

Zygon and the Future of Religion-and-Science

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THE GENETIC RECOMBINATION OF SCIENCE AND RELIGION

by Stephen M. Modell

Abstract. The estrangement between genetic scientists and theologians originating in the 1960s is reflected in novel combinations of human thought (subject) and genes (investigational object), paralleling each other through the universal process known in chaos theory as self-similarity. The clash and recombination of genes and knowledge captures what Philip Hefner refers to as irony, one of four voices he suggests transmit the knowledge and arguments of the religion-and-science debate. When viewed along a tangent connecting irony to leadership, journal dissemination, and the activities of the "public intellectual" and the public at large, the sequence of voices is shown to resemble the passage of genetic information from DNA to mRNA, tRNA, and protein, and from cell nucleus to surrounding environment. In this light, Hefner's inquiry into the voices of *Zygon* is bound up with the very subject matter *Zygon* covers.

Keywords: cell; chaos; DNA; genetics; irony; journal; leadership; meiosis; mitosis; policy making; protein; public; recombination; religion; RNA; science; self-similarity; systems theory

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DISJUNCTION AND RECOMBINATION IN SCIENCE AND RELIGION

Unitarian minister Ralph Waldo Emerson, who inspired the nineteenth-century American transcendentalist movement, observed, “The foregoing generations beheld God and nature face to face; we, through their eyes. Why should not we also enjoy an original relation to the universe?” (Sacks 2008, 1). That was a simpler time when Charles Darwin was being newly recognized and Gregor Mendel had just begun his pea-crossing experiments. Think of all the discoveries that have occurred in the last fifty years—DNA, quarks, neural imaging (and the search for a “God gene” and the seat of religious experience in the brain)—and it is clear that a recombination of science and religion was needed. Recombination occurs at the cellular level, but I argue that because of the universe’s tendency to repeat patterns on different scales, a phenomenon known by chaos theorists as “self-similarity,” it also occurs at the human level (Gleick 1988, 116). Recombination is readily seen in the activity of *Zygon* scholars merging religion and science, but it is also part of the human components about which Philip Hefner has written (2010).

For my discipline, genetics policy, the merging of science and religion has followed a bimodal distribution. During the first era, in the late 1960s and early ’70s, critical genetics-policy decisions had to be made for conditions such as Down syndrome, Tay-Sachs disease, and procedures touching the beginning of human life. Ethics centers were populated by theologians who could earnestly deliberate on these questions. However, the marriage of medicine and religion began to dissolve under the increasing weight of secularization. Today the same ethics centers scarcely pay heed to religious perspectives, having succeeded in institutionalizing their work in the modern secular direction just as Hefner has described. The *Zygon* Center for Religion and Science, with its intellectual autonomy and ties to clergy and scholars at major universities, has been key in maintaining the religious dialogue as it advances into the genomic era of clones, chimeras, and stem cells.

SCIENCE AND SOCIETY IN THE GENOME ERA

Zygon reporting of genetic developments transpired through the period of the Human Genome Project, the second historic hump. Shortly before heading to the National Institutes of Health to lead the United States genome mapping initiative, Francis Collins created a Genome Ethics Committee at the University of Michigan. The Committee commissioned me to prepare a report on “Science and Society” (Modell 1992). The report mentioned the existence of a Lutheran School of Theology in Chicago that had established a Center to study faith and science concurrently. I noted, as has Hefner, an emerging genome-era model in the journal *Zygon*: “More recently scientifically inclined religious thinkers like Arthur Peacocke,

Karl Peters, Philip Hefner, and Jeffrey Wicken have absorbed notions of molecular level indeterminism and novelty of complex self-organizing systems into their metaphors for the Divine” (Modell 1992, 7; see Hefner 1989, 142). The material *Zygon* was publishing two decades ago is quite relevant today. Contingency is built into our evolution and, by ontological inheritance, the molecular world health practitioners frequently face when attempting to predict the operation of cancer genes and environmentally modulated disease conditions.

I also noted Ian Barbour’s statement that science and religion can undergo paradigm shifts in times of conceptual transformation (Barbour 1990, 51–58). These shifts can be sociologic in the sense that new images, for example of the zygote (inspiring *Zygon*’s title) or the double helix, are presented to society—images that “bust” the estrangement between science and religion (Nelkin and Lindee 2004; Eaves 1989, 194–97). Paradigm shifts can also involve changes in consciousness. In physics one can detect changes happening with the advent of string theory and inflationary views of the universe that upset the classical “one universe” notion.

The field of biology is undergoing a paradigm shift. The United States Institute of Medicine has publicized a multilevel, nonreductionistic model with biologic factors at the core, social and community networks in the middle, and the interacting environment in the outermost enclosing shell (IOM 2003, 52). Most recently it has provided a systems model for transdisciplinary research (Payne, Royal, and Kardia 2007; IOM 2006, 19). Neoplatonic philosophers were well aware of this union, to Plotinus represented by the One, *Nous*, or the Intelligible, Soul, and bodies (Martin 1982). The four voices Hefner has cited—public intellectual, academic discipline, religious communities, and the element of irony (Hefner 2010)—portray the linking of biologic and human levels. His essay is part of and not independent of the cosmologic system. Let us turn his categories on their side, moving tangentially so as to connect them, showing how he has recapitulated the cellular system in his human-level description of the religion-and-science face-off.

IRONY AT THE MOLECULAR AND SOCIAL LEVELS

The irony Phil expresses, incommensurate clashing realities, may also be viewed as complementary realities within a dualistic pair. During cellular meiosis, chromatids from both original parents seek each other out and bind, exchanging chunks of genetic material. This recombination of material leads to fresh assortments of genetic alleles or variants in the reproductive gametes meiosis generates. Mitosis, regular cell division, does not involve such recombination. Analogously, a recombination of contrasting fields nurtured by academic insights, the irony to which Phil refers, is required to move social consciousness ahead. Otherwise, human understanding divides and perpetuates but does not evolve.

LEADERSHIP IN BLAZING NEW TERRITORY

The gametes created by meiosis fuse and fertilize, yielding a fresh zygote and new embryonic cells. The fresh DNA in the center of the nucleus is like new knowledge ready to be transmitted by the leaders in a given field. We can all see Platonic shadows of Phil's ingenuity in our own fields, though rarely does the commitment to bind science with the higher spheres of religion and to communicate the findings reach such a pitch. Francis Collins also offers an example of leadership juxtaposing science and religion. Starting as an agnostic, Collins gradually began to perceive the operation of the Divine in the complexity of the molecular world, and the genetic code as "God's instruction book." He wrote about his perspectives in *The Language of God: A Scientist Presents Evidence for Belief* (2007), which, like Hefner's books on the intersection of science and faith in relation to the co-creative human (Hefner 2003; 2000), has become quite popular. Collins also represents Hefner's sense of irony in his lifestyle. He has been known to play a guitar in crowds, sing poetry about genetics, and zip through town on a motorcycle. Is this lifestyle a form of release, or a way to personify and make palatable to the public the ironies Collins (and Hefner) have encountered?

The thinker in his role as academician is seldom without intellectual competition. For Collins it was arguably Dr. James V. Neel of the University of Michigan, who was also humanitarian in his global scientific missionary work, but equally outspoken in arguing against the molecular genetic approach, insisting population-based science was the way to spread health. The tacit conflict between Collins and Neel reflects the dance between Hefner and his detractors. There are people of faith who say that only God the creator should tinker with the human body. Leave well enough alone. Hefner has many times defended his conviction that a religiously tempered science holds the keys to human restoration and the flourishing of human capacity. Even among people of faith, like two struggling scientists, disagreement exists on something as fundamental as the basis of morality—is it based on a form of natural law (à la Richard Dawkins) or principle-based? These within- and between-field clashes are the human version of mitotic and meiotic processes that result in shifts in consciousness and understanding. Ironies crop up; leadership such as Hefner's brings the two sides together in complementary fashion and synthesizes the information.

THE NECESSITY OF A JOURNAL

The DNA in the cell's center is basically useless without a means of transmission—messenger RNA, or mRNA. Likewise, sustained enterprise must manifest its work in a lasting, material fashion. The most well-intentioned learned societies can fail to endure for lack of popularization. *Zygon* journal, an organ of academe, has brought the kinds of discussions Hefner has

engendered to the attention of academicians, public intellectuals, and religious communities, immortalizing threads of discussion much as scientists immortalize a cell line.

Most professional journals remain locked to one disciplinary level cum one set of technical jargon. That jargon can be research-oriented, ethical, or philosophical, but typically it remains specialized and out of reach. *Zygon* has been able to transcend the levels boundary in its to appeal to varied audiences, helping to assure that the information it carries will not become “lysed” or dissipated before it is utilized.

THE PUBLIC INTELLECTUAL AS A SUSTAINER OF ENTERPRISE

Hefner defines the public intellectual as a person who “bring[s] knowledge and ideas to bear in the larger public sphere” (Hefner 2010, 421). This role resembles the function of the ribosome and transfer RNA, or tRNA, which translate information from the nucleus and launch its products into the cell body or cytoplasm. Really the category of public intellectual should be broken into two levels, national and local, just as the proteins produced by the genetic translation process can end up within the cell or be released into the vast expanse outside the cell. Such writers as Ted Peters, Ronald Cole-Turner, Roger Willer, and J. Robert Nelson have raised discussion of biology and genetic developments in a religious light to the public level on a widespread scale, both in writing and speech. Geneticists Francis Collins (2007) and Georgia Dunston of Howard University (2000) have accomplished the same from their professional quarter as scientists wishing to show how shared genetic variation and a common genetic code link all humanity.

A second tier of public intellectual operates locally to translate the implications of science (religious, ethical, philosophical) for the public. Such individuals have acquired professional expertise, engage in topical discussion, and bring the discussion to a general audience. This kind of public intellectual populates the Genetic Frontiers Professional Dialogue Group in Detroit, which has been holding quarterly meetings for eight years running on topics spanning new genetic technologies and their religious and social implications. When we consider the membership of the group—physicians, clergy, health care administrators, and researchers—we can begin to appreciate how the public dialogue local public intellectuals may spark can yield positive benefits when it comes time to vote on stem-cell policy or for a family to consider how it will act toward purchasing genetically engineered foods.

THE PUBLIC AT LARGE AS A GROUNDING FORCE

To be distinguished from the notion of public intellectual is the straightforward concept of the public at large. Hefner has delivered talks in South-

east Michigan, “The Created Co-Creator Meets Cyborg” and “Created in the Image of God—Embodying the Purposes of God,” as part of the Metanexus Institute–funded *Genetic Frontiers: Challenges for Humanity and our Religious Traditions* program, which had as its two parts the professional arm just discussed and three public conferences, total attendance 353 persons (Modell 2007). These conferences really expanded the notion of religious community. Present were expert speakers from the Christian, Jewish, and Muslim faiths; Interfaith Round Table members of the sponsoring organization, the then National Conference for Community and Justice; clergy; and numerous public attendees of all faiths. The day-long events—talks and breakout discussion groups—primed attendees to take the genetic issues discussed with them beyond the conference halls.

The report of a related dialogue project in Michigan and Alabama, the National Human Genome Research Institute–funded *Communities of Color and Genetics Policy Project*, contained two sections of community recommendations on the ticklish matter of “Playing God” with respect to cloning and reproductive genetic technologies (CCGPP 2002, 2.7–8, 3.27–28), and was given to congressional members. Thus, the terminus of the speculative process initiated by academicians can be concrete recommendations backed by the laity. The public serves as the final receptor, providing the protein subunits of the action and policy scaffolding (Garland 1999, 245). For both public dialogues, academicians provided expertise with grant seeking, assembled hand-out information, and secured facilities for the discussions, serving as the general environment or supportive matrix in the IOM’s systems model.

THE FUTURE VISION

In this systems interpretation of Hefner’s essay on the voices of *Zygon*, the cell has served as a model of information transmission that also takes place at the human level, especially in the dynamic, clashing religion-and-science area. Multilevel models can be expected to increasingly enfold together the wisdom of religion, the physical sciences, cosmology, and biology in useful ways within the pages of journals such as *Zygon*. Inclusion of multiple languages, humanistic and hard-core empirical, is essential to preserving and widening the religion-science conversation. With an eye on the ethical and policy implications of their work, *Zygon* scholars will be able to see their writing attain practical dimensions as well.

CONCLUSION AND REGENERATION

In *Cosmos and History*, Mircea Eliade reviews cultural process in general and concludes that it repeats itself as part of the cosmogonic act (Eliade 1959, 81). For a while in the 1960s, at the birth of *Zygon*, religion and science coexisted in theory and practice. Then shifts in society caused a rift

and an existential fall. As Eliade suggests, the distancing process between spirit and materiality is cyclical. A convergent future, illuminated by Hefner, exists for those who choose to explore the link between religion and science, but the future's expanse remains undefined until crossed.

NOTE

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