this book is impressive. And the general advice about how to stay healthy in body, mind and spirit is most helpful. This book is to be warmly recommended to Christians who avail of alternative therapies or remedies or wonder whether they should. It is recommended also to Christian doctors who want to know more about alternative medicine—and, indeed to anyone else who is curious about alternative medicine.

**Reviewed by Agneta Sutton, PhD,** Lecturer at Heythrop College in the University of London, UK.

# Ethics Medicine

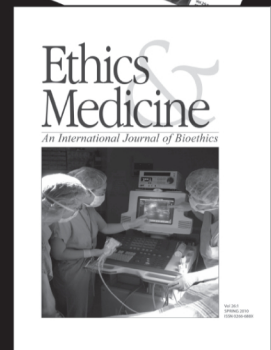
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