

# CRISPR and the Condition of Public Moral Discourse<sup>1</sup>

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October 6, 2017

## Introduction

My name is Mark Richardson and I am delighted to be here with you today. I am grateful to David Nichols, John Carey and so many others behind the scenes, who organized this event. It has been my experience that interdisciplinary events of this sort are the richest conferences I have attended, so I am happy to present and even more so to learn from others who will present.

Like Ted Peters, I'm from Berkeley CA where I serve as President and Dean of The Church Divinity School of the Pacific, an Episcopal seminary within the inter-religious consortium of the Graduate Theological Union (GTU). We are probably about a 5-minute walk from the office of Professor Jennifer Doudna, a leader in the discovery and advancement of CRISPR research and technology. Ted Peters is a long time friend, who has been a leader at the Center for Theology and the Natural Sciences (CTNS) for over 30 years. During my time at CTNS, I directed *The Science and Spiritual Quest* project, convening leading scientists worldwide to engage in conversation about theory in their science and the relation it holds to assumptions behind their spiritual traditions as Jews, Christians, Muslims and Atheists. I have edited books inspired by this project.<sup>2</sup>

This morning we've heard a clear description of CRISPR, and I thank Dr. David Grunwald for this presentation. It's a reminder of the vast implications of this game-changing genetic engineering technique. By the way, its worth taking a moment to express admiration for the genius CRISPR based applications represents, the dedication to find medical solutions, especially after an election cycle that has not always shown respect for scientific expertise, and has denied scientific findings in matters profoundly important to our future.

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<sup>1</sup> A paper delivered at a conference "Faith and Science Workshop on Ethical Issues in Human Germ-line Editing," sponsored by departments and centers at the University of Utah, the Rocky Mountain Synod of ELCA, and the Episcopal Diocese of Utah.

<sup>2</sup> Some of this work can be sampled in my publication *Science and the Spiritual Quest*, (NY: Routledge, 2002).

But back to CRISPR: we place our hopes today on its *therapeutic* potential, but the same technology has prospective use beyond therapy and this is the more controversial arena for moral consideration—a new form of genetic germ line *enhancement*, changing levels of performance or appearance, and irreversibly affecting future offspring. My remarks will turn more toward this latter potential of the technology<sup>3</sup>

There is a new book titled *Your Brain is a Time Machine*.<sup>4</sup> The author states that the human brain, like no other mammalian brain, allows us to travel back and forth in time to plan for the future and agonizingly regret the past. Let me suggest that the same capacity allows us to learn from the past as we prepare for the prospect of future genetic engineering. The capacity to look into the past and anticipate the future is a necessary condition of moral being, which leads to my topic this morning.

Some claim that we may not need to worry about enhancement issues right now. Bio-ethicists, Arthur Caplan, stated in a recent interview: “I’m filled with amusement about that worry... The designer baby question is sort of, ‘Can we travel to other galaxies?’ It’s not something anybody has to worry about right now...”<sup>5</sup>

In contrast, Hans Jonas believes the ‘fear’ instinct signals something to be avoided. Only later, on further reflection, do we discover what the fear represents and how it taps something we deeply care about.

Unlike Caplan, many are not waiting to weigh in on the prospect of CRISPR-based technology and some of this reflects a deep worry.

Robert Pollack, a biologist at Columbia University, is convinced we need a total ban on germ line modifications. Eugenics is eugenics, whether it is a state mandated form which horrified us in the early and

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<sup>3</sup> For this distinction between ‘therapy’ and ‘enhancement’ I rely on the Stanford Encyclopedia’s article on ‘enhancement’ which defines it as *biomedical interventions that are used to improve human form or functioning beyond what is necessary to restore or sustain health*.

<sup>4</sup> Dean Buonomano, *Your Brain is a Time Machine*, (NY: Norton, 2017).

<sup>5</sup> <http://religionnews.com/2017/08/03/gene-editing-gateway-to-promised-land-or-key-to-pandoras-box/> *Religious News Service*, “Gene Editing: Gateway to Promised Land, or Key to Pandora’s Box?,” Yonat Shimron, August 3, 2107

mid-20<sup>th</sup> century, or the prospect of a free market private preference form of eugenics sponsored by liberal western societies.<sup>6</sup>

Another cautionary voice is sounded by Israeli physician, Shimon Glick. Fully aware of the Jewish mandate to promote healing and the mitigation of suffering, he nevertheless writes regarding germ line modification: “One of the major issues is whether we can clearly differentiate enhancement from disease treatment. If we can do so, should we adopt a policy under which the latter should be permitted? I believe the answer is negative on both sides.”<sup>7</sup>

At the other extreme are those who state we have an obligation to proceed with germ line intervention full speed ahead, and not just for therapy. They insist we have no right to stop parents who wish through genetic engineering to enhance their offspring.<sup>8</sup>

My presentation is an attempt to step back and look at the moral questions in large scope that precede the more technical questions of risk/benefit analysis. This conference has been organized around the question ‘what is intrinsically good about CRISPR’? We use the word ‘good’ in a variety of ways: ‘this is good chocolate’, or ‘helping Mrs. Jones rebuild her home after the flood is good’. At its highest form we think of ‘the Good’ as the organizing principle for understanding our place in the cosmos from which we evaluate what matters to us about human existence. This axiomatic use of ‘Good’, the organizing core in our pursuit of meaning, is the ground from which we can raise the moral question: ‘What is CRISPR good for?’

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<sup>6</sup> *Science Magazine*, “Letters,” ed. Jennifer Sills, “Eugenics Lurk in the shadow of CRISPR,” Robert Pollack, Vol. 348 Issue 6237, p 871. Also, see the remarks of Australian bioethicist Robert Sparrow in a 2011 *Hastings Center Report*, fearing that libertarian, individualist eugenics would lead to the same ends as good old-fashioned ‘progressive’ eugenics. We have no historical grounds for thinking otherwise. Finally, some scholars of disability have mounted a vigorous critique of the pursuit of genetic perfection. Their claim: by granting individuals the power and permission to select against difference, we will be selecting for *intolerance* of difference.

<sup>7</sup> *Jews and Genes: The Genetic Future in Contemporary Jewish Thought*, Elliot N. Dorff and Laurie Zoloth, eds., “Some Jewish Thoughts on Genetic Enhancement,” Shimon Glick (Philadelphia: The Jewish Publication Society, 2015) 245.

<sup>8</sup> The Oxford philosopher, Julian Savulescu, holds a position similar to this.

This question, insists the Johns Hopkins historian of biology, Nathaniel Comfort, in an essay for *The Nation*, takes us into new territory: “I’m pretty immune to biomedical hype, but gene editing has the marks of a genuine watershed moment in biotechnology ...the CRISPR debate is not about the technological challenge but the ethical one: that gene editing could enable a new eugenics, a eugenics of personal choice, in which humans guide their own evolution individually and in families...Are we ready to edit our children’s genomes...?”<sup>9</sup>

His question is an urge to discover what we care about regarding life, the human future, and the well being of the system of systems in the natural world of this planet that support all life?

But before addressing the moral question, we must first face into a stark reality, a dilemma that has been with us throughout the post-enlightenment era. And it is this: public moral inquiry is in a fragile place because in a pluralistic society we do not share a common story, a common worldview background, from which to address such immediate touchstone questions human beings have asked for millennia: ‘Who am I?’ ‘How ought I to live?’ ‘What is my destiny?’

Gone are the days of a shared theistic world about creation that frames an understanding of finite-infinite relations in a context of grace; gone are the days of common assent to Platonic reason, or a Thomistic vision of natural law, or philosophies of an immortal soul, or of reincarnation. All of these exist in one fashion or another still, but they cannot be *public* grounds for ethical conversation if none constitutes a fully shared premise for public democratic discourse. So the assumption goes.

This just is the post-enlightenment dilemma: how can we re-establish a compelling moral universe when the once shared background of transcendence, has been emptied out, or reduced to safety regulations, and so forth, without access to the frameworks which motivate the values behind the regulations? From whence do these moral principles achieve their status once again?

The question is of course urgent if, as a society, we are going to address momentous problems including the gifts and also limits of CRISPR based technologies.

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<sup>9</sup> *The Nation*, Aug 3-10 2015, “Can We Cure Genetic Diseases Without Slipping into Genetics?”, Nathaniel Comfort

Post enlightenment thought on these matters can only look to the human being for this reflection, in two respects. First, out of the evolutionary process we have emerged as the moral species capable of imagining ourselves in a cosmic, holistic perspective.<sup>10</sup> Second, we have taken this status and merged it with the idea that the object of our moral concern should be principally or solely the human being and human flourishing. But I wonder if this is sufficient. Should the human being be the center of value?

I raise the issue of anthropocentrism in this second sense because of its bearing on two of the major problems needing to be solved today: 1) human activity affecting climate change, and the fate of all life on our planet; and 2) technologies of enhancement, not just applied to human beings but other organisms left in the hands of research, and later, business interests, and free market liberal decision making.

What follows are a few moral positions in our era, and in each case I will attempt to state the implicit axiom or metaphysical assumption the position presents, then state the ethical implication for our identified topic—germ line intervention made possible by CRISPR.

### **Radical Materialism**

The first position I present is radical materialism found in intellectual culture, a materialism which in effect loops back to turn the flattening of meaning and purpose on the human being as its object, seeing all our moral stories as simply a surplus and extravagance built upon the truth about ourselves. And what is this ‘truth’? that we are essentially fascinating and complex aggregations of organic chemical processes. Taking the scientific method of knowing—the investigation of quantifiable properties of matter-energy and the mechanism explaining interactions—and seeing this at the base line of all

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<sup>10</sup> Even the materialist biologist and biological philosopher, Robert Wright, will recognize this as unsolved/unsolvable mystery. Robert Wright, “The Great Divide,” in *From Gaia to Selfish Genes: Selected Writings in the Life Sciences*, Connie Barlow, ed., (Cambridge, MIT Press, 1992), 243-248. First, if we are survival machines, robots programmed by genes, then what is the point of the emergence of sentience in general? Second, in light of the principle of parsimony in evolution, how do we account for the emergence of the capacity to wonder and care about origins and ends, the moral questions? Finally, the sheer fact of natural selection, leading to subtle and complex ecosystems and the diversity we observe is unexplained mystery.

knowledge, the materialist user of science then claims that all else is *not* knowledge at all, but private opinions and preferences. The physical universe, including its organic properties, does not produce meaning or reflect meaning, so it cannot be a source of moral inquiry. So, ‘the universe has no intrinsic meaning’ appears to be the materialist’s metaphysical starting point.<sup>11</sup>

This particular position leads to the conclusion that we are on our own to determine what kind of moral surpluses suit us best. But eventually the question arises: “What should ever stand in the way of the next iteration of human inquiry and the technical power issuing from it? There is no moral ground for stopping it.”<sup>12</sup> Even the risk/benefit analysis of our public principles is simply a cultural

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<sup>11</sup> Note the implications for this regarding the so called ‘naturalistic fallacy’. If ‘the universe has no intrinsic meaning’ is the metaphysical assumption, then when one claims there is no ‘ought’ derivable from ‘is’ (no moral life derivable from what is the case about the universe) it is merely stating a tautology—if one agrees the universe is meaningless as such, then of course no *ought* (i.e., no willing toward what might be, or how we might align ourselves well with what is the case) is derivable from what *is* (i.e., just a physical universe blinding away according to completely non-purposive processes). Hans Jonas offers a compelling statement of this problem in *The Imperative of Responsibility*, to which I will refer liberally below.

<sup>12</sup> I imagine a good critical voice asking me, “Well then, if you think the materialist reduction of knowledge is not sufficient, then what public standards of knowledge are out there that we can agree upon in public discourse beyond the highly successful publicly agreed upon standards of science?” In the interest of full disclosure I am inclined to say, “I don’t know. I’m in there with the rest of us who struggle with this. But there are fragments from our affective and aesthetic experiences, which insinuate ‘the more’ (as William James named it, the transcendence that surpasses our typical empiricism) and which urge us to look for echoes from the past that answer this question of knowledge in fuller spectrum. Moreover, the common moral and affective experiences of our everyday lives include things that are not reducible to materialist reductive description of those experiences, and we find we need the more robust description to satisfy the inner feeling of the experience itself. If it is not reducible then these suggest a kind of moral realism. Are these not hints of a different kind of knowing that the human being employs? Is there not a kind of evidence about existence that should not be locked out? But in the end, my response would probably come down to some version of our non-foundational basis of epistemology, a lack of ground based on our historical and contextual finitude for epistemic certitude. We are all in the position of making the most responsible, compelling and coherent case for explaining the common data of life on earth in a web that links vast ranges of experience into whatever wholes of belief we can muster.

convention—what we choose to do or uphold. As for the *raison d'être* of life? Well, you're on your own to figure that out with your friends.

The next post-enlightenment philosophers do not take the position of the materialist, but in fact, refute it. They all attempt to re-establish a ground for public moral discourse on secular, post-religious terms. We may question each, but the efforts are thoughtful and worthy of our attention. In each case I will attempt to state the basic picture of the axiomatic 'Good' one finds in the moral philosopher, and perhaps one conclusion that can be drawn for our case study of germ line enhancement.

### **Hans Jonas**

Hans Jonas was one of the earliest and most prescient of the philosophers to deal with the questions we are asking today about germ line intervention. A child and young adult in Germany before WW2, he experienced the dissonance first hand of being shaped by the great philosopher Heidegger, then witnessing Heidegger's turn to Nazism, and by implication assent to the brutality of state mandated eugenics. This was a pivotal moment in Jonas's life that set in motion a lifetime quest in the moral philosophy of biology.

Jonas pointed out something in the 1970s of great significance that it would be easy for us to overlook, and that has serious implications for technologies of genetic enhancement. Never in the history of moral theory have we had to consider the impact of action beyond relatively immediate effects, either in public ethics of ordering institutional and economic life, or in personal life of cultivating virtues.<sup>13</sup> From Plato to Kant we have not needed knowledge of and moral consideration of the future, because frankly even late in the 18<sup>th</sup> century human technology did not rise to the level of whether we could do something today that could possibly have chilling effects generations

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<sup>13</sup> "...neighbor ethics—justice, charity, honesty, and so on—still hold in their intimate immediacy for the nearest, day-by-day sphere of human interaction. But this sphere is overshadowed by a growing realm of collective [technological action] where doer, deed and effect are no longer the same as they were in the proximate sphere, and which by the enormity of its powers forces upon ethics a new dimension of responsibility never dreamed of before." Hans Jonas, *The Imperative of Responsibility: The Search for an Ethic in a Technological Age*, (Chicago: u. of Chicago Press, 1984), 6.

later. This, for the most part became a 20<sup>th</sup> century problem for ethics because of 20<sup>th</sup> century power. As Jonas states it, “The gap between the ability to foretell and the power to act creates a novel moral problem.”<sup>14</sup>

Regarding biology, we haven’t needed an ethic of the future because there hasn’t been the power to irreversibly affect the future. But, Jonas wonders, what do we really know about impact on the internal environment of the organism resulting from our interventions, or diversity in the external environment after generations of engineering our own species and other species?<sup>15</sup>

Without his own religious Judaism to lean on, what is Jonas’s axiom of ‘the Good’? Here Jonas turns his spade on the question of existence, life as such. If there is anything close to a universal foundation across the plurality of human cultures, it is the *good* of life over *non-life*, *being* over *non-being*. The urge and drive of life tells us before we ask that this is an agreed upon good above all proximate goods.<sup>16</sup> From this axiom we move the will to the place of our primary moral obligation: to preserve the future of life at all cost. It is our responsibility, Jonas holds, to act in such a way that we protect future stakeholders in the great experiment of life as such, principally human life, as it is the place where life reaches its highest form of sentience and moral capacity.<sup>17</sup>

In summary, Jonas’s reasoning about genetic engineering hinges on his premise about the goodness of life and the duty to guard its future, coupled with our epistemic predictive limits related to the effects of our technical powers. It leads him to a disposition of extreme caution, the need to recover respect and humility in the face of the subtle and complex whole of evolution we still do not, and cannot, know

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<sup>14</sup> *Ibid.*, 8.

<sup>15</sup> Jonas writes, “We must really wonder whether taking the human future into humanity’s hands would give a surer prospect of evolutionary success, or rather would inject new insecurity and hazards which rise in proportion to the stakes.”, 31

<sup>16</sup> Jonas, 39ff

<sup>17</sup> “The mandate of future generations does not depend on the *desires* of the future human. We consult not our successor’s wishes but the ‘ought’ (i.e., obligation) that stands above us both. To make it impossible for them to be what they ought to be is a crime, which all frustration of their desires is culpable. It is not their right to exist in happiness, but ...”their duty to be truly human, which we could potentially rob them of with the alchemy of our utopian technology.” Jonas, 42.

in its entirety.<sup>18</sup> His is a note of caution on the question of genetic engineering.

## **Jurgen Habermas**

Another great moral philosopher Jurgen Habermas, is a contemporary who also engages in moral debate from a post-enlightenment, post-religious perspective. Born in 1929 he too was deeply impacted by WW2.

Recognizing the erosion of moral discourse and the loss of a public sense of a common good,<sup>19</sup> Habermas asks, Where shall we go to re-build a universally agreed upon ground for moral reasoning?

He finds his answer in the power of language and communication itself. He asserts that we come into personal consciousness as social beings and in community first, and only then discover ourselves as individuals unique and non-exchangeable.<sup>20</sup> He writes that: “The logos of language embodies the power of the inter-subjective, which precedes and grounds the subjectivity of speakers.”<sup>21</sup>

We are in a sense made human through others, and find our mutual integrity and dignity through one another, never in our isolation.

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<sup>18</sup> Ibid, 33

<sup>19</sup> “Deontological theories after Kant may be very good at explaining how to ground and apply moral norms; but they still are unable to answer the question of why we should be moral at all, or why orient ourselves to the common good.” Ibid, 158 Habermas offers a brilliant example of how the deep background is distilled into modern reasoning. Building on the Genesis account of the human being made in God’s image he reflects: “..the fact that God gives form to human life does not imply a determination interfering with human beings’ self-determination. One need not believe the theological premise to realize that an entirely different kind of dependence, perceived as a causal one, becomes involved if the difference assumed as inherent in the concept of creation were to disappear, and the place of God be taken by a peer, that is, if a human being were to intervene in parental chromosomes according to their own preferences, and without being justified in assuming a consent of the concerned other. Would not the first human being to determine, at his own discretion, the natural essence of another human being at the same time destroy the equal freedoms that exist among persons of equal birth? Jurgen Habermas, *The Future of Human Nature*, (Cambridge: Polity Press in association with Blackwell Publishing Ltd, 2003) 2263

<sup>20</sup> Habermas, loc 718, p.33f

<sup>21</sup> Ibid., loc 272, p.11

In the constant dynamic of conversation, ethical self-understanding is achieved, but that understanding is never absolute.

The axiomatic heart for Habermas's ethics is the human dignity, which comes from our belonging in communities of conversation in which we grow into personhood. And this must be guarded.<sup>22</sup>

What is at stake when we consider genetic germ line intervention? It is partly the degree to which we treat the recipient of intervention as the personal life he or she may become, whose moral claim on us is of the highest order. Healing frees the person to be more fully herself. This is distinct, Habermas claims, from germ line enhancement, in which the pre-personal is an object of the parents' phenotypic wishes—what will it be, hair and eye color, height, IQ, athleticism? We probably can't know the impact of this enhancement on the psychology of future recipients of such engineering.

Habermas uses dramatic language to highlight the difference between what is *made*, and what is *grown*, in other words, what is an artifact and what is the outcome of natural processes. He writes, "Do we want to treat the new possibility of intervening in the human genome as an increase in freedom (i.e., therapeutic use)—or as a self-empowerment for transformations that depend simply on our preferences (i.e., positive eugenics)?"<sup>23</sup>

Consider for a moment, with Habermas, someone whose parents chose certain enhancements for their child by genetic intervention. As the child becomes young adult she can eventually come to terms with the good and ill effects of the nurturing she received from her parents, adjusting here and there in the process of coming into mature selfhood. She can always undertake psychological counseling to overcome her parents' dysfunctions. But the young adult cannot do the same when it comes to her genetically enhanced states and dispositions chosen by parents and irreversibly affecting her future.<sup>24</sup> She would be, in a sense, an agent of her parents' intentions, an object of the parents' choices.

Habermas would say, there is truly something new here, distinct from the decision making of parents throughout history. As standard biology textbooks will confirm, we may choose a mate under the criterion of desired future offspring, but in the contingent process of random fertilization, "each male and female gamete represents one of

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<sup>22</sup> Habermas, loc 291, p. 11

<sup>23</sup> Habermas 301, p. 12

<sup>24</sup> Habermas, Loc 336, p. 14; See also loc 989, p. 51 and loc 1192, p. 63

about 8.4 million possible chromosome combinations due to independent assortment.”<sup>25</sup> Hardly the choice of two parents controlling offspring in the details!

Natural reproduction is a process of order and chance, and expressive both of the mystery and finitude of our existence, and it is the conditions out of which we find our freedoms and its constraints. Our autonomy, always finite, is found in the delicate connection of our interdependence and our striving to take this condition into whatever authentic personhood we bring to our world. This is quite different, Habermas claims, from intervening in chromosomes according to the parents’ preferences.

In concluding this section on Habermas’s reflections, the takeaway is that we must protect the ground from which we receive our dignity as human beings. This dignity is won in the process of coming into our agency through community; it is fragile, never guaranteed, and it can be lost. We should thus worry about enhancement decisions handed over to a market governed by profits and preferential demand, handed over to parental choices, and whims of fashion, consumers, and clients.<sup>26</sup>

## **Charles Taylor**

Finally, I turn to the contribution of Charles Taylor another contemporary. Here I think the importance is found in his remarks on the nature of moral reasoning and how we should engage each other on this level today. Taylor asserts that our moral principles, public and private, call out of us the narrative structure of our lives, a narrative that embeds our sense of self and how we should live—the big questions I have referred to as ‘the Good’.<sup>27</sup> But in a pluralistic context this qualitative background remains a ‘personal resonance’ left

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<sup>25</sup> Campbell *Biology, 10<sup>th</sup> Edition*, Jane E. Reece, Lisa A. Urry, Michael L. Cain, Steven A. Wasserman, Peter V. Minorsky, and Robert B. Jackson, eds., (Pearson, Inc, 2014) 263-264

<sup>26</sup> Habermas, loc 941, p. 48

<sup>27</sup> “...we should treat our deepest moral instincts, our ineradicable sense that human life is to be respected, as our mode of access points to the world in which ontological claims are discernible and can be rationally argued about and sifted.”

Charles Taylor, *Sources of the Self: The Making of the Modern Identity*, (Cambridge: Harvard University Press, 1989)

unarticulated in the public domain. So we are left with risk/benefit analysis, utilitarian calculus—all of this can be good, but the stories of our lives, the sources that give them meaning, have been removed from the conversation.

Taylor writes, “My identity is defined by the commitments and identifications which provide the frame or horizon within which I can try to determine from case to case what is good, what ought to be done, what I endorse or oppose...it is the horizon within which I am capable of taking a stand.”<sup>28</sup> In fact, he states, a person free from all such frameworks “... is a person in the grip of an appalling identity crisis.”<sup>29</sup>

The quest for meaning, in other words, is at the core of what it is to be a being human, and cannot be removed from moral problem solving. I agree with Taylor: we have suppressed these places of personal orientation—whether it is belief in God or other philosophical or religious renderings—because, as he writes “...it is easier to do so in a pluralistic public moral space, and because the modernist epistemology has destabilized our spiritual outlooks, and finally because of the tentative and uncertain status of our moral beliefs.”<sup>30</sup>

We may come up with efforts such as Asilomar conferences of specialist doing problem solving, and UN principles to determine guidelines on pressing technological applications. These are important. But *guidelines* have in the background unarticulated assumptions about the common good we don't bring to the table in today's public conversations.

Eventually, Taylor fears, when all sense of a larger cosmic good is lost in our enlightenment rationalism we will risk losing our answer to the question: why be moral at all?<sup>31</sup>

Taylor believes that in our present culture we have tended to stifle the spirit, whether out of prudence in the face of centuries of religious abuse, or dangerous ideological activism in our recent history. He makes the case that we ought not throw out promising sources because of past abuse, but rather rearticulate the buried goods of classic

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<sup>28</sup> Taylor, 27.

<sup>29</sup> *Ibid.*, 31

<sup>30</sup> Taylor states “...because we cannot but orient ourselves to the good, and thus determine our place relative to it and hence determine the direction of our lives, we must inescapably understand our lives in narrative form as a ‘quest’.” *Ibid.*, 52

<sup>31</sup> Taylor wonders, “...whether we are not living beyond our moral means in continuing allegiance to standards of justice and benevolence,” 517

wisdom, and “...bring air back into the half collapsed lungs of the spirit.”<sup>32</sup>

My question is this: can we really bring these backgrounds of cosmic meaning, our various renderings of ‘the good’ into the public square? Can we let the plurality of stories expand and correct and move our personal locations in this deeper context of cosmic meaning making? It is enticing, but a tall order. In our polarized social space it is hard to imagine this conversation without dedication to skills of public conversation not in evidence today. Nevertheless, the very biologists and bio-technologists who have built the applications of CRISPR are calling us to hold back on major decisions about application of this new technology until *the public* has weighed in. What will be the moral stories the public will tell? How prepared are we to reach beyond metaphors of the marketplace to something that resonates at a deeper level?

### **Taking Stock and Personal Remarks**

Taylor tells us our stories matter. I will, then, end with a small portion of my own cosmic story. It draws upon the classic theistic vision of the universe as an expression of the continuous creativity of God from which all of life receives its goodness. I’m a creature of this shared story and I see it in a contemporary framework of the sciences: the physical sciences that extend profoundly our horizons of time and space.<sup>33</sup>

In addition I see evolution as a mode of God’s continuous creativity. This view combines with science to pose a problem and it adds information. The problem is this: if evolution is a mode of God’s creativity, then I must face the enormity of suffering, death and extinction over the long history of life as intrinsic to the processes of this creativity. How do I square this with divine goodness, and creation as expression of grace? I cannot offer an answer that will completely satisfy but as a theist I must squarely face the question.

The first bit of information contained in combining evolution and theism is in the following point: if what we call ‘natural selection’ is a mode of continuous divine creativity then it calls out humility, echoing the position of Jonas of caution. We contemplate engineering the

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<sup>32</sup> Taylor, 520

<sup>33</sup> This has indeed changed my conception of human origins and its late arrival on the shoulders of other species and other elemental complexity.

creative process, which as a whole, exceeds our knowledge yet is vulnerable to our technological powers.

Second the cosmic perspective of the theist, properly considered, ought to give us pause to consider the human centeredness of post-enlightenment ethics, encourage us to find our significance only as embedded in the larger cosmic story. On a cosmic scale we are very brief visitors within this created process. Like Taylor, I would agree that moral quest is not complete without *cosmic*, not just *anthropic*, meaning. The cosmic picture I would paint claims we are not actors on the stage of nature, as if the rest of the natural world were a neutral backdrop (stage props) for our human aspirations. We are fruit on nature's tree with interdependence that takes the entire natural world to be a stakeholder in our moral decision-making. We cannot abstract ourselves from the rest of nature as the only center of value, but rather we must appreciate both the vast interconnectivity of the material of the cosmos, and its diversity built over billions of years, as, what, maybe a window onto the mystery and beauty of God? This larger scope inspires our moral inquiry.

Seeing the evolutionary process as a mode of creation I am struck by its contrast with genetic enhancement. Germ line genetic enhancement is not an evolutionary step at all, but rather historical development. It is an expression of the intentions and purposes and aspirations of human cultures in the shaping of their own historical future. It uses knowledge of evolutionary principles to engineer the biological future in a particular way, compressing the time frame of biological processes to make nature do what it might not otherwise do. It is human management of the material future but it is not evolution as such. Marxism was a certain kind of management of the future. Is germ line enhancement a free market form of bio-technological management of the future?<sup>34</sup> Is it God's 'new heaven and earth', or is it our own?

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<sup>34</sup> As some biologists would claim, natural selection has no purposes; but clearly germ line enhancement does. Now personally, I would *not* say evolutionary process has no purpose; over vast stretches of time we detect the emergence toward complexity. But I am in no position to read purposes, if indeed the emergent process expresses a transcendent intention. But, I also am not in a position to state dogmatically with materialists that it has no purpose at all; that nature as such is meaningless. Why, with lab coat on, would I make such a metaphysical claim? And, I am also not in the position to impose on natural processes a particular human era's technical power without deep and subtle knowledge of the sophisticated interconnectivity of ecosystems the natural process has bestowed upon us.

This example of just one cosmic story provides an attitude for moral decision-making but cannot on its own answer the tough questions, or even draw a line between therapy and enhancement. I am not nearly as qualified as others in the room to address the technical questions. This has been an attempt to look at big picture considerations that might have to do with our moral bearing as we approach the technical questions.

It's worth imagining, and listening well to the storied backgrounds of others in our public life, the horizons we may not share but which motivate the other person. It requires clear expression and deep listening to the other with whom we share in the momentous moral conversations of our lives. Here I agree with Habermas: we are social beings who find ourselves in conversation with others who are essential to the making of our identities, our uniqueness and authenticity. I challenge you with this kind of entry into the public conversation.