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Human Dignity From a Neurophilosophical Perspective

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15 **T**his essay on human dignity and bioethics will have six parts. In
16 the first, I argue that dignity is an important concept whose
17 meaning is inherently ambiguous and cannot be settled by appeals
18 to religious authority, conceptual analysis, or philosophical argu-
19 ment; instead, the meaning of human dignity—and its specific con-
20 sequences for today’s biomedical controversies—must be worked
21 out pragmatically, in a spirit of compromise. In the second part, I
22 suggest that we can gain some clarity about human dignity by exam-
23 ining where morality comes from, and in particular the biological
24 and social origins of human moral behavior. In the third part, I ar-
25 gue that moral progress is possible, but that misplaced moral certi-
26 tude can do more harm to human dignity than good. In part four, I
27 describe historical cases in which medical progress was impeded by
28 moral and theological opposition, and I predict that those who to-
29 day are morally opposed to embryonic stem cell research will fall
30 silent once the clear medical benefits begin to emerge. Part five
31 considers a deeper question concerning human dignity: whether
32 modern biology has exposed human dignity itself as something that
33 doesn’t really exist. Part six addresses the related question of
34 whether, in the light of modern neuroscience, holding people mor-
35 ally responsible makes any sense.

1 **I. How do we figure out what adherence to the idea of human**
 2 **dignity requires of us?**

3
 4 Consider a few obvious facts. First, “human dignity” is not a
 5 precise concept, in the way that “electron” or “hemoglobin” are
 6 precise. Nor is it merely conventional, in the way that “meter” or
 7 “gallon” are conventional. It is not a matter of etiquette, as thank-
 8 you notes are. It does not connote a matter of fact, as “the Earth
 9 revolves around the Sun” does. Regarding our fellow humans as
 10 worthy of dignity, and being considered worthy of dignified treat-
 11 ment ourselves, are important to us. But what that entails is not
 12 precisely defined. The idea varies—across cultures, within cultures,
 13 across history, and within a single person’s lifetime. More exactly, it
 14 varies even among those persons of goodwill who are themselves
 15 exemplars of moral rectitude. For example, some of the morally
 16 wise consider contraception a moral abomination, while others view
 17 it as a moral obligation. Both may claim moral certitude; both claim
 18 religious blessing.*

19 In our recent history, some people viewed smallpox vaccination
 20 as morally heinous on the grounds that it usurped the power of
 21 God, while others considered it a moral duty to vaccinate all chil-
 22 dren against this disease. Some sacred books command us to kill
 23 anyone who is deemed a witch;† other wise texts state that burning
 24 of heretics and blasphemers is morally indecent.‡ In some cases, the
 25 very same sacred book is inconsistent on the question of the moral-
 26 ity of slavery.§

27 The variation in moral practice, which is often correlated with
 28 variation in religious preference, implies that we cannot settle what

* See Adam Schulman’s background paper on “The Question of Human Dignity” in this volume.

† The Old Testament—see *Exodus* 22:18: “Thou shalt not suffer a witch to live.”

‡ Among the earliest, Friedrich von Spee’s work of 1631, *Cautio Criminalis, or a Book on Witch Trial*, trans. Marcus Hellyer (Charlottesville: University of Virginia Press, 2003).

§ See, for example, *Exodus* 21:2-6: “If thou buy a Hebrew servant. . .” and *Exodus* 22:2-3: “If a thief. . . have nothing, then he shall be sold for his theft.” On the other hand, see also *Exodus* 21:16, where “stealing a man” is grounds for execution, and *Deuteronomy* 23:15-16, where it is forbidden to hand over an escaped slave to his master. As Bernard Shaw wryly noted, no one believes the Bible means what it says; everyone believes it means what *he* says.

1 “human dignity” means by appealing to universally shared ideology.
 2 Can philosophers deploy a tool known as “conceptual analysis” to
 3 reveal the requirements? No more than they can use conceptual
 4 analysis to discover whether fire is rapid oxidation or whether
 5 mortgage rates will rise next month. There is no final and indisput-
 6 able source of truth about what “human dignity” entails, to which
 7 philosophers, even word-wise, reflective philosophers, have privi-
 8 leged access. There is no “essence” that is somehow fixed in some
 9 realm, if only we had access, or by deploying pure reason, if only we
 10 were smart enough.

11 What *is* conceptual analysis? If “conceptual analysis” merely taps
 12 into how the concept is currently used by ordinary people, then all
 13 the variation, ambiguity, vagueness, and open-endedness inherent in
 14 ordinary usage of “human dignity” is immediately laid bare. On this
 15 construal, conceptual analysis is essentially an anthropological enter-
 16 prise. On the other hand, if conceptual analysis is deployed in
 17 hopes of dissipating all that ambiguity and vagueness and settling
 18 whether, for example, human dignity must be attributed to the fer-
 19 tilized egg, then the hopes are vain. There is no purely analytical
 20 technique that gets you from there to here. Some philosophers do
 21 covertly import into their “analysis” a favored moral conviction, but
 22 this over-reaches strictly *analyzing* the concept as it lives and
 23 breathes, and goes on to endorse a particular moral view. In which
 24 case, one might as well avoid the whole charade of conceptual
 25 analysis and just endorse the moral view forthrightly.

26 Is there any source of special knowledge to which philosophers
 27 uniquely can appeal? There is none. Plato famously believed that
 28 important concepts, complete with all their entailments, did exist in
 29 the realm of the intellect, later waggishly dubbed Plato’s heaven.
 30 Alas, Plato’s heaven is merely a fantasy, as Aristotle well knew.
 31 Concepts are part of living languages and are imbued with beliefs,
 32 associations, and analogies. They change over time, they sometimes
 33 vanish or come into existence; they are the categories brains use for
 34 making sense of the world. They are not fixed and frozen Platonic
 35 essences that are reachable via some semi-magical procedure such
 36 as Platonic intellection.

37 How then do we resolve moral disagreements about a certain
 38 practice? Can we embrace a principle of universal human dignity
 39 and still use contraception and support stem cell research? Like all

1 social activities, resolution of these issues is a complex sociological
2 dance. To a first approximation, it involves people of goodwill try-
3 ing to come to a workable solution. That may sound mundane, but
4 it embodies the wisdom of humans as diverse as Aristotle, John
5 Locke, Benjamin Franklin, John Dewey, Nelson Mandela, and Con-
6 fucius. It involves recognition that no single person, no single pro-
7 fession, no single religious sect, no single sacred text, can be
8 counted on to deliver the correct answer to moral questions.

9 As I am fond of telling my students, there is no Wise Guru sit-
10 ting atop a mountain holding all moral truths in his pocket. How
11 could there be? Such a guru would need to know about all social
12 conditions and all possible scientific advancements. No human be-
13 ing falls into that privileged category. Nor is there a specific recipe
14 for how “people of goodwill work together to find a solution.” But
15 we do have history to learn from. In addition to examples of what
16 to avoid, we do have examples where no bloody crusade was
17 launched, no heretic burned, no infidel beheaded, no city sacked,
18 and no idol smashed. Instead, fair-minded compromises were
19 worked out. From these examples, we can hope to learn the morally
20 decent ways of resolving disagreements about the uses of new
21 medical technologies.

22 23 24 **II. The biological and cultural sources of morality**

25
26 We may be able to find common ground on the meaning and
27 implications of human dignity by examining the origins of human
28 moral behavior. Put simply, where does morality come from?

29 The answer has two parts. First, the evolution of the brain of so-
30 cial animals provides the neurobiological platform for social dispo-
31 sitions such as cooperation, reciprocity, group defense and
32 prevention of disorder.¹ This is the neuro-genetic component. Sec-
33 ond, conditions of life, accidents of history, and the capacity for
34 cultural accretion stimulate the emergence of various superstruc-
35 tures on this biological platform. The first is biology, while the sec-
36 ond is politics, in the broadest sense. Let me explain a bit further.

37 Humans are social animals, and as individuals our flourishing
38 very much depends on the behavior of others in our group. Socia-
39 bility confers a wide range of benefits on the individual. Living

1 within a pack, a wolf can help hunt large animals such as deer and
2 elk, rather than scrounge for mice. Benefits multiply: group defense
3 against predators, shared resources for care of the young, warmth in
4 the group huddle during winter storms, grooming to remove para-
5 sites from the hide, a division of labor whereby those who know
6 where to find water or where the caribou cross the river can guide
7 the rest of the pack. The life span of a loner chimpanzee is much
8 shorter than that of his conspecifics who live in a troop.

9 The brains of social animals are wired to feel pleasure in the ex-
10 ercise of social dispositions such as grooming and cooperation, and
11 to feel pain when shunned, scolded, or excluded. Neurochemicals
12 such as vasopressin and oxytocin mediate pair-bonding, parent-
13 offspring bonding, and probably also bonding to kith and kin.
14 Other neurotransmitters, such as serotonin and dopamine, play a
15 role in the astonishing complexity that is social life, as do hormones
16 such as testosterone.²

17 Typically, young social mammals learn the prevailing practices
18 and settle into a fairly stable pattern of social life. Humans, like
19 other social animals, including chimpanzees, bonobos, baboons,
20 monkeys, wolves, and ravens, have social instincts. These basic so-
21 cial instincts, enabled by the genes and tuned to local practices by
22 the reward system, are the platform for cooperation and mainte-
23 nance of the social order, and they provide the neurobiological
24 foundation for ethics in its broader sense. More particularly, they
25 provide the basis for love of mates and offspring, for the affection
26 of kin, and for the default respect accorded to other group mem-
27 bers. A plausible hypothesis is that the desire to extend to all hu-
28 mans the respect and dignity once more or less limited to small
29 groups probably originates here.

30 In human society, the benefits of group membership are even
31 more far-reaching and extensive than in baboons and chimpanzees,
32 mainly because humans have a drive to share and accumulate
33 knowledge. To a greater extent than other mammals, human are
34 consummate imitators.³ The capacity to imitate a skill learned by an
35 elder puts the young human at a singular advantage: he or she does
36 not have to learn everything by trial and error. Jointly, the drive to
37 learn by imitation and to upgrade that knowledge with new ideas is
38 what yields the gradual accumulation of clever ways of doing things
39 that can be passed on from one generation to the next. That is, it

1 yields culture. A child can learn from the elders how to make fire
2 and keep it going, how to prepare for winter, how to set a broken
3 bone.

4 These benefits acknowledged, the *costs* of social life are mainly
5 the costs associated with sharing resources, inhibiting the impulses
6 to exploit the weakness of others, assisting in group defense, and
7 maintaining the social order by, among other things, punishing
8 those who violate group norms or threaten the group as a whole.
9 Of course these may not be recognized as costs by the animal mak-
10 ing its way in social life, but they are costs in the straightforward
11 biological sense that risking loss of life and limb in defense of the
12 group can get the animal injured or killed.

13 The greater reach of altruism in humans than in other primates
14 has long been a puzzle, because the costs of helping strangers seem
15 to outweigh the benefits to gene spread. A recent model by Samuel
16 Bowles⁴ suggests a solution: If our ancestral groups engaged in le-
17 thal intergroup competition, where the group successful in battle
18 takes the resources of the vanquished, and if this was accompanied
19 by practices of “reproductive leveling” such as monogamy and food
20 sharing beyond the family, then genes disposing individuals to altru-
21 stic behavior would tend to spread through the population.

22 Social dispositions are only part of our motivational package, of
23 course. Our brains are also wired to see to the welfare of ourselves
24 and our offspring at the expense of those unrelated to us. If we are
25 lucky, these impulses will not conflict with social impulses, but of
26 course they often do. Even the rules of thumb conflict: *charity begins*
27 *at home; love your neighbor as yourself*. Suppose one can enhance one’s
28 welfare at the expense of another? Depending on conditions, social
29 and otherwise, this can lead to great complexity in behavior, includ-
30 ing all the familiar ways of flouting the social norms: cheating, de-
31 ceiving, hoarding, refusing to reciprocate, etc. Historically, it has
32 also led to branding some humans as “not fully human,” and hence
33 not deserving of dignity. Taking as slaves members of alien groups,
34 where the slaves are considered “not of our kind,” has had a long, if
35 sorry, history, and if Bowles’s theory is correct, in-group altruism
36 and out-group aggression naturally co-occur. Because humans are
37 very smart, these inclinations to violate social norms while seeming
38 not to can be manifested in subtle as well as not so subtle ways.
39 Hence we see complicated forms of deception, hypocrisy, extended

1 forms of slavery, cabals, factions, power struggles masked as moral
2 struggles, and all the other forms of human tragedy explored by
3 Shakespeare. As with other social animals, humans augment the ba-
4 sic social dispositions with rewards for socially acceptable behavior
5 and punishments for its opposite.

6 The point of much of cultural structure is to deter behavior that
7 runs counter to the accepted practices. Stories about the glory of
8 courage and the humiliation of cowardice instill the values of out-
9 group aggression and in-group defense; songs about kindness re-
10 warded and sharing blessed, about truthfulness praised and deceit
11 despised, solidify social values. Rituals involving praise for warriors
12 and punishment for cheaters reinforce the cultural lines of demarca-
13 tion. The local religion may depict both the basic social dispositions
14 and their detailed local expression as gifts from spirits or gods and
15 as deserving otherworldly goods after death. Sacrifices, of animals
16 and humans, are often employed with the effect of dramatizing the
17 power of the other-worldly source.

18 Once trained, the child has an automatic negative response to
19 the very idea of stealing, as well as to cowardice. And history and
20 anthropology both teach us that, with adolescence, a bloodlust for
21 out-group massacres often manifests itself.⁵ The youth's desires
22 change. He is apt to acquire narrow-minded convictions about what
23 is right and what is wrong, about who is truly a group member, and
24 who is not. The salient thing about this cultural activity is that a
25 group's ethical standards may tend to be internalized as absolute;
26 absolutely true, infallible, correct, applicable for all time under all
27 conditions, and beyond explanation. Moral certitude is not inevita-
28 ble, but it is common, more so in the young than in the broadly ex-
29 periented, less so in certain kinds of temperaments (e.g., Aristotle,
30 Gandhi, Lincoln, the Dalai Lama, Nelson Mandela) than in others.

31 To sum up: Both biology and "politics"—understood broadly to
32 include cultural anthropology, sociology, and group psychology—
33 help us to understand how and why moral standards of behavior
34 developed among humans, as well as how and why we are tempted
35 to violate those standards. The next question is whether, given such
36 a realistic account of the origins and function of morality, it makes
37 sense to speak of "moral progress," i.e., of one society being better
38 than another at preserving "human dignity."
39

III. Can There Be Moral Progress?

Aristotle viewed moral understanding as a kind of skill—a skill in navigating the social world. He realized that, through one’s experience of life, one could achieve an increasingly deep understanding of what is conducive to the flourishing of human societies and what undermines that flourishing. Skills may improve over time, but they may also degenerate, and that is true of living skills as well. It is, I think, fair to say that some moral progress has been achieved in some societies. For example, trial by one’s peers, though an imperfect institution, is, all things considered, a more stable and efficacious system than trial by ordeal. The rule of monarchs by divine right has the defect that the monarch may have a diseased brain or a feeble brain; the education of females tends to reduce collective poverty; bribing government officials leads to a loss of faith in the system as a whole, and so on. Plainly, there are better and worse ways of organizing society.⁶

Not infrequently, it may be difficult to discern whether a proposed law will aid or impede human flourishing in the long run. As many moral thinkers, including Aristotle and John Dewey, have realized, sometimes the consequences are very hard to predict, and cautious legislation may be viewed as a kind of social experiment. For example, in the early part of the nineteenth century, many people predicted utter catastrophe if women were allowed to vote in elections to federal and state office. Yet these predictions have turned out to be wholly false. Prohibition of the sale and consumption of alcohol in the 1920’s in the United States was acclaimed by temperance groups as a monumental moral achievement, but eventually it became evident that the legislation had addressed a bad problem and made it worse. This is probably also true of the current prohibition of other addictive drugs, such as marijuana, cocaine, and heroin.

As John Stuart Mill realized, legislating *private* morality (i.e., not what I do to others but what I do to myself) generally causes more trouble than it cures.⁷ If you make *my* private life *your* business, the door is open to no end of busybody intrusion, no end of ugly harassment in the name of morality, and no end of enforcement costs. Moral certitude about the right way to lead one’s private life tends,

1 in the enthusiastic, to generate the impulse to force others to fall
2 into line. Much moral courage and breadth of experience are
3 needed to face the fact that such an impulse can lead to immense
4 and unnecessary wretchedness.

5 Some well-intentioned advice, even from exemplary moral
6 thinkers, can turn out to be poor advice. At one point, Jesus advised
7 that we should live as the lilies in the field, without care for the long
8 term. As historical research makes clear, he advised thus because he
9 believed the end of the world was nigh. Since the world did not
10 end, it was very bad advice indeed, and Sunday school teachers now
11 hastily contrive an excuse for not taking it seriously. St. Paul also
12 believed the end of the world was nigh and, in the midst of some
13 rather moving ruminations about kindness, also rendered excep-
14 tionally poor advice, especially on the topic of sexuality. These
15 lapses are not surprising.

16 Even thoughtful, experienced, balanced people may be ignorant
17 of certain facts or may themselves be blinded by certain hopes and
18 passions. Everyone sees the world from some perspective or other,
19 influenced by one's own idiosyncratic experience, framed by one's
20 own idiosyncratic brain, with its particular balance of emotions,
21 fears, beliefs, and temperament. This means that we are all limited,
22 in some respect or other. We do the best we can, but there is no
23 guarantee that it is The Best Absolutely. To be sure, there are plenty
24 of people who advertise their pre-eminent wisdom, including,
25 sometimes, allegedly infallible guides to life. Self-styled wise men
26 will always attract followers, since there are plenty of desperate
27 people vulnerable to their promises.

28 To sum up: It does make sense to speak of moral progress; some
29 societies are unquestionably better than others at treating people
30 decently, i.e., with due respect to their dignity; and societies can
31 learn from their mistakes and improve their performance in this
32 regard. But it is an unfortunate fact that morally self-righteous at-
33 tempts to improve human society—sometimes undertaken in the
34 name of preserving human dignity—have sometimes led to the mis-
35 treatment of human beings and to much human suffering. Good
36 intentions based on moral certitude are no guarantee that human
37 beings will actually benefit.

38

IV. Vaccines, Anesthesia, and Stem Cells

Now let us consider some of the burning issues of contemporary bioethics, and in particular the advent of new medical technologies that some observers believe pose a threat to human dignity.

What about stem cell research? More exactly, what about the research use of human embryos for therapeutic (not reproductive) purposes? Let us accept for this discussion the prevailing criterion that the embryos at issue have not yet advanced to the stage of cell differentiation (so there are no brain cells at all). Is a blastocyst (a ball of about two hundred undifferentiated cells) something that commands the dignity, rights, and privileges accorded a full term human infant? And what about assisted suicide for the terminally ill patient, suffering in agonizing pain, who pleads for it? If her religion allows it, but yours does not, why should yours prevail? On what basis can you assume that you *know better*? As I argued in Section I, attention and reflection to the everyday use of the concept “human dignity” cannot give us the answers. Life is harder than that.

What I can do is tell you how I am inclined to approach these questions, as I draw upon historical examples, and as I try to apply the ideas of diverse thinkers—e.g., Aristotle, Confucius, Aquinas, Dewey, Mill and the Dalai Lama. I shall avoid putting my eggs in one basket. I shall do the best I can, but I do not wish to claim it is Absolutely The Best, and I do not wish to claim special moral authority, though I do not think I should be taken less seriously than the Pope or Pat Robertson. I only wish to suggest that we reason together.

Past moral and theological opposition to novel medical technologies sheds some light on contemporary bioethical controversies. Smallpox is a highly contagious, painful and disfiguring viral disease. Mortality of those infected is about 20-40%. In the mid-eighteenth century in Europe, on average one in thirteen children died of smallpox, and many more were left blind owing to corneal ulcerations. As early as 1000 BC, physicians in India used a form of inoculation to prevent the spread of infection. They rubbed the pus of an infected person into a small cut of a healthy person, who then contracted a mild form of smallpox and was immune thereafter.

1 The Chinese variant was to powder a smallpox scab and inhale the
2 powder into the nasal cavity. Eventually the British and Americans
3 learned of the inoculation practices and began to try them, though
4 some patients did still die in spite of inoculation, and some died as a
5 result of the inoculation itself. Overall, however, it produced a
6 transformative reduction in the rate of infection. In 1757 Jenner
7 became famous for having safely vaccinated a boy with cowpox,
8 after noticing that milkmaids were immune to smallpox. Cowpox
9 vaccination produced very mild and local symptoms but provided
10 immunity against smallpox.

11 Arch-conservative theologians and medical men, both Catholic
12 and Protestant, bitterly opposed inoculation as well as vaccination
13 with cowpox. The struggle went on for some thirty years.⁸ The
14 theological opposition turned on the conviction that smallpox is a
15 judgment of God on the sins of the people, and that to avoid the
16 disease was to risk further punishment. Inoculation was described
17 as a tool of Satan that would distance man from God. For example,
18 Rev. Edward Massey in England preached an impassioned sermon
19 in 1772 entitled *The Dangerous and Sinful Practice of Inoculation*. Per-
20 sonal threats were leveled at medical practitioners, and primitive
21 bombs were thrown into homes. Not all theologians were opposed,
22 and some, especially among the Puritans, took an active role in
23 promoting vaccination. One theologian, attempting to defend the
24 science, argued that Job's boils were actually smallpox pustules
25 caused by the devil. So, he concluded, if Job's agony was devilish in
26 origin, then avoiding the agony is consistent with God's law.

27 By the middle of the nineteenth century, pro-vaccination forces
28 had succeeded in getting large numbers of people vaccinated, and
29 the number of deaths plummeted. The death rate of children in
30 Europe due to smallpox fell from one in thirteen to one in sixteen
31 hundred. In London, in 1890, only one person died of smallpox,
32 while a hundred years earlier smallpox had taken thousands.

33 That vaccination against a horrible viral disease was once fought
34 as a violation of God's law is rarely remembered today. That vacci-
35 nation was opposed *at all* scarcely seems possible, and the opposi-
36 tion seems anything but moral. But the opposition was entirely real;
37 it was also powerful, impassioned, widespread, and—but for the
38 courage of a few—could have been successful. The opponents
39 never did take the pulpit to admit they were wrong.

1 The opposition was defeated not by argument, but by the obvi-
2 ous benefits of vaccination. Quite simply, it became more and more
3 difficult to convince people that the misery of smallpox was morally
4 superior to the benefits of immunization. The bishops and priests
5 and reverends who once thundered about the sin of inoculation
6 drummed up other topics on which to thunder.

7 Incidentally, it may be worth noting that today, arch-
8 conservative Christian groups, such as the Family Research Council,
9 appear to continue this tradition of favoring misery and death over
10 vaccination against a virus. They oppose routine vaccination of
11 young girls against cervical cancer. The vaccination against human
12 papilloma virus (HPV) is highly effective and can prevent some ten
13 thousand new cases (and thirty-five hundred deaths) in the United
14 States per year. World-wide, 300,000 women die of cervical cancer
15 each year. Cervical cancer is in fact the second leading cause of can-
16 cer deaths in women. “Abstinence is the best way to prevent HPV,”
17 says Bridget Maher of the Family Research Council. “Giving the
18 HPV vaccine to young women could be potentially harmful, be-
19 cause they may see it as a license to engage in premarital sex,”
20 Maher claims.⁹ The Christian Coalition of Florida also opposes rou-
21 tine vaccination, on much the same grounds: “We’re concerned
22 about the age of the kids and the message we’re sending,” said Bill
23 Stephens, the coalition’s executive director. Stephens said the coali-
24 tion might be more apt to support the legislation if it included edu-
25 cation about abstinence.¹⁰ According to *Fortune* Magazine, Dr. Hal
26 Wallis, head of the Christian conservative group, Physicians Con-
27 sortium, said, “If you don’t want to suffer these diseases, you need
28 to abstain, and when you find a partner, stick with that partner.”
29 The founder of the National Abstinence Clearinghouse also op-
30 posed the vaccine. This organization was formed “to promote the
31 appreciation for and practice of sexual abstinence (purity) until mar-
32 riage.” Leslee Unruh, the organization’s founder, was quoted as
33 stating, “I personally object to vaccinating children against a disease
34 that is 100 percent preventable with proper sexual behavior.”¹¹ Phil
35 Gingrey (Republican representative from Georgia) has claimed,
36 “States should require vaccinations for communicable diseases, like
37 measles and the mumps. But you can’t catch HPV if an infected
38 schoolmate coughs on you or shares your juice box at lunch.
39 Whether or not girls get vaccinated against HPV is a decision for

1 parents and physicians, not state governments.”¹² If the deeper mo-
2 tivation for opposition to the vaccine is that cervical cancer is a de-
3 served result of failure to adhere to sexual abstinence outside of
4 marriage, as AIDS has been claimed to be God’s punishment for
5 homosexual activity, one would have to question the morality of
6 such a position. In any case, even if abstinence may be the surefire
7 way to prevent sexually transmitted diseases, as a social policy it
8 cannot be said to have had a successful history.

9
10 The history of opposition to anesthesia as a method of relieving
11 pain during surgery and childbirth is equally dismaying, and also
12 surprising. What could be morally objectionable about relieving
13 pain? Quite a lot, apparently. Arch-conservative theologians and
14 physicians regarded pain as God’s punishment for sin, as part of
15 God’s divine plan, as making the person closer to God as he begs
16 for mercy. To interfere with that plan was to play into the hands of
17 the devil. It was to usurp God’s power and take it unto oneself or—
18 as one might say now—to “play God.”

19 Ether and chloroform, the best of the early anesthetics, were
20 particularly potent and if used carefully, were also reasonably safe.
21 William Morton, a dentist in Boston, demonstrated the use of ether
22 at Massachusetts General Hospital in 1846, and chloroform was
23 introduced by James Young Simpson in Scotland in 1847. In Scot-
24 land, Simpson’s use of chloroform was widely denounced in the
25 pulpit. One clergyman asserted that “chloroform is a decoy of Sa-
26 tan. It may appear to be a blessing, but it will harden society and
27 rob God of the deep earnest cries for help.” Use of anesthesia in
28 childbirth, even in Caesarian sections, was strenuously opposed
29 even by some who thought its use in amputation and tooth extrac-
30 tion was just barely acceptable. Their justification was that the pro-
31 cedure tried to circumvent God’s curse upon Eve as she and Adam
32 left the Garden of Eden: “I will greatly multiply your pain in child-
33 bearing. In pain shall ye bring forth children.” (*Genesis* 3:16)

34 As with vaccination, the benefits were so profound and so im-
35 mediately appreciated that religious opposition eventually fell silent.
36 No one today would consider it a moral necessity to avoid anesthe-
37 sia during a breach delivery. But the opposition in the nineteenth
38 century was sincere, backed by Biblical text, devoutly embraced, and
39 supported by unwavering moral certitude. Again, there is no evi-

1 dence of clerics coming to the pulpit to announce a change of
 2 mind, the clear benefits notwithstanding. Rather, this embarrassing
 3 bit of theological history was left in the back of the closet.

4 There are plenty of other examples of religious condemnations
 5 of scientific technologies that have greatly benefited mankind, in-
 6 cluding contraceptive techniques, *in vitro* fertilization (which alleg-
 7 edly violates human dignity¹³), division (dissection) of the dead body
 8 (Boniface VIII in 1300¹⁴) and organ donation by living donors
 9 (Pope Pius XII, 1956), as well as religious blessings of such prac-
 10 tices as female subjugation*, slavery, forced conversions, and genital
 11 mutilation of females.

12 Part of the point of these historical interludes is that claims to
 13 know what God wants are no guarantee against moral failure. Hu-
 14 mility, whatever one's religious inclinations or moral convictions, is
 15 surely appropriate. The main point, however, is that moral attitudes
 16 can change when the benefits of a technology are clear and demon-
 17 strable. As the benefits of a technology become plain, it becomes
 18 more and more difficult to convince large numbers of people that
 19 enduring the misery of disease is morally superior to enjoying the
 20 benefits of health. Ideology, however laced it may be with moral
 21 certainty, generally has a tendency to quietly fold its tents once the
 22 benefits of a technology are manifest and reasonable regulations
 23 have been worked out. Moral certitude itself can be a moral menace
 24 when it stymies the compromises and negotiations of fair-minded,
 25 sensible people.

26 If past experience is a guide, I predict that the opposition to
 27 stem cell research will likely weaken once the benefits of that re-
 28 search begin to emerge. Even now, parents whose infants have dia-
 29 betes do not find it credible that a microscopic fertilized egg is a
 30 person. Someone who has macular degeneration and is blind at
 31 twenty or who is a quadriplegic at fifteen does not find it reasonable
 32 that a ball of undifferentiated cells—not a neuron in sight—is really
 33 his equal in rights and obligations. As I write this, new research is
 34 showing that when newly born retinal cells from mice pups are in-
 35 jected into the eyes of retina-damaged mice, they link up to existing
 36 retinal cells and restore a functional retina, providing the best evi-

* According to 1 *Timothy* 2:8-11, women are required to learn in silence and to submit to men in silence.

1 dence so far for cell replacement therapy in the central nervous sys-
 2 tem.¹⁵ Once the therapeutic benefits become undeniable, the Bibli-
 3 cal texts will be reinterpreted to show that God approves of
 4 scientific advances that ameliorate suffering, just as they were in the
 5 cases of anesthesia and vaccination. It will be seen as obvious that,
 6 just as a fertilized apple seed is not an apple tree and a fertilized
 7 chicken egg is not a chicken, so a fertilized egg is not a person. It
 8 will be acknowledged that just as fertilization is an important step in
 9 reproduction, so is the development of a nervous system. Neural
 10 development will turn out to be vastly more important in reaching
 11 agreement on when a person has come into being.* Religious lead-
 12 ers who have supported well-regulated stem cell research will gather
 13 adherents. Common sense will prevail.

14 Why do I believe this is likely? Because when ideology conflicts
 15 with obvious benefits for human health and flourishing, common
 16 sense typically, if slowly, triumphs.

17 So, as a *practical* matter, I believe that mankind will by and large
 18 prove successful in meeting the challenges of modern biomedical
 19 technology, reaping its great fruits while pragmatically avoiding the
 20 threats it might pose to human dignity. But there remains, in the
 21 minds of some, a *theoretical* problem concerning human dignity and
 22 modern science: to the extent that evolutionary theory, neurobiol-
 23 ogy, and genetics can give an account of our moral behavior and
 24 how it arose, some are afraid that human dignity itself will be ex-
 25 plained away. I turn to this question next.
 26

* As Robert Pasnau observes, Aquinas believed that God would not put “the rational soul” into a body that was not prepared, and the body of the developing human fetus was not prepared for the rational soul until about three month of gestation. He selected that date because by then the fetus begins to move. See Robert Pasnau, *Thomas Aquinas on Human Nature. A Philosophical Study of Summa theologiae 1a 75-89* (Cambridge: Cambridge University Press, 2002).

1 **V. If ethics is rooted in social instincts supplied by our genes,**
2 **doesn't that mean human dignity is not real?**

3
4 Occasionally someone may suggest that, if our thoughts and
5 ideas are merely the product of the brain and its activities, then they
6 cannot be real—not genuinely real. Consequently, it will be con-
7 cluded, neuroscientists must believe that human dignity is not
8 something real. But this worry rests on a misunderstanding, the nature
9 of which can be readily explained.

10 When we remember the mad scene in *King Lear*, when we shoot
11 a basketball, run to catch the ferry, hum “Greensleeves,” or recog-
12 nize a flower as goldenrod, networks of neurons in the brain are
13 responsible for the result. In no case is the achievement the result
14 of a single neuron. In no case is the achievement owed to a non-
15 physical soul.¹⁶

16 Representations more generally—in perception, thought, emo-
17 tion, motor planning—are distributed over many neurons, typically
18 millions of neurons in the case of mammals. Even the rhythmic be-
19 havior of walking, chewing, breathing, and so forth, is not the prod-
20 uct of a single “rhythmic generator,” but is an emergent property
21 that arises from the interactions of many neurons. By *emergent prop-*
22 *erty*, I do not mean anything spooky or metaphysical. I merely mean
23 that the property is a function of both the intrinsic properties of
24 neurons in the network and the dynamics of their interactions. I
25 mean it is a network property.¹⁷ The network provides the neural
26 mechanism whereby the phenomenon is produced.

27 Discovering the mechanisms whereby networks yield their ef-
28 fects is horrendously complex. Nevertheless, neuroscience is begin-
29 ning to piece together the story of how neurons collectively work
30 together to represent colors, locations in space, decisions to move,
31 odors, sounds, and temporal durations. Quite a lot is known about
32 how populations of neurons represent in these ways, though much
33 of the story is still ahead of us.

34 So the first point is simple: representations are network proper-
35 ties. The second point, to which I now turn, is that representations
36 of the social world are also network properties, and they too are real
37 and they too mediate behavior. Of course, if there is no social world
38 for the animal (e.g., if it is completely isolated from others) then it
39 will not have a social world to represent.

1 Chimpanzees have been shown to represent the goals of others;
2 an individual chimpanzee can represent what another chimpanzee
3 can and cannot see from its point of view.¹⁸ Chimpanzees represent
4 the niceties of social structure, and they know who is the offspring
5 of whom. Young males can represent a weakness on the part of the
6 alpha male and will orchestrate a challenge for dominance of the
7 troop. With normal serotonin levels, participants in a donnybrook
8 represent when it is prudent to back off the fight. These cognitive
9 activities are the function of the orchestrated activity of neurons in
10 neural networks. The representation of another animal's intention
11 to ask for grooming is as real as the representation of a location of a
12 food cache or the representation of movement. It is every bit as
13 real as the activity of a single neuron; it just happens to be the activ-
14 ity of large numbers of neurons organized into a coherent network.
15 Detailed understanding of exactly how all this works still eludes us,
16 but every year brings new advances that make the problems more
17 tractable.¹⁹

18 When social animals such as humans represent another as de-
19 serving dignified treatment, that cognitive/emotional state is
20 achieved by networks of neurons. Representations of highly ab-
21 stract ideas (e.g., infinity) and complex thoughts (e.g., mortgages)
22 probably depend on the use of language, but linguistic representa-
23 tions nevertheless are still the business of neural networks. Social
24 representations—of goals, intentions, sympathy, respect, fairness,
25 kindness, exploitation, slavery—are as real as any other representa-
26 tion.

27 Notice, moreover, that many representations are not exact or
28 precise, but typically have fuzzy boundaries. Depending on what is
29 learned, in the myriad ways in which things can be learned, one's
30 representation of the nature of the tides or of toilet training or of
31 social justice may be modified—revised, augmented, deepened. A
32 three-year-old's understanding of "fairness" is much less rich and
33 elaborated than that of Abraham Lincoln.²⁰ In any event, it is simply
34 a misunderstanding of neuroscience to conclude that, because there
35 is a biological substratum underlying our representations of justice,
36 morality, dignity and the like, those representations have no reality.

37 Even if it is accepted that such moral representations are real,
38 some observers worry that the causal account of mental activity
39 promised (and increasingly delivered) by neuroscience undermines

1 our belief in free will and moral responsibility. But this too, I argue,
2 is based on a misunderstanding.

3
4
5 **VI. If my decisions and choices are the outcome of brain ac-**
6 **tivity, and if the brain is a causal machine, am I responsible**
7 **for anything?**

8
9 Let me begin by simplifying. The fundamental point about hold-
10 ing an individual responsible ultimately rests on the need for safety
11 of individuals in the group. We understand reasonably well the con-
12 ditions permitting social traits to spread through a population, and
13 they include the capacity to detect and remember who are the so-
14 cially dangerous individuals and the willingness to punish them—as
15 well as to punish those who will not share the burden of exacting
16 punishment.²¹

17 Darwin had the basic story right when he remarked in *The De-*
18 *scend of Man*, “A tribe including many members who, from possess-
19 ing in high degree the spirit of patriotism, obedience, courage and
20 sympathy, were always ready to aid one another and to sacrifice
21 themselves for the common good would be victorious over most
22 other tribes; and this would be natural selection.”²²

23 Monogamous pair bonding is typical in certain species, such as
24 marmosets, Canada geese and prairie voles. The behavior exists not
25 because Divine Law or Pure Reason decrees its universal propriety,
26 but owing to the utility of monogamy for their way of making a liv-
27 ing. The species have evolved so that most individuals have high
28 concentrations of receptors for the peptides *oxytocin* and *vasopressin*
29 in limbic structures of the brain.²³ The limbic pathways connect to
30 the dopamine-mediated reward system (mainly the ventral tegmen-
31 tal area and the nucleus accumbens). Thus, when a pair of voles
32 copulates each comes to associate great pleasure with that particular
33 mate. In social animals (including human beings), bonding with kith
34 and kin probably involves these same biochemical pathways.

35 Fundamentally, punishment of cheaters (in the broadest sense) is
36 justified because social traits such as cooperation and sharing can-
37 not spread through a population unless cheaters are punished. Dis-
38 positions to punish are likely also to be regulated by neural
39 modulators such as dopamine in the reward system, serotonin in

1 frontal structures, and oxytocin in limbic structures. The precise
2 nature of the punishment—shunning, beating, biting or whatever—
3 may, in some species such as humans, be a matter for negotiation
4 and cultural standards.

5 In varying degrees, human groups also recognize that under spe-
6 cial circumstances the form of punishment calls for a closer look.
7 Special circumstances may include being involuntarily intoxicated,
8 being very young, sleep-walking, having an epileptic seizure, or be-
9 ing severely brain damaged. Insanity has always been a complicated
10 issue for judicial systems, and it remains so now, though agreement
11 on the necessity for public safety is pretty much universal.²⁴

12 There are many forms of mental abnormality, some that render
13 the individual merely eccentric, others that distort the representa-
14 tion of reality to such a degree that custodial care is essential. There
15 are no easy answers regarding how to diagnose those forms of in-
16 sanity, or exactly when responsibility is diminished. Nor is it at all
17 obvious, in many cases, what justice requires. In his book *The Ethical*
18 *Brain*, Michael Gazzaniga has suggested that issues involving in-
19 sanity and criminal justice will not be made easier even when we can
20 identify differences in the brains of those who are classified as in-
21 sane and those who are not.²⁵ I suspect he is right, mainly because
22 asylums for the criminally insane will have to be as secure as regular
23 prisons, and because many people believe that—insanity notwith-
24 standing—the possibility of punishment acts as a strong deterrent.

25 In any event, far from being undermined by neuroscience's in-
26 sights into human behavior and its causes, moral responsibility is
27 actually put on a firmer and more realistic basis, the more we un-
28 derstand about the neurological substratum of our moral life.

31 Conclusions

32
33 Treating all members of our species with dignity is, certainly, a
34 worthy aim. What must remain sobering to all thoughtful people,
35 however, is that—as a matter of historical fact—those who es-
36 poused such a principle have often been willing to take coercive
37 action, sometimes brutally coercive, to achieve their version of hu-
38 man dignity. Such coercion may be exercised even in matters of pri-
39 vate morality, where the welfare of others is entirely irrelevant. In

1 the name of religion, so-called heretics have been burned, blas-
2 phemers hunted down, private lives invaded and made miserable,
3 cities sacked, and the peace overturned. For your own good, and in
4 the name of your own dignity, it may be argued, you must suffer
5 terrible pain and submit to smallpox or Parkinson's disease or spinal
6 paralysis.

7 We have much more to fear from the moral dogmatist who
8 brandishes his unshakable certainty about what God supposedly
9 wants and intends concerning human dignity than from the calmly
10 tolerant person who will listen to others, and who will work toward
11 a peaceful compromise that is conducive to human flourishing. If
12 someone professes certainty regarding a fact, we can always test his
13 claim against the evidence. By contrast, if someone expresses certi-
14 tude regarding what God intends, it is much harder to test his claim.
15 In any case, it would be inconsistent with human decency to assume
16 that feeling certain is itself conclusive evidence of possessing the
17 truth.

1 Notes

¹ See Edward O. Wilson, *On Human Nature* (Cambridge, Massachusetts: Harvard University Press, 1988); Matt Ridley, *The Origins of Virtue: Human Instincts and the Evolution of Cooperation* (New York: Viking, 1996); Frans de Waal, *Good Natured: The Origin of Right and Wrong in Humans and Other Animals* (Cambridge, Massachusetts: Harvard University Press, 1996).

² For a comprehensive review, see Thomas R. Insel and Russell D. Fernald, “How the brain processes social information: Searching for the social brain,” *Annual Review of Neuroscience* 27 (2004): 697-722. See also Frances P. Champagne and James P. Curley, “How social experiences influence the brain,” *Current Opinion in Neurobiology* 15 (2005): 704-709.

³ Michael Tomasello, Malinda Carpenter, Josep Call, Tanya Behne, and Henrike Moll, “Understanding and sharing intentions: The origins of cultural cognition,” in *Behavioral and Brain Sciences*, 28 (2005): 675-691; Michael Tomasello, *The Cultural Origins of Human Cognition* (Cambridge, Massachusetts: Harvard University Press, 1999).

⁴ Samuel Bowles, “Group Competition, Reproductive Leveling and the Evolution of Human Altruism,” *Science* 314 (2006): 1569-1572.

⁵ Richard W. Wrangham and Dale Peterson, *Demonic Males: Apes and the Origin of Human Violence* (New York: Mariner Books, 1996); Patricia S. Churchland, “Of gangs and genocide: Chimp behavior provides clues to the neural basis for aggression in humans,” *Science and Theology News*, August 11, 2006.

⁶ See William D. Casebeer, *Natural Ethical Facts: Evolution, Connectionism, and Moral Cognition* (Cambridge, Massachusetts: MIT Press, 2001).

⁷ John Stuart Mill, *On Liberty*, ed. Gertrude Himmelfarb (London: Penguin, 1974), (first published in 1859).

⁸ Andrew Dickson White, *A History of the Warfare of Science with Theology in Christendom* (Gloucester, Massachusetts: Peter Smith, 1978), chapter XIII, section 5 (first published in 1896).

⁹ Deborah MacKenzie, “Will Cancer Vaccine Get to All Women?,” *The New Scientist*, April 18, 2005.

¹⁰ Shannon Colavecchio-van Sickler, “Vaccine bill finds tough opposition,” *St. Petersburg Times*, February 26, 2007.

¹¹ Janet Guyon, “The Coming Storm Over a Cancer Vaccine,” *Fortune*, October 31, 2005, p. 123.

¹² Fran Eaton, “HPV Vaccine Effort Encounters Strong Opposition,” *Health Care News*, June 1, 2007, available online at www.heartland.org/Article.cfm?artId=21151.

¹³ In 1968, Pope Paul VI issued the encyclical *Humanae vitae* (i.e., “Of human life”), stipulating that all contraceptive devices, including condoms, intrauterine devices, the pill and patches, as well as sterilization techniques (vasectomy and tubal ligation) are forbidden because of the “the inseparable connection, established by God, which man on his own initiative may not break, between the unitive significance and the procreative significance which are both inherent to the marriage act.” (*Humanae vitae* II.12). He used the same argument in forbidding in

vitro fertilization. (The official English translation of *Humanae vitae*, quoted here, may be found online at www.vatican.va/holy_father/paul_vi/encyclicals/documents/hf_p-vi_enc_25071968_humanae-vitae_en.html.)

Catholic Insight explains that IVF is “in opposition to the dignity of procreation and the conjugal union.” See John B. Shea, MD, “What the Church teaches about human reproduction,” *Catholic Insight*, September, 2006, available online at www.catholicinsight.com/online/church/humanae/article_684.shtml. According to Australian physician John Billings, “this moral attitude [separation of sex and possible procreation] has produced in our own time an anti-child society.” See John Billings, MD, *Gift of Life and Love* (Apostolate of Catholic Truth, Sixth Printing, 1997), quoted in Fr. Joseph Hattie, “The prophecies of Paul VI,” *Catholic Insight*, July/August 2003, available online at www.catholicinsight.com/online/church/humanae/article_131.shtml).

In the 1968 encyclical, Paul VI goes on to say: “Consequently, unless we are willing that the responsibility of procreating life should be left to the arbitrary decision of men, we must accept that there are certain limits, beyond which it is wrong to go, to the power of man over his own body and its natural functions—limits, let it be said, which no one, whether as a private individual or as a public authority, can lawfully exceed.” (*Humanae vitae*, II.17) Having witnessed for myself, as a child growing up in rural Canada, the unspeakable misery caused in many families by inability to control family size, I cannot but find these claims morally dubious. Common sense generally prevails here too, as many educated Catholics ignore the injunction against contraception.

¹⁴ Boniface’s bull, *Detestande feritatis* (i.e., “Of Abhorred Wounds”) of 1300, forbade the division of the body, and did so in the strongest terms, with excommunication and denial of an ecclesiastical burial as automatic penalties for violation. Some historians have argued that Boniface’s intent was only to prohibit the friends of dead crusaders from extracting the bones, boiling them, and returning them home for burial. See, for example, Daniel Boorstin, *The Discoverers* (New York: Random House, 1983). More recent and thorough historical analysis reveals a much more complicated story that has little to do with the crusaders and was intended to apply quite broadly.

Among other things, the evidence suggests that Boniface, a sickly man, had a strong concern with his own body and a deep personal abhorrence of the fairly common practice of bodily division before burial, perhaps fearful that he might be carved up before fully dead. He may also have worried about what division might imply for the doctrine of saintly “refreshment,” perhaps envisaging his own canonization. His reasons for the decree remain obscure, however, since he published the decree without providing any arguments. In any case, his decree was broadly ignored, though not actually nullified by later Popes. For example, Boniface’s successor, Clement V gave Philip the Fair permission to have his corpse divided so as to maximize the number of churches in which his remains could be buried. See Katherine Park, “The Criminal and the Saintly Body: Autopsy and Dissection in Renaissance Italy,” *Renaissance Quarterly* 47:1 (Spring, 1994), pp. 1-33, and Elizabeth A. R. Brown, “Authority, the Family, and the

Dead in late Medieval France,” *French Historical Studies* 16:4 (Autumn, 1990), pp. 803-832.

¹⁵ See Robert E. MacLaren, et al., “Retinal repair by transplantation of photoreceptor precursors,” *Nature* 444 (2006): 203-207. Millions of otherwise normal people are affected by macular degeneration or retinitis pigmentosa and become blind.

¹⁶ See Paul M. Churchland, *The Engine of Reason, the Seat of the Soul* (Cambridge, Massachusetts: MIT Press, 1996), and Patricia S. Churchland, *Brain-Wise: Studies in Neurophilosophy* (Cambridge, Massachusetts: MIT Press, 2002).

¹⁷ For the best account of this see Carl F. Craver, “Beyond reductionism: Mechanism, multifield integration and the unity of science,” in *Studies in the History and Philosophy of Biological and Biomedical Sciences* 36 (2005): 373-396.

¹⁸ Michael Tomasello, Josep Call, and Brian Hare, “Chimpanzees understand psychological states: The question is which ones and to what extent,” *Trends in Cognitive Science* 7 (2003): 153-156.

¹⁹ Carl F. Craver and William Bechtel, “Mechanisms and mechanistic explanation,” in *The Philosophy of Science: An Encyclopedia*, ed. Sahotra Sarkar and Jessica Pfeiffer (New York: Routledge, 2005).

²⁰ Tanya Behne, Malinda Carpenter, and Michael Tomasello, “One-year-olds comprehend the communicative intentions behind gestures in a hiding game,” *Developmental Science* 8 (2005): 492-499.

²¹ See Matt Ridley, *The Origins of Virtue: Human Instinct and the Evolution of Cooperation* (New York: Viking, 1996).

²² Charles Darwin, *The Descent of Man, and Selection in Relation to Sex*, 2nd edition (New York: Appleton, 1909), chapter V, p. 135 (published in 1877).

²³ Larry J. Young, Brenden Gingrich, Miranda M. Lim, and Thomas R. Insel, “Cellular mechanisms of social attachment,” *Hormonal Behavior* 40 (2001): 133-138..

²⁴ See Owen D. Jones and Timothy H. Goldsmith, “Law and Behavioral Biology,” *Columbia Law Review* 105 (2005): 405-502.

²⁵ Michael Gazzaniga, *The Ethical Brain* (Chicago: University of Chicago Press [distributed for Dana Press], 2005).