

Rabbi Bleich's most recent volume is the newly published *Biotechnical Dilemmas: A Jewish Perspective*.

## *Survey of Recent Halakhic Periodical Literature*

### CLONING: HOMOLOGOUS REPRODUCTION AND JEWISH LAW

In the year six hundred of the sixth millennium the gates of wisdom will open on high and the fountains of wisdom [will open] below and the world will be readied to enter the seventh millennium. As a person who readies himself to enter the Sabbath on the sixth day, from the time the sun [begins to] decline, so with this as well. An allusion: "In the six hundredth year of the life of Noah . . . all the fountains of the great deep were split and the windows of the heavens were opened" (Genesis 7:11).  
*Zohar, Bereishit 117a.*

There is no gainsaying the fact that the world has witnessed quantum leaps in scientific and technological advances since the mid nineteenth century or, according to Jewish reckoning, since 5600, i.e., the year six hundred in the sixth millennium. As foretold by the *Zohar* the benefits are not merely pragmatic; the explosion of human knowledge is categorized by the *Zohar* as the direct result of heavenly inspiration and serves to herald the advent of the eschatological era of the seventh millennium.

God reveals himself in the processes of nature with the result that insightful understanding of the laws of nature is, in at least some minuscule way, tantamount to apprehension of the Deity. Thus Rambam, *Hilkhos Yesodei ha-Torah* 2:2, writes that love of God is acquired by reflection upon His wondrous created works in which His wisdom can be discerned and, in *Hilkhos Yesodei ha-Torah* 4:12, Rambam declares that increased understanding of the nature of created entities carries with it enhanced love of God. Accordingly, the *tikkun* of which the *Zohar* speaks in describing the burgeoning of knowledge as the harbinger of the eschatological era is at one at the same time both preparation in the

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physical sense, comparable to Sabbath preparations carried out on the preceding day, so that, with the coming of the Messiah, man may enjoy undisturbed leisure to engage in more pursuits and perfection in the sense of intellectual preparation and development in the form of appreciation of the grandeur of creation, and hence of the Creator, so that man will be equipped for a more profound understanding of the nature of God that will be attainable in the eschatological era.

There can be no doubt that unraveling the mysteries of procreation and the genesis of human life are integral to this process. Attempts to fathom those mysteries are entirely laudatory. Whether or not those endeavors yield any licit practical benefit is secondary; their major value, as well as that of all aspects of theoretical science lies in qualitatively enhanced fulfillment of the commandment "And you shall love the Lord, your God" (Deuteronomy 6:5). The legitimacy of acting upon such scientific information is another matter entirely. Surely every thinking person recognizes that not everything that can be done should be done; that which is possible is not for that reason moral.<sup>1</sup>

## I. SCIENTIFIC BREAKTHROUGH AND POTENTIAL

Not everything that *can* be done *should* be done. But it is a truism that, in the usual course of human events, that which *can* be done *will* be done.

Since the early 1970s ethicists have grappled with the implications of human cloning.<sup>2</sup> What was then a vague specter now looms as an imminent reality. With the most recent breakthrough in the cloning of fetal mice in Hawaii it is evident that "advances in science are coming faster than even the most confident scientists had imagined."<sup>3</sup> Dr. Lee Silver, a mouse geneticist and reproductive biologist at Princeton University, described the speed at which cloning has progressed as "breathtaking" and added, "Absolutely, we are going to have cloning of humans."<sup>4</sup> The protestation of scientists such as Dr. Ryuzo Yanagimachi, whose cloning experiments have electrified the scientific world, that "we should stick to reproduction the way that Mother Nature did for us"<sup>5</sup> notwithstanding, it is now conjectured that in vitro fertilization clinics will add human cloning to their repertoires within the next five to ten years.<sup>6</sup>

The new era of reproductive technology was ushered in with the birth of Dolly on July 5, 1996, at the Roslin Institute in Roslin, Scotland.<sup>7</sup> The birth of a cloned sheep was the culmination of research undertaken by Dr. Ian Wilmut on behalf of PPL Therapeutics Ltd., a

small biotechnology company with headquarters in Edinburgh. The purpose was to use sheep to generate drugs for use in treating human diseases such as hemophilia and cystic fibrosis. Genetic engineering had already been employed to produce sheep whose milk contains a drug, alpha-1 antitrypsin, that is used in treatment of cystic fibrosis. The purpose of cloning sheep was to avoid the laborious and expensive process of genetically engineering large numbers of animals individually. With cloning, once an animal has been genetically adapted, the process need not be repeated; the animal can simply be cloned and, since all its clones will have identical genetic characteristics, the clones will also produce the same drug.<sup>8</sup>

The research was certainly not conducted in a vacuum. Scientists have long been able to use skin cells from a frog to clone embryos that grow to the tadpole stage before dying. Much more successful is a process known as twin splitting. In 1993 Dr. Jerry Hall and Robert Stillmann of George Washington University separated as yet undifferentiated fetal cells of embryos to the two, four and eight cell stages of development and allowed each cell to develop as a separate embryo. The immediate precursor of the Roslin experiment was the work of Dr. Steen Willadsen who was the first to successfully clone a sheep<sup>9</sup> from an embryo cell. Willadsen took cell nuclei, which contain the genetic blueprint encoded in DNA, and added them to animal ova whose own nuclei he had removed.<sup>10</sup>

However, cells derived from early embryos are not suitable for genetic engineering. Manipulation of embryo cells leads to their death with the result that they cannot be grown in a laboratory so that genes can be added in order to cause the organism to produce pharmaceutical agents. Moreover, vast numbers of cells must be grown in order to assure that at least a few will become genetically modified. Wilmut and his associate, Dr. Keith Campbell, successfully took the nucleus of a cell removed from the udder of a mature sheep and inserted it into the ovum of a ewe from which they had previously removed the existing nucleus. The egg was then jolted with a burst of electricity causing it to behave as if it was newly fertilized. The difficulty of the procedure is evidenced by the fact that it successfully culminated in the birth of a lamb only after 277 attempts.

Some time after the birth of Dolly, ABS Global Inc., a company in De Forest, Wisconsin, announced the birth of Gene, a calf that was cloned from a genetically altered fetal cell.<sup>11</sup> Less than two years after the cloning of a sheep from an adult cell, Dr. James Robl of the University of Massachusetts at Amherst and Dr. Steven L. Stice, a scientist

employed by Advanced Cell Technology, a commercial firm, reported the cloning of Holstein calves from genetically engineered fetal cells taken from a fifty-five-day-old male Holstein embryo.<sup>12</sup> Two hundred seventy-six fetal cells were inserted into an equal number of unfertilized cow eggs whose own genetic material had been removed. At the end of a week only thirty-three embryos remained alive. Twenty-eight of those were transferred to eleven cows that served as surrogate mothers. Four calves survived to parturition, but one of the calves died five days after birth as the result of a congenital heart defect. Robl and Stice had previously attempted to clone calves from adult cells but none of the fetuses survived. There have been other unpublished reports of cows pregnant with fetuses cloned from adult cells<sup>13</sup> but there have been no reports of the birth of other cows or sheep cloned from adult cells.

More recently and more dramatically, biologists at the University of Hawaii have reported the cloning of over fifty mice, including clones of clones, from the cells of adult mice.<sup>14</sup>

These experiments have implications far beyond the goal of facilitating the manufacture of pharmaceutical products from genetically altered cells which itself is potentially of far-reaching benefit in the treatment of numerous diseases and disorders. Cells of mature organs are capable of reproducing themselves but cannot be altered to form the cells of different organs. In effect, the DNA of differentiated cells is programmed to reproduce cells of one specialized type and of no other. Thus, for example, if a pancreas is destroyed a new pancreas cannot be generated by other cells in the body. Successful cloning of adult cells demonstrates that, when inserted into an ovum, the program of a cell's DNA can be reversed thereby allowing the cell to reproduce and develop into cells of other bodily organs. When the process is more fully understood, it may become possible to create particular organs to replace those that become diseased or destroyed.

As noted, the successful cloning of Dolly, the prospect of human cloning became much more than a theoretical conjecture. The initial reaction of both ethicists and scientists was that human cloning is morally unacceptable. President Clinton, following the recommendation of the National Bioethics Advisory Commission, banned the use of federal money to conduct human cloning experiments and requested that privately funded enterprises adhere to a voluntary ban on human cloning. Nevertheless, at present, other than in California,<sup>15</sup> the cloning of a human being is perfectly legal in the United States, although it is prohibited by law in Britain, Spain, Denmark, Germany and Australia.<sup>16</sup>

Despite the generally negative view with regard to cloning

humans, G. Richard Seed, a Chicago physicist who has been involved in various forms of fertility research since the early 1970's, has announced that he has assembled a team of scientists for the purpose of cloning a human being before the procedure is banned and is seeking venture capital for the project.<sup>17</sup> Moreover, the climate of opinion has changed rapidly. Three decades ago, two fertility experts, Sophia J. Kleegman and Sherwin A. Kaufman, wrote that reproductive breakthroughs pass through several predictable stages. Reactions proceed from "horrified negation" to "negation without horror" to "slow and gradual curiosity, study, evaluation" and, finally, to "a very slow but steady acceptance."<sup>18</sup> The *volte face* that has occurred with regard to the prospect of human cloning is best expressed in a headline that appeared in the *New York Times*: "On Cloning Humans, 'Never' Turns Swiftly Into 'Why Not.'"<sup>19</sup> In that article Dr. Steen Willadsen, the cloning pioneer who developed the fundamental methods for cloning animals, is quoted as saying that it is just a matter of time before the first human is cloned. Earlier, John Paris, a Jesuit ethicist, remarked that he is certain that humans will be cloned: "I can't imagine a world in which someone won't try it. There are two things that drive man—power and money. And fame leads to fortune. Someone will try it."<sup>20</sup>

The present climate of opinion makes analysis of the moral and ethical issues involved in cloning an imperative. But the enterprise must be undertaken honestly and objectively. To quote the late Professor Paul Ramsey, it is imperative that we

raise the ethical questions with a serious and not a frivolous conscience. A man of frivolous conscience announces that there are ethical quandaries ahead that we must urgently consider before the future catches up with us. By this he often means that we need to devise a new ethics that will provide the rationalization for doing in the future what men are bound to do because of the new actions and interventions science will have made possible. In contrast, a man of serious conscience means to say in raising urgent ethical questions that there may be some things that men should never do. The good things that men do can be made complete only by the things they refuse to do.<sup>21</sup>

## II. HUMAN INTERVENTION IN THE NATURAL ORDER

Faith communities that base their moral teaching upon natural law theory regard various forms of artificial procreation as immoral. The

immorality of such acts lies not in their artificiality *per se* but in the fact that they thwart the natural character of transmission of human life. In its Thomistic formulation, the essence of natural law is a divinely ordained teleological system and the notion that divine wisdom, in guiding all creatures to their proper ends, imparts moral law to man through the medium of his intellect. As a rational creature, man's intellect inclines him toward the actions and goals proper to his nature. Thus, according to natural law theorists, among other things, lying, gluttony, drunkenness and contraception are all immoral for essentially the same reason. Such acts are performed by a human faculty created for a readily discernible purpose. The evil in the immoral form of conduct described lies in the abuse of a natural faculty by its use in an unnatural manner.

These natural law theorists further assert that it is in the nature of man to transmit life through conjugal union. Use of body fluids or tissue for generation of life in some other manner, they contend, constitutes a subversion of man's teleological function and purpose. They maintain that it is the conjugal act by which the spouses become one flesh, and only the conjugal act, that is designed for the purpose of generating human life. In effect, the phrase ". . . and they shall be one flesh" (Genesis 2:24) is understood by these theorists as having a double meaning: (1) A man "shall cleave to his wife" in order that they "shall be one flesh," i.e., that they may jointly produce a single flesh, namely, a child. Hence the announced *telos* of the conjugal act is procreation. (2) The generation of a child reflexively causes the parents themselves to become "one flesh." Thus generation of new life has as its *telos* solidification of the marital bond. Generation of a human life in some other manner and for some other purpose violates the divinely ordained *telos* for which the human body was created. On that analysis, homologous artificial fertilization is unacceptable because it separates the unitive and procreative aspects of propagation of the human species. Thus it has been stated that:

By comparison with the transmission of other forms of life in the universe, the transmission of human life has a special character of its own, which derives from the special nature of the human person. "The transmission of human life is entrusted by nature to a personal and conscious act and as such is subject to the all-holy laws of God: immutable and inviolable laws which must be recognized and observed. For this reason one cannot use means and follow methods which could be licit in the transmission of the life of plants and animals."<sup>22</sup>

With regard to cloning specifically, the same source declares:

. . . attempts or hypotheses for obtaining a human being without any connection with sexuality through “twin fission,” cloning or parthenogenesis are to be considered contrary to the moral law, since they are in opposition to the dignity both of human procreation and of the conjugal union.<sup>23</sup>

There is no reflection in Jewish tradition of a doctrine that establishes a global prohibition forbidding man to tamper with known or presumed *teloi* of creation. There are indeed individual thinkers who have explained the rationale underlying particular *mizvot* in a manner echoing such a concept. Biblical commandments prohibiting interbreeding of species and the mingling of diverse agricultural species certainly lend themselves to such an interpretation. Although Rashi, in his commentary to Leviticus 19:19, regards those restrictions as *hukkim*, i.e., arational statutes not subject to human inquiry, Ramban, *loc. cit.*, takes sharp issue with Rashi and opines that interbreeding and prohibited mingling of species are forbidden as constituting illicit tampering with creation. Ramban states that every creature and every plant is endowed by God with cosmically arranged distinctive features and qualities and is designed to reproduce itself so long as the universe endures. Crossbreeding and cross-fertilization produce a reconfiguration of those distinctive qualities and also compromise reproductive potential. By engaging in such activities man usurps the divine prerogative in producing a new species or entity with its own novel set of attributes and, presumably, less than optimally suited to fulfill the divinely ordained *telos* associated with the original species.

Ibn Ezra has been understood as presenting the matter in a somewhat different light in declaring that the Torah prohibits crossbreeding of species because the act thwarts prorogation of the species and hence represents an injustice to the animals who are prevented from fulfilling the divine purpose of propagating their respective species<sup>24</sup> and as explaining the prohibitions against the mixture of agricultural species as well as the combination of linen and wool in the of cloth of a garment as violative of the natural order decreed by the Creator.<sup>25</sup> R. Samson Raphael Hirsch had no difficulty in explaining the prohibition regarding *sha'atnez* (the mixing of linen and wool) in similar terms. Indeed, R. Hirsch understood all *hukkim* as being reflective of the principle that man should not interfere with the order and harmony—and hence the

*telos*—of creation.<sup>26</sup> According to R. Hirsch, such laws are distinguished from *mishpatim* or so-called rational commandments only because our duties toward fellow men are more intelligible to us by virtue of our recognition of our own needs and aspirations. That particular purposes are similarly assigned to animals and even to inanimate objects is not immediately grasped by the human intellect and hence *hukkim* are depicted as arational. It is noteworthy that, although R. Hirsch regards these commandments as designed to prevent interference with divinely ordained *teloi*, unlike natural law theologians, he regards the *teloi* themselves as not being immediately available to human reason. That is certainly confirmed by the fact that no natural law philosopher has ever asserted that the manufacture of linsey-woolsey or even agricultural hybridization is intuitively perceived as violative of the divine plan for creation.

Were it to be assumed that tampering with the ostensive or presumed nature of animal species is always forbidden, most forms of genetic engineering would be illicit. No bacterium is designed by nature to clean up oil spills by metabolizing petroleum or to excrete human insulin for use by diabetics. In the absence of evidence in rabbinic sources to the contrary, it must be assumed that, even accepting Ramban's explanation of the prohibition against interbreeding or R. Hirsch's broader analysis of the rationale underlying *hukkim* in general, such strictures must be understood as limited to those matters explicitly prohibited.<sup>27</sup>

Indeed, there is a perceptible tension between the concepts enunciated by Ramban and R. Samson Raphael Hirsch and the many midrashic sources indicating that man is an active partner in the process of creation and, as such, is charged with bringing creative processes to completion. Indeed, the biblical charge to Adam exhorting him to "fill the earth and conquer it" (Genesis 1:28) seems to give Adam *carte blanche* to engage in any form of conduct that is not specifically proscribed. The problem is readily resolved if it is understood that, in general, the functions and *teloi* of the products of creation are not immutable; that the Creator did not intend to bar man from applying his ingenuity in finding new uses and purposes for the objects of creation;<sup>28</sup> and that there is no injustice to animal species or inanimate objects in doing so. Immutability of function and *telos* is the exception, not the rule. Thus, for example, it has never been suggested that manufacture and use of synthetic fibers in the making of clothes is in any way a contravention of either the letter or spirit of the law.<sup>29</sup> The exceptions were announced by the Creator as formal prohibitions.<sup>30</sup> It is precisely because human reason cannot intuit, or even comprehend, when and under what circumstances contravention of the



natural order is inappropriate that these commandments are in the nature of *hukkim*.

More generally, man's creative power, at least to the extent that it does not involve creation of novel species, is extolled in rabbinic sources. The divine appellation "*Shaddai*" is understood in rabbinic exegesis as an acronym: *she-amarti le-olami "dai"*—Who said to My universe, "Enough!" Thus the verse, "I, the Lord *Shaddai*" (Genesis 17:1) is rendered by *Midrash Rabbah* 46:2, "I am the Lord who said to the universe 'Enough!'"<sup>31</sup> R. Jonathan Eibeschutz, *Tiferet Yonatan, ad locum*, followed by R. Joseph Ber Soloveitchik, *Bet ha-Levi, ad locum*, explains that, in His creation of various artifacts, God arrested their development before completion. Man plants a seed, the seed germinates, a stalk grows and kernels of wheat develop. The Creator could well have made it possible for the kernels to crumble into flour, for the flour to absorb rain or moisture from the atmosphere, for the wind to churn the water-drenched flour so that dough be formed and for the heat of the sun to bake the mixture in order to yield a product that might literally be termed a "breadfruit." Instead, the Creator arrested the process long before its completion and ordained that grinding of the wheat, mixing the flour with water, kneading the dough and baking the bread be performed by man. Similarly, the flax plant could have been endowed with properties causing strands of flax to separate and intertwine themselves in a cloth which might grow in the shape of a cloak. Instead, the process is arrested and brought to completion by man. Indeed, the Gemara, *Shabbat* 30b, declares that in the eschatological era the Land of Israel will yield "cakes" and "linen garments." *Bet ha-Levi* explains that the import of that statement is simply that, in the end of days, God will allow the processes of creation to be culminated by modifying the natural order in a manner that will permit the creative process to become complete and thus spare man any travail. In the interim, however, he has declared, "Enough!," i.e., He has precipitously interrupted the process of creation and co-opted man, who must complete the process, as a collaborator in fashioning the universe.

The concept of man as an active partner in bringing the process of creation to completion as portrayed in the aggadic statement of the Gemara reappears much later in rabbinic writings as an explanation of the nature of the forms of "labor" that are prohibited on the Sabbath. In the nineteenth century, R. Jacob Zevi Mecklenberg, *Ha-Ketav ve-ha-Kabbalah*, Exodus 20 10, and R. Samson Raphael Hirsch,<sup>32</sup> each writing independently take note of the fact that the "labor" prohibited on *Shabbat* is not a correlative of physical exertion. For example, carrying or

stacking heavy objects, so long as performed within the confines of a private domain, entails no violation of any biblical prohibition, while placing even a small quantity of food over an already existing flame constitutes a capital transgression. These scholars develop the thesis that, on the Sabbath, the Jew is commanded to emulate God who desisted from creative endeavors on the seventh day. The notion of exertion or expenditure of physical energy in association with the Deity is entirely noncognitive. God "rested" on the seventh day "from all His work that He created" (Genesis 2:2) solely in the sense that he ceased to bring novel entities into being. Man, too, assert these writers, is commanded to rest on the seventh day, not from physical labor, but from activities that serve to complete the creative process and bring it to fruition. Thus God created foodstuffs, but many are inedible until cooked; man initiates the process of cooking which serves to render those products edible and in doing so completes the creation of food. God arrested the creative process by saying "Enough!" and left it for man to bring the process to final culmination. It is precisely such activity, *viz.*, completion of the creative process that is prohibited to man regardless of how effortless and physically undemanding the task may be. To rephrase the concept, six days a week man engages in completing the tasks left uncompleted by the Creator and by doing so becomes an active partner in the process of creation; on the seventh, the Jew emulates the Creator by ceasing and desisting from all such creative endeavors.

It is abundantly clear that human intervention in the natural order is normatively interdicted only to the extent that there are explicit prohibitions limiting such intervention. Moreover, there is no evidence either from Scripture or from rabbinic writings that forms of intervention or manipulation not expressly banned are contrary to the spirit of the law. Quite to the contrary, Jewish tradition, although it certainly recognizes divine proprietorship of the universe, nevertheless, gratefully acknowledges that while "The heavens are the heavens of God" yet "the earth has He given to the sons of man" (Psalms 115:16). In bestowing that gift upon mankind, the Creator has granted man dominion over the world in which he lives and over the living species that are coinhabitants of that world. Man has been given license to apply his intellect, ingenuity and physical prowess in developing the world in which he has been placed subject only to limitations imposed by the laws of the Torah, including the general admonition not to do harm to others, as well as by the constraints imposed by good sense and considerations of prudence.

There is ample reason to assume that Jewish teaching would not

frown upon cloning of either animals or humans simply because it is a form of asexual, and hence “unnatural,” reproduction. The Gemara, *Sanhedrin* 65b, relates that R. Hanina and R. Oshia met every Friday for the purpose of perusing *Sefer Yezirah* in order to create a calf for their Sabbath meal. This anecdote is recounted by the Gemara without the slightest hint of censure. The text incontrovertibly yields two principles: 1) asexual husbandry, at least with regard to animal species, is morally innocuous; and 2) harnessing metaphysical forces, or “white magic,” at least when practiced by masters of the Kabbalah, is acceptable. Although there is nothing in this narrative that may be cited as providing an explicit basis for extending such sanction to creation of a hybrid, interbreed or genetically engineered animal, the report certainly reflects acceptance of the legitimacy of asexual, and hence homologous, reproduction of animals.

### III. MAN AS CREATOR OF MAN

The notion that man is an active partner of the Deity in the process of creation extends to the creation of members of the human species as well. This is poignantly reflected in the words of the Sages recorded in *Kiddushin* 30b: “There are three partners in [the conception of] a person: his father, his mother and God.” Thus man, in engaging in procreative activity in order to promulgate the human species, is depicted as an active participant in the ongoing process of creation. The question is whether procreative license is limited to sexual reproduction or whether it encompasses asexual or homologous reproduction as well.

There may well be cogent reason to distinguish between various forms of asexual reproduction with the result that approbation expressed with regard to a particular mode of reproduction may not necessarily be transposed to endorsement of all. Thus, for example, artificial splitting of an embryo in the earliest stages of cell division represents a relatively minimal level of human intervention. Parthenogenesis, although homologous in nature, is more closely akin to natural reproduction with the result that it is less likely than cloning to be found objectionable. Cloning involves a much higher degree of manipulation and interference with the natural order. Least natural is the creation of a *golem* or anthropoid in whom replication of already existing human genetic material is completely lacking. For reasons that require no elaboration, creation of a *golem* is the only form of asexual reproduction heretofore addressed in rabbinic literature. Although cloning may pre-

sent an array of halakhic and moral issues significantly different from those posed in the fashioning of a *golem*, examination of extant *golem* literature is instructive for purposes of establishing an attitudinal framework in which the contemporary problem can be examined.

The most significant source by far is the narrative recorded by the Gemara, *Sanhedrin* 65b. According to Rashi's understanding, the Gemara cites the verse "Your iniquities have been a barrier between you and your God" (Isaiah 59:2) as establishing that, but for their supposedly minor transgressions, the righteous would find it within their power to emulate God and create a universe.<sup>33</sup> Presumably in illustration of that point, the Gemara reports that Rava created a man and sent him to R. Zeira. R. Zeira spoke to the man but he did not answer. Thereupon R. Zeira said to him, "You stem from [our] colleagues."<sup>34</sup> Return to your dust."

R. Zeira must have been aware that the creature appearing before him was an anthropoid before he attempted to engaged him in conversation; otherwise, it would have been impossible for R. Zeira to have known that he was not simply confronting a mute person. R. Zeira then proceeded to destroy the creature because, as an artificial creature he regarded it as defective or undesirable.<sup>35</sup> Had the anthropoid been capable of speech R. Zeira would presumably have had no problem with its continued existence.

Maharsha's comments *ad locum* are most revealing in this regard. Maharsha comments that speech is the "power of the soul." The anthropoid could not speak, declares Maharsha, because Rava lacked the ability to create a soul and R. Zeira proceeded to destroy it precisely because it was not endowed with a human soul. It follows from Maharsha's analysis that had Rava, either by harnessing the teachings of *Sefer Yezirah* or otherwise, been capable of creating an anthropoid endowed with a soul, R. Zeira would have had no objection.<sup>36</sup>

Maharsha's analysis serves to underscore the import of the Gemara's original statement declaring that, in the total absence of transgression, the righteous are capable of creating not merely an anthropoid but even an entire universe and to resolve the tension between that statement and R. Zeira's destruction of the anthropoid actually created by Rava. The Gemara ascribes the power of creation to the righteous in terminology that is entirely matter of fact. There is no hint that such power should not be utilized just as there is no censure of R. Hanina and R. Oshia for having created a calf. R. Zeira did not destroy the *golem* created by Rava because he disapproved of Rava's attempt to engage in such an enterprise but because the result was not satisfactory. Rava, presumably because of the "inequities" that constitute a barrier

between man and God, was incapable of creating a man endowed with a soul. Had it indeed been within Rava's power to do so, R. Zeira would not have interfered. However, upon discovering the inherent deficiency of the anthropoid, R. Zeira destroyed the creature.<sup>37</sup> Although the considerations that prompted R. Zeira to act in that manner are not spelled out, R. Zeira undoubtedly had reason to fear that the imperfect anthropoid arising from a failed attempt to create a human would prove to be a source of grief. Indeed, as will be noted later,<sup>38</sup> this indeed proved to be the case with regard to the *golem* purportedly created by R. Elijah of Helm.

Nevertheless, even if man has the power to create a clone endowed with a human soul, there may well be reason to question whether that power should be used. Lurking beneath the surface of theological opposition to cloning is not simply that artificial creation of human beings represents an illicit mode of *imitatio Dei* but that success in such an endeavor would have a profound psychological effect upon the perceiver, *viz.*, perception of the uniqueness of the Deity as compromised by human emulation of creative function would lead to denial of divine creation of the universe and even to denial of the existence of God.

That concern is indeed echoed in one kabbalistic source. One of the earliest medieval references to creation of a *golem* is found in a thirteenth-century work, *Sefer ha-Gematri'ot*, authored by disciples of R. Judah the Pious.<sup>39</sup> That source reports:

Ben Sira wanted to study *Sefer Yezirah*. A voice [*bat kol*] came out and said, "You cannot do it alone." He went to Jeremiah his father. Ben Sira is [numerically equivalent to] Ben Yermiyahu, [the son of Jeremiah] and they studied it and after three years, a man was created to them, upon whose forehead it was written 'Emet, as on the forehead of Adam. And the created one said to them: If the Unique One, the Holy One, Blessed be He, created Adam, when he wanted to kill [*le-hamit*] Adam, He erased a letter from 'emet and what remained is MeT [dead], even more so I would like to do it and you shall no longer create a man, so that people shall not err concerning him, as it happened in the generation of Enosh.<sup>40</sup> This is why Jeremiah said: Cursed is the man who relies on Adam. The created man said to them: Reverse the combination of the letter backwards. And they erased the 'aleph from his forehead and he immediately turned into ashes.<sup>41</sup>

As expressed in *Sefer ha-Gematri'ot* the concern to which the *golem* gives voice is that he might be deified as, according to the midrashic tradition cited in this narrative, had previously occurred in the genera-

tion of Enosh when people prostrated themselves before Adam believing that he was God because of his gargantuan height.

However, the same narrative is presented in a somewhat different manner by the anonymous author of a manuscript treatise titled *The Secret of the Name of 42 Letters*:

We found in *Sefer ha-Bitahon* written by R. Yehudah (ben Bateirah) that Jeremiah, of blessed memory, was studying *Sefer Yezirah* alone: A voice came out and said to him: Take a companion. He went to Sira his son and they studied [together] for three years in order to accomplish what was written. Then they that feared the Lord spoke one with the other. At the end of three years, when they wanted to combine the alphabets, according to the *Zeruf*, [combination] the *Mikhlol* and the *Ma'amar*, a man was created, and on his forehead it was written, YHVH 'Elohim 'Emet. In the hand of that man there was a knife, and he was erasing the 'aleph of the word 'emet and there remained met. Jeremiah rent his garment and said to him, Why did you erase the 'aleph of 'emet? He answered him, "I will tell you a parable . . . . Thus is God, when He created you in the image, likeness and form. Now, when you created a man like Him, the people will say that there is no God in the world but you." Jeremiah told him, "If so, how can we repair it" [*mai takanteh*]? He answered them, "Write the letters backwards on the dust that was thrown, by the intention of your heart and do not think about the way of [its] honor or of its order [*tikkuno*] but do all this backwards." And they also did so and that man became before their eyes dust and ashes. Then, Jeremiah said, "Indeed it is worthwhile to study these matters for the sake of knowing the power and dynamis of the creator of the world, but not in order to do [them]. You shall study them in order to comprehend and teach."<sup>42</sup>

Whether or not successful cloning of a human being in the early years of the twentieth-first century would have the same profound psychological impact as the creation of an awesome anthropoid in the days of Jeremiah or even in the thirteenth-century is speculative. Neither polytheistic confusion nor deification of man appears to be likely in our day, although belief in the Deity's role as Creator of the universe, and of man in particular, may be weakened in the minds of some. Moreover, the concern voiced in this anonymous kabbalistic treatise is not reflected in authoritative halakhic sources. Nevertheless, there is a widespread perception that any attempt at human cloning would constitute an act of extreme hubris on the part of man.

#### IV. IMPORT OF THE GOLEM LITERATURE

The rabbinic literature devoted to the *golem* is of importance with regard to another matter pertaining to cloning as well, *viz.*, the halakhic status of a cloned individual. In its broadest terms, the question is whether or not an anthropoid enjoys the halakhic status of a human being. Particular issues that have been addressed explicitly are whether destruction of an anthropoid is tantamount to homicide, whether an anthropoid can be counted in a *minyan* and whether its corpse defiles in the manner of a human cadaver. Analogous questions have also been raised with regard to animals created in a similar manner, e.g., may the meat of such an animal be cooked in milk and may the animal be offered as a sacrifice. The discussion of these questions with regard to anthropoids is only the first step in an analysis of the relevant halakhic issues since generation from human gametes, gestation *in vitro* as well as normal parturition as will be shown, may indeed significantly alter the conclusions. These discussions are, however, entirely relevant to the analogous situation of a cloned embryo or an embryo fertilized *in vitro* that is also subsequently artificially incubated outside the mother's womb as described by Aldous Huxley in his *Brave New World*.

In the course of Jewish history there have been numerous reports concerning the creation of a *golem* by various individuals.<sup>43</sup> In the annals of Halakhah, most significant by far is the narrative of R. Zevi Ashkenazi. R. Zevi Ashkenazi, *Teshuvot Hakham Zevi*, no. 93, reports that his grandfather,<sup>44</sup> R. Elijah Ba'al Shem of Helm, had created a *golem*.<sup>45</sup> *Hakham Zevi's* son, R. Jacob Emden, *She'ilat Ya'avez*, II, no. 82, adds that when the *golem* "grew stronger and greater because of the Divine Name written on a paper attached to his forehead," R. Elijah became afraid that the *golem* would wax harmful and destructive. R. Elijah therefore destroyed the creature by tearing the paper from the *golem's* forehead whereupon the *golem* fell to the ground as a lump of dust.<sup>46</sup>

Although the discussion is directed to an entirely different issue, *Hakham Zevi*, perhaps prompted by the fact that his grandfather subsequently destroyed the *golem* that he himself had created, remarks, *en passant*, that even if the *golem* is deemed to be human for other purposes, its destruction is not a violation of the prohibition against homicide. The basic assumption, *viz.*, that there is no attendant prohibition is amply evidenced by R. Zeira's conduct with regard to the anthropoid created by Rava. The simplest explanation for R. Zeira's lack of concern in taking the life of the anthropoid is that such a creature is not at all

deemed to be human—and perhaps not even an animal<sup>47</sup>—and hence can be destroyed with impunity. [As will be noted later, this is indeed the position of the sixteenth century kabbalist, R. Moses Cordovero, *Pardes Rimmonim*, chap. 24, sec. 10, as well as of the early seventeenth century authority (and ancestor of Hida), R. Abraham Azulai, *Hesed le-Avraham*, *Ma'ayan Revi'i*, *nahar* 30. *Hesed le-Avraham* asserts that the vitality of a creature created by means of *Sefer Yezirah* is comparable to the “vitality of an animal” and that, since anthropoids do not enjoy the status of human beings,<sup>48</sup> their destruction entails no transgression. *Hesed le-Avraham* was followed in this position by his descendant, R. Chaim Joseph David Azulai (Hida), *Mahazik Berakhah*, *Orah Hayyim* 55:1, and later in his *Mar'it ha-Ayin*, *Sanhedrin* 65b].

However, *Hakham Zevi*, at least for the purpose of his initial discussion, assumes that an anthropoid does enjoy the status of a human being and hence was constrained to find an alternative justification for R. Zeira's conduct. *Hakham Zevi* cites the discussion of the Gemara, *Sanhedrin* 57b, with regard to feticide. The Gemara adduces Genesis 9:6 which is conventionally rendered “Whosoever sheds the blood of a man, by man shall his blood be shed.” The Hebrew phrase “*dam ha-adam ba-adam damo yishafekeh*” is readily translated in that manner, i.e., “*by man shall his blood be shed.*” However, since the biblical text contains no commas and the word “*ba-adam*” can equally well be understood as meaning “within man,” the verse can also be rendered “Whosoever sheds the blood of a man *within* a man, his blood shall be shed.” For purposes of talmudic exegesis the verse is indeed understood as having the latter meaning. Hence the ensuing talmudic query: “Who is a ‘man within a man?’” And the immediate response: “One must say this is a fetus in the mother's womb.” That interpretation forms the basis for the Gemara's determination that feticide is a capital offense in the Noahide Code. *Hakham Zevi* alludes to that discussion in declaring that since an anthropoid is not formed in a woman's womb its destruction cannot constitute an act of homicide.

*Hakham Zevi's* opinion regarding destruction of an anthropoid was challenged by R. Gershon Leiner, popularly known as the *Radzyner rebbe*, in his *Sidrei Taharot*, *Oholot* 5a. Acceptance of *Hakham Zevi's* thesis would logically lead to the conclusion that, since Adam was not born of a human mother, Adam might have been murdered with impunity—a conclusion *Sidrei Taharot* regards as absurd particularly since Adam was created by God as a human *par excellence*.

The major problem, however, is that the talmudic interpretation is not at all intended to be a literal reading of the scriptural passage but



expresses an additional level of meaning reflecting the notion that the particular language in which the commandment is couched is designed to incorporate feticide within the parameters of the prohibition against homicide. The rabbinic interpretation may well be understood as inclusive rather than exclusive. As such, the rabbinic interpretation of the verse should be understood as having the effect of rendering its meaning: "Whosoever shall shed the blood of *even* a man within a man, his blood shall be shed." Or to put the matter somewhat differently, the exegetical interpretation is designed to expand the ambit of the prohibition to include "a man within a man" but does not ordain that characteristic as a necessary condition of applicability.

More significantly, the verse in question was addressed to Noah and forms part of the Noahide Code. The verse serves to elucidate the crime of homicide as integral to the Seven Commandments of the Sons of Noah. Murder as one of the 613 commandments of the Sinaitic code binding upon Jews is prohibited on the basis of entirely different verses. Indeed, albeit with a number of highly significant exceptions, there is a plethora of authorities who maintain that, for Jews, feticide, although forbidden on other grounds, is not a form of homicide.<sup>49</sup> Those authorities clearly regard extension of the prohibition to encompass feticide as limited solely to the prohibitions which form part of the Noahide Code. Similarly, even if the verse is regarded as limiting the prohibition to the killing of a person born of a woman's womb, such limitation should also be regarded as applicable only to the Noahide Code.

The particular issue addressed by *Hakham Zevi* is whether the *golem* may be counted as one of the ten people necessary to constitute a *minyan*, i.e., a quorum for public prayer. In effect, the issue addressed by *Hakham Zevi* is not the anthropoid's status as a human being but his status as a Jew. Indeed, although *Hakham Zevi*'s final position is somewhat ambiguous, the anthropoid's status as a human is taken for granted as evidenced by the argument presented. *Hakham Zevi* cites the dictum recorded in *Sanhedrin* 19a: "He who rears an orphan in his home, Scripture considers it as if he had begotten him" and, without further elaboration, astonishingly concludes, "Likewise since [the *golem*] is the handiwork of the righteous he is included among the sons of Israel for the handiwork<sup>50</sup> of the righteous are their progeny." However, *Hakham Zevi* dismisses his own argument on the grounds that, were the anthropoid capable of providing any benefit (*to'elet*), e.g., were he qualified to serve as a member of a *minyan*, R. Zeira would not have been justified in destroying him.<sup>51</sup> The implication is that the *golem* was ineligible to serve as a member of a *minyan* because the *golem* shares neither the

responsibilities nor the prerogative of members of the Jewish community and hence that *Hakham Zevi* does not regard a *golem* as Jewish.<sup>52</sup> Whether or not his concluding comment indicates that the *golem* is also not to be regarded as human is unclear.<sup>53</sup>

In his earlier cited responsum, *Hakham Zevi's* son, R. Jacob Emden, questions his father's conclusion regarding the anthropoid's eligibility to be counted as a member of a *minyan*. *She'ilat Ya'avez* sees no reason why a *golem* endowed with auditory perception and capable of understanding words addressed to him should not be capable of speech as well and hence assumes that the anthropoid created by Rava was not only incapable of speech but was deaf as well. But, notes *She'ilat Ya'avez*, a deaf-mute cannot be included in a *minyan*. Accordingly, argues *She'ilat Ya'avez*, adjudication of the status of an anthropoid in that context is superfluous. The identical observation is made by R. Chaim Joseph David Azulai, *Birkei Yosef*, *Orah Hayyim* 55:4. It would follow from these comments that there is no evidence to rebut *Hakham Zevi's* original argument—assuming it is regarded as cogent in the first instance—establishing the *golem's* status as a Jew. *She'ilat Ya'avez*, however, concludes his responsum by citing an earlier authority, *Hesed le-Avraham*, *Ein Ya'akov*, *Ma'ayan Revi'i*, *nahar* 30, who comments that the vitality of a *golem* is that of an animal and hence the *golem* is to be regarded as “an animal in the form of man” whose destruction entails no transgression.<sup>54</sup> *Hesed le-Avraham*, and apparently *She'ilat Ya'avez* as well, maintain that a *golem* is not at all human.

Writing in the latter part of the nineteenth century, R. Judah Asad, *Teshuvot Maharya*, I, no. 26, asserts that *Hakham Zevi's* original quandary with regard to including an anthropoid as a member of a *minyan* must be understood as a question according to only one school of rabbinic thought. *Shulhan Arukh*, *Orah Hayyim* 55:6, rules that a person who is asleep may be counted as a member of the quorum of ten. *Bet Yosef*, in his commentary on the *Tur*, *ad locum*, attributes that view to his teacher, Mahari bei Rav. *Taz*, *Orah Hayyim* 55:4, takes sharp issue with that view and argues that the status of a sleeping person is inferior even to that of a minor. Referring to *Bet Yosef's* own citation of a comment of the *Zohar*, *Taz* declares that the soul departs from a person during sleep with the result that a sleeping person is in a state of quasi-death and devoid of sanctity. In defense of the ruling of *Shulhan Arukh*, *Mahari Asad* declares that the comment of the *Zohar* must be understood as applying only to a person sleeping alone. When, however, there is a group of ten and the *Shekhinah* rests upon them the *Shekhinah* does not depart simply because one member of the group has

fallen asleep. Under such circumstances, declares *Mahari Asad*, the soul of the sleeping person remains in his body.

*Mahari Asad* observes that, if a sleeping person cannot be counted as a member of a *minyan* because his soul has temporarily taken leave of his body as maintained by *Taz*, *a fortiori*, an anthropoid "in whom there is no soul at all, only an animating spirit" cannot be counted toward a *minyan*. Thus, he observes, *Hakham Zevi*, in formulating his question, must have assumed with conviction that the normative view is that of *Shulhan Arukh*, i.e., that a person may be counted toward a *minyan* even while asleep.

The ruling of *Hakham Zevi* and *She'ilat Ya'avez* disqualifying an anthropoid from being counted in a *minyan* and *She'ilat Ya'avez'* view that an anthropoid is not deemed to be a human being for purposes of Halakhah was challenged by R. Zadok ha-Kohen of Lublin, *Kuntres Divrei Halomot*, sec. 6.<sup>55</sup> As reflected in the title of the work, R. Zadok reports that the argument in its entirety occurred to him in a dream. The position espoused by *Hakham Zevi* and *She'ilat Ya'avez* is based entirely upon the fact that R. Zeira destroyed the *golem* sent to him by Rava, an action those authorities deemed unthinkable were the *golem* to have been able to serve a worthwhile purpose such as being included in a *minyan*. R. Zadok, however, notes that it is in the nature of a *golem* continuously to grow and expand as *She'ilat Ya'avez* reports was the case with regard to the *golem* created by R. Elijah of Helm.<sup>56</sup> Interestingly, R. Zadok notes that the Gemara reports that R. Haninah and R. Oshiya created their calf only on the eve of the Sabbath. Had they created it earlier in the week, conjectures R. Zadok, by *Shabbat* it would have grown much too large.<sup>57</sup> R. Zadok maintains that the *golem* created by Rava must have been created for some specific purpose not disclosed by the Gemara and was destroyed by R. Zeira because of the fear that as it continued to grow it would wreak havoc. It will be remembered that it was for that reason that R. Elijah of Helm destroyed the *golem* that he had created. Hence, argues R. Zadok, there is no evidence that an anthropoid should not be considered human.

Curiously, R. Zadok seems to accept *Hakham Zevi's* original contention that the anthropoid is not only human but also a Jew because the anthropoid was created by a righteous Jew. Nevertheless, R. Zadok maintains the anthropoid is not endowed with a soul and hence is neither rewarded nor punished in the afterlife. Accordingly, he argues, when Moses is directed to transmit a commandment and addressed in the words "speak to the children of Israel," such admonition does not include an anthropoid.

It is remarkable that R. Zadok adopts this position while simultaneously asserting that we must assume that a *golem* is endowed with reason.<sup>58</sup> Consistent with that view he disputes *She'ilat Ya'avez'* contention that an anthropoid cannot be considered for inclusion in a *minyan* by virtue of the fact that he is a deaf-mute. Developing a thesis that is more fully articulated in other sources,<sup>59</sup> R. Zadok declares that disqualification of a deaf-mute is not absolute. R. Zadok adopts the view that a deaf-mute lacks legal capacity solely because, since he is deprived of the ability to communicate, he cannot develop intellectually. The anthropoid, however, contends R. Zadok, is created "as a mature man," and therefore it should be assumed that he is endowed with reason in a manner comparable to an adult.<sup>60</sup> In the case of an anthropoid, lack of speech, asserts R. Zadok, is to be attributed to the fact that it lacks "a portion of God from above." R. Zadok attributes the source of speech to the divine power breathed into Adam as recounted in the verse "and He breathed into his nostrils the breath of life" (Genesis 2:7) in accordance with *Targum Onkelos'* translation of "the breath of life" as "the speaking spirit (*ruah memallela*).<sup>61</sup> But, according to R. Zadok, since the anthropoid is fully developed in every other way there is no reason to assume that his rational faculty is defective.

Various other halakhic aspects of the status of an artificial animal created by means of *Sefer Yezirah* are discussed by rabbinic writers. *Shelah, Parashat Va-Yeshev*, declares that an animal created in such a manner does not require ritual slaughter and, moreover, its *helev* (fat from certain portions of the body that in the case of sacrificial animals is offered on the altar) and blood is permissible.<sup>61</sup> R. Meir Leibush Malbim, in his commentary on Genesis 18:18, indicates that the meat of such a creature may be cooked and eaten with milk. Malbim employs that halakhic observation in explaining how it was possible for Abraham to serve the angels who visited him dairy foods together with the meat of a calf. According to Malbim, the calf that was served was created by Abraham by means of *Sefer Yezirah* with the result that eating its meat together with milk was entirely permissible.<sup>62</sup> R. Zadok asserts that such an animal cannot be offered as a sacrifice since the biblical section defining the suitability of animals for sacrificial purposes begins with the phrase "When a bull or a sheep or a goat *will be born*" (Leviticus 22:27).<sup>63</sup>

It is rather evident that there are four<sup>64</sup> distinct views with regard to the status of a *golem*: *Hesed le-Avraham*, *She'ilat Ya'avez*, and possibly *Hakham Zevi*, maintain that its status is identical to that of a brute animal; R. Zadok ha-Kohen maintains that it is human in every sense; Maharsha and R. Gershon Leiner maintain that only an anthropoid

endowed with speech is human; *Zofnat Pa'aneah* maintains that an anthropoid does not at all have the status of a living creature.

## V. CLONING AND SPECIES IDENTITY

As stated at the outset, discussion of the halakhic status of a *golem* may appear to be esoteric and irrelevant to the status of a cloned animal or person. That presumption, however, is incorrect. The *golem* literature serves to demonstrate the unassailability of the status of a cloned human as a human being according to the view of Maharsha, R. Zadok ha-Kohen and R. Gershon Leiner.<sup>65</sup> In order to establish the humanity of a human clone according to the authorities who espouse a conflicting view with regard to the status of an anthropoid it is necessary to distinguish between a clone and a *golem*.<sup>66</sup>

The crucial distinction between a *golem* and a clone is that a *golem* is created, if not *ex nihilo*, then from mere dust, but clearly lacks a human progenitor. A human clone, although the product of asexual reproduction, does have a human progenitor. There is no evidence that Halakhah assigns a living creature membership in a particular species solely on the basis of sexual reproduction or on the basis of the identity of both parents as members of a common species. On the contrary, Halakhah is cognizant of the existence of interspecies and attributes to the progeny the identity of the species of the mother. Whether the identity of the father, and with it membership in the father's species as well, is to be attributed to offspring produced by interbreeding is a matter of talmudic controversy.

The matter of identification as a member of a species is best summed up in a pithy comment attributed to R. Chaim Solveitchik. It is reported that R. Chaim explained a certain halakhic concept by posing the following query: Why is a horse a horse? Is it a horse because it manifests certain characteristics which are necessary conditions of being a horse, or is a horse a horse because its mother was a horse? The answer is that a horse is a horse because its mother was of that species. For that reason the Mishnah, *Bekhorot* 5b, declares that the offspring of a kosher animal is kosher even if it has the appearance and physical attributes of a non-kosher animal and, conversely, the offspring of a non-kosher animal is non-kosher even if it has the appearance and physical attributes of a kosher animal. Thus identity as a member of a particular species is determined not by distinguishing characteristics, but by birth.

Applied to the human species, it may well be the case that humans differ from other members of the animal kingdom by virtue of defining

characteristics such as being featherless bipeds or by virtue of being endowed with reason, yet the progeny of beings categorized as humans by virtue of having been endowed with those attributes at the time of Creation are also human even if such progeny lack those characteristics.

Similarly, R. Elchanan Wasserman remarks several times in his writings that, although the concept of *yozei* is generally associated with the status of food products, it does not represent a novel rule limited to determining the permitted or prohibited nature of a foodstuff for purposes of the dietary code. Rather, asserts R. Elchanan, *any* thing that is emitted by, or proceeds from, a particular entity has the status of the entity that produced it. Thus, the concept, of *yozei* serves as the principle to be employed in determining identity as a member of a species with such determination of identity having consequential effect in determining issues of religious law.<sup>67</sup>

Thus, there can be no question that, for example, a sheep cloned from a cell of another sheep and gestated within the womb of a ewe has the halakhic status of a sheep. Similarly, a human cloned from the cell of another human and gestated within the womb of a human female is a human being. It appears to this writer that the same conclusions with regard to species identity would apply to a cloned animal or to a person that develops artificially in a laboratory incubator, with a possible exception in the latter case with regard to the punishment of the perpetrator of an act of homicide directed against such a person.<sup>68</sup>

The question that must be addressed is the status of an animal cloned from a cell of an animal of one species but nurtured in the womb of a female of another species. For example, what is the status of an animal cloned from the cell of a pig but gestated in the womb of a cow or a ewe? Is the offspring, in effect, a kosher pig?

Elsewhere,<sup>69</sup> it has been argued that Halakhah recognizes parturition as generating a maternal relationship. Presumably, that is the case not only with regard to an individual maternal-filial relationship but with regard to species identification as well since, as has been shown, species identity is a concomitant of maternal identity.

Nevertheless, if the position that *hosheshin le-zera ha-av*, i.e., that consideration is given to the seed of the father, is accepted, the offspring must be regarded as a member of the two separate species, i.e., in the example given, part pig, part cow or part sheep. Thus, *Shulhan Aurkh, Yoreh De'ah* 28:3, as amplified by *Shakh, Yoreh De'ah* 28:7, rules that the progeny of a stag and a ewe has doubtful status as a "part deer" because the question of *hosheshin le-zera ha-av* is an unresolved halakhic issue.

It seems to this writer that the principle of *hosheshin le-zera ha-av* is

not founded on the fact that the father contributes *zera* or sperm in a literal sense but upon whether the father's donation of cytoplasm is of sufficient halakhic significance to cause the developing embryo to be regarded as the "*yozei*" or "outgrowth" of the father. If so, the principle of *hosheshin le-zera ha-av* is applicable to any and all sources of genetic material that contributes to the development of an animal. Accordingly, from the viewpoint of Halakhah, the animal, male or female, from which the cloned cell is taken is regarded as the "father" regardless of the organ from which the cell is taken.<sup>70</sup> In the case of human cloning, *hosheshin le-zera ha-av* would render the person from whom the nucleus is taken a "parent"<sup>71</sup> regardless of whether that individual is a male or a female.

Although at present the matter is in the realm of science fiction, it must be freely conceded that this analysis yields a number of conclusions that may be counterintuitive. Offspring produced from a cloned cell of a monkey or chimpanzee implanted in a human womb, although having both the genotype and phenotype of an animal, would be regarded as human for purposes of Jewish law. It is indeed evident from the discussion of the Gemara, *Niddah* 23b, that an animal-like creature born of a human mother is regarded as a human being.<sup>72</sup> Conversely, a cell cloned from a human and gestated within the womb of a primate, despite being endowed with both the genotype and phenotype of a human, would, on the basis of the halakhic principle of *hosheshin le-zera ha-av*, have the halakhic status of a doubtful human being.

One additional point should be made regarding the status of a cloned human being. A clone acquires human status by virtue of the fact that it is a *yozei* of a human being, i.e., by virtue of its generation from human tissue. Nevertheless, it seems quite evident to this writer that, if a clone is produced from a cell of a male, the male does not thereby fulfill the biblical commandment with regard to procreation. Stated in somewhat different terms, a male cannot fulfill his obligation with regard to procreation by siring a clone. Elsewhere,<sup>73</sup> this writer has discussed the birth of a child *sine concubito* as exempting the father from further biblical obligation with regard to procreation. Although some authorities disagree, the majority of rabbinic decisors rule that a male is discharged from further obligation even if the child is not conceived as a result of intercourse. Nevertheless, it would seem quite strange to extend that notion to the case of a childless person who creates an anthropoid by means of metaphysical methods gleaned from *Sefer Yezirah*.<sup>74</sup> It seems cogent to assume that, even if a sexual act is not required, nevertheless, the children whose birth is the subject of the commandment are those produced from male semen.<sup>75</sup> In context, the

command "be fruitful and multiply" is formulated in the plural in the Hebrew text even though it is binding only upon the male and is also immediately preceded by the phrase "male and female did He create them."<sup>76</sup> It would thus seem that, even if actual cohabitation is not required, the commandment is nevertheless fulfilled only if the child is the product of gametes contributed by both the male and the female.<sup>77</sup> If so, for example, birth of a child cloned from a cell taken from the cheek would not release the donor of the cell from further biblical obligation.

## VI. POTENTIAL HARM TO THE CLONE

Although, from the vantage point of Jewish tradition, animal cloning presents no ideological or halakhic problem, the same cannot be said with regard to the cloning of a human being.

The ethical implications of fetal experimentation which, by its very nature, may result in the birth of a defective neonate were analyzed some time ago by the late Professor Paul Ramsey.<sup>78</sup> In the early days of *in vitro* fertilization Professor Ramsey argued that such a procedure represented an immoral experiment upon a possible future life since no researcher can exclude the possibility that he may do irreparable damage to the child-to-be. In the words of Professor Ramsey: "We ought not to choose for another the hazards he must bear, while choosing at the same time to give him life in which to bear them and to suffer our chosen experimentations."<sup>79</sup>

This argument is no less applicable to homologous reproduction than to artificial conception and is entirely consistent with the norms of Torah ethics. Jewish law does not sanction abortion motivated solely by a desire to eliminate a defective fetus, nor does it sanction sterile marriage as a means of preventing transmission of hereditary disorders. However, it does discourage marriages which would lead to the conception of such children. The Gemara, *Yevamot* 64b, states that a man should not marry into an epileptic or leprous family, i.e., a family in which three members have suffered from those diseases. This declaration obviously represents a eugenic measure designed to prevent the birth of defective children. It follows, *a fortiori*, that overt intervention in natural processes which might cause defects in the fetus would be viewed with opprobrium by Judaism.

There is some question with regard to whether the Gemara's negative statement regarding entering into a marital relationship with a



woman whose family has a history of leprosy or of epilepsy represents a formal interdiction or simply constitutes sound eugenic advice. The talmudic dictum is presented in the ambiguous form "*lo yisa adam*" which may be understood either as an imperative, viz., "a person dare not" or as having a much weaker prudential meaning, viz., "a person *ought* not." The dictum is recorded in the same language by Rambam, *Hilkhhot Isurei Bi'ah* 21:30, and by *Shulhan Arukh, Even ha-Ezer* 2:7. Unfortunately, there is scant discussion of this statement either in the talmudic commentaries or in commentaries upon Rambam or *Shulhan Arukh*. However, the formulation employed by *Tur Shulhan Arukh, ad locum*, may be instructive. The Gemara defines a family of epileptics or of lepers as a family in which there have been three occurrences of the disease. In recording that provision *Tur* adds that if there have been only two such occurrences "it is permissible [to marry]." Employment in this context of the term "*shari*" or "it is permissible" would seem to indicate that in a situation involving a family in which there have been three such occurrences the marriage is not merely imprudent but impermissible.<sup>80</sup>

It should also be noted that the Gemara, on the very same page on which this statement is presented, employs almost identical language in declaring that a twice-widowed woman should not marry a third time for fear that her third husband, will meet an untimely death as well. The consensus of opinion among early-day authorities in that such a marriage is not merely ill-advised but is prohibited.<sup>81</sup> It would be cogent to assume that the Gemara has herein recorded two separate but parallel rabbinic edicts, one based upon concern for the life of the prospective husband, the other based upon concern for the well-being of prospective issue of the marriage. R. Isaac Schmelkes, *Teshuvot Bet Yitzhak, Even ha-Ezer*, I, no. 46, sec. 3, strives to show that the prohibition against marrying a woman who has buried two husbands is rabbinic in nature. That is also the position of *Besamim Rosh*, no. 276.<sup>82</sup> However, numerous authorities, including *Teshuvot Ketav Sofer, Even ha-Ezer*, no. 13 and *Teshuvot Bet Shlomoh, Even ha-Ezer*, no. 18, maintain that, in light of the danger involved, the prohibition is biblical in nature.<sup>83</sup> Moreover, Ritva, in his commentary on the talmudic discussion, indicates that the prohibition against marrying a twice-widowed woman is subsumed under the prohibition against suicide. Since marrying a woman who stems from a family of epileptics or a family of lepers, even if formally prohibited, is presumably banned only by virtue of rabbinic decree,<sup>84</sup> no comparison can be drawn between the negative statement regarding such marriages and the statement decrying marriage to a twice-widowed woman if it is accepted that the latter prohibition is biblical in nature.

On the other hand, Rambam, *Teshuvot Pe'er ha-Dor*, no.156, cited by *Kesef Mishneh*, *Hilkhoh Isurei Bi'ah* 21:31, maintains not only that there is no prohibition against entering into marriage with a twice-widowed woman but that such a union does not even pose an intrinsic danger. Rambam understands the Gemara's negative attitude as based entirely upon the fear that people experience in such situations and the resultant harm that can be engendered even by psychological causes. Hence, if the parties are sanguine with regard to the matter, Rambam sees no reason to discourage, much less prohibit, the marriage. Nevertheless, Rambam does take the genetic danger of epilepsy and leprosy seriously as evidenced by his unqualified statement in *Hilkhoh Isurei Bi'ah* 21:30. Accordingly, for Rambam as well, there is no theoretic parallelism between the Gemara's statement concerning twice-widowed women and women stemming from families having a history of epilepsy or leprosy.

Be this as it may, as noted earlier, the sole rabbinic source to offer a concrete basis for even an inferential conclusion is *Tur Shulhan Arukh* and that conclusion is not challenged by evidence from any other source. Nevertheless, acceptance of the fact that the Sages promulgated a eugenic ordinance in order to prevent occurrences of epilepsy and leprosy does not entail the conclusion that they prohibited any and every marriage carrying a greater than normal risk of hereditary defects in potential progeny,<sup>85</sup> much less that they established a prohibition against artificial forms of reproduction that carry with them such risks. On the contrary, rabbinic ordinances, in general are not paradigmatic; their ambit is limited to that which is explicitly proscribed.

Nevertheless, such prohibitions are reflective of underlying policy considerations. The concern in this case was clearly the prevention of congenital anomalies. There is little question that were the Sages legislating in response to contemporary circumstances and in possession of scientific information available to us they would have targeted other genetic anomalies. Given the values they so clearly espoused there is strong reason to suppose that they would have decried fetal experimentation and human cloning because of the inherent danger of producing congenital defects. It must also be recognized that birth outside of a family unit carries with it the potential for psychological burden. Clones are likely to suffer even greater psychological problems. Since serious psychological problems are as real and as burdensome as physical defects it is likely that the Sages would have viewed their imposition upon as yet unborn children with disfavor.

This consideration notwithstanding, the prohibition against causing

harm to a fellow human being admits of some exceptions. Accordingly, there are conceivable situations in which an unborn life may be burdened with potential defects in order to achieve an overriding purpose.

It must be emphasized that, despite its tragic nature, overcoming infertility does not warrant causing harm to another. Elsewhere,<sup>86</sup> this writer had endeavored to show that the therapeutic exemption to the prohibition against "wounding" is not limited to "wounding" oneself or allowing a physician to perform a surgical procedure in order to benefit the subject of the procedure but includes even an act of "wounding" performed upon an individual who himself or herself derives no personal benefit from the assault. Nevertheless, in no way does that line of reasoning serve to justify the potential harm to a fetus that may occur in the course of cloning. Cloning is not restorative in nature. The process neither cures a malady nor restores a dysfunctional organ to its intended purpose. The effect of cloning is to provide a child for a couple to raise and thereby satisfy a deeply felt human need. Cloning, particularly since it does not serve as a fulfillment of the commandment to "be fruitful and multiply," is, from the vantage point of Jewish law, analogous to adoption. Adoption ameliorates the pain arising from infertility, but does not remedy the underlying physical cause. An adopted child may be loved and cherished, but adoption is not a "cure" for infertility. Neither adoption nor cloning can be accorded the halakhic status of a "cure." Hence it must be concluded that, if cloning is otherwise regarded by Jewish teaching as immoral, it cannot be sanctioned as means of alleviating the effects of infertility. It is almost superfluous to add that this is the case even if cloning is contemplated in order to preserve the family line of a Holocaust survivor who has no other living relatives.<sup>87</sup>

It has also been suggested in some quarters that cloning may be morally acceptable in situations in which the sole child of parents who have become infertile develops a terminal disease. By means of cloning, the parents could use a cell obtained from the child to create another child who would be an exact replica of the child they are about to lose. However, tragic as such cases may be, there is nothing in those circumstances halakhically to distinguish that situation from more usual situations of infertility.

## VII. MORAL AND LAUDATORY PROCEDURES

Nevertheless, there are some very rare situations in which cloning, despite the attendant risks, may be regarded as moral and even laudato-

ry. Despite the contrary view of some early-day authorities, the overwhelming consensus of rabbinic opinion is that restrictions governing interpersonal relationships, including the prohibitions against theft and "wounding," are treated no differently from purely religious prohibitions and are suspended in face of danger to human life.<sup>88</sup>

There have been unfortunate cases of children afflicted with leukemia whose only chance of survival is a bone marrow transplant. To be successful, a donor must be genetically compatible, otherwise the transplant will be rejected. When bone marrow of family members is incompatible, finding a suitable match is exceedingly difficult. There have been cases of the mother of such a child becoming pregnant in the hope that the newly-born child will be a suitable donor. However, the statistical probability that the child will be a compatible donor is only twenty-five percent. If cloning were available, parents, in such rare situations, could clone the ill child. The newly-born infant would be disease-free but would be genetically identical to its afflicted sibling. Medically, the child would be an ideal donor.

There may well be other forms of research requiring cloning designed to find a cure for disease that may benefit individuals who are in the category of a *holeh le-faneinu*, i.e., for whom the danger and potential benefit is regarded as actual rather than merely hypothetical. Under such limited circumstances—and only in such circumstances—human cloning, when scientifically prudent and undertaken with appropriate safeguards, may be deemed appropriate and halakhically sound.

More significantly, cloning technology may prove to be extremely beneficial in cell and tissue therapy. Embryonic stem cells have the ability to differentiate into any cell type and, in theory, could be produced from human blastocysts. Perfection of cloning procedures would make it possible for a person to provide the nucleus of his own cell to replace the nucleus of a donor egg. Stem cells could be taken from the developing blastocyst and induced to differentiate in culture.<sup>89</sup> Those cells would be genetically identical to those of the person from whom the nucleus was taken with the result that cell and tissue replacement would be possible without the problems of rejection currently attendant upon transplantation. Rejection of transplants occurs because the body's immune system recognizes the transplanted tissue as foreign. Cloned tissue is genetically identical to the tissue from which it is cloned and hence will not be rejected. The goal of such technology would be the cloning of human tissues and organs rather than of human beings. Although the cloning of human beings is highly problematic, the cloning of tissues and organs for therapeutic purposes is entirely salutary.

There is one final lesson to be derived from the *golem* literature. Absence of a prohibition against creating an anthropoid does not mean that such endeavors were encouraged by rabbinic scholars. Thus, to cite but one source, R. Chaim Joseph David Azulai, *Birkei Yosef*, *Orah Hayyim* 55:4, notes that, in order to complete a *minyan*, R. Eliezer chose to emancipate his slave rather than to create a *golem*. *Birkei Yosef* regards R. Eliezer as having been quite capable of that feat but comments that R. Eliezer refrained from creating a *golem* as an act of piety. Many scholars frowned upon engaging *kabbalah ma'asit* or "white magic" because of fear that the procedure might go awry, because of fear of misuse for less than noble purposes or because of fear that this esoteric knowledge might fall into the hands of unworthy persons.<sup>90</sup> The identical concerns surround creation of the modern-day *golem* in the form of the product of homologous reproduction and similar restraint is in order.

Society certainly has reason to regard development of cloning technology with concern. Those concerns are by no means limited to the exaggerated fear of the specter of mad scientists engaging in cloning for nefarious purposes *à la The Boys From Brazil*. Quite apart from the earlier discussion regarding concern for potential defects in the clonee, society has reason to fear that untrammelled cloning may result in a disproportionate number of clones of one gender, that a multiplicity of persons identical to one another may spell confusion and give rise to an assortment of social problems and that idiosyncratic preferences may create an imbalance in the distribution of physical attributes and human talents. These and other demographic concerns are quite real. Tampering with natural processes in a manner that would lead to social upheaval is not included in man's mandate "to fill the earth and conquer it" (Genesis 1:28). Assuredly, society is justified in preventing such a situation from arising. Accordingly, society has both the right and the obligation to regulate experimental endeavors designed to perfect techniques necessary for successful cloning of humans. The goal of such regulation should be assurance that those skills be utilized only for purposes that are beneficial to society.

## NOTES

1. Cf. the statement ". . . what is technically possible is not for that reason morally admissible," Congregation for the Doctrine of the Faith, *Instruction on Respect for Human Life in Its Origin and on the Dignity of Procrea-*

- tion (*Donum Vitae*) (February 22, 1987), introduction, sec. 3. Although that document is not an expression of Jewish teaching, the validity of the quoted axiom is self-evident.
2. See Willard Gaylin, "The Frankenstein Myth Becomes a Reality: We Have the Awful Knowledge to Make Exact Copies of Human Beings," *The New York Times Magazine*, March 5, 1972, pp. 12-13, 41-49.
3. *New York Times*, July 23, 1998, p. A1.
4. *Ibid.*, p. A20.
5. *New York Times*, July 24, 1998, p. A12.
6. *New York Times*, July 23, 1998, p. A20. In an editorial accompanying the report of the cloning of Dolly, the editors of *Nature* voiced the opinion that "Cloning humans from adults' tissues is likely to be achievable any time from one to ten years from now." See *Nature*, vol. 385, no. 6619 (February 27, 1997), p. 753.
7. A full report of the methods employed in causing that event to occur was published by I. Wilmut *et al.*, "Viable Offspring Derived from Fetal and Adult Mammalian Cells," *Nature*, vol. 385, no. 6619 (February 27, 1997), pp. 810-813.
8. See Gina Kolata, *Clone: The Road to Dolly and the Path Ahead* (New York, 1998), p. 25.
9. Much earlier, in 1981, to the excitement of the scientific community, a prominent German researcher, Dr. Karl Illmensee, and a younger colleague, Dr. Peter Hoppe, reported the successful cloning of three mice from early embryo cells. However, a formal investigation of charges of scientific fraud culminated in a somewhat equivocal report and Illmensee's reported results were not duplicated. For an intriguing survey of the entire episode see *Clone* pp. 120-156.
10. *New York Times*, June 3, 1997, p. C1; *Clone*, p. 129.
11. *New York Times*, December 2, 1997, p. A24.
12. See Jose B. Cibelli *et al.*, "Cloned Transgenic Calves Produced from Non-quiescent Fetal Fibroblasts," *Science*, vol. 280, no. 5367 (May 22, 1998), pp. 1256-1258.
13. *New York Times*, May 23, 1998, p. A11, col. 1.
14. See T. Wakayama, *et al.*, "Full-Term Development of Mice from Enucleated Oocytes Injected with Cumulus Cell Nuclei," *Nature*, vol. 394, no. 6691 (July 23, 1998), pp. 369-374.
15. *New York Times*, December 2, 1997, p. A24.
16. *Clone*, p. 32.
17. *Washington Post*, January 7, 1998, pp. A2-A3. A company named Clonaid has already been established in the Bahamas in contemplation of offering cloning for fees of \$200,000 and higher. The firm's scientific director has stated that "Before the year 2000, there will be a human cloned on this planet." See John Carey, "Human Clones: It's Decision Time," *Business Week*, August 10, 1998, p. 37.
18. Sophia J. Kleepman and Sherwin A. Kaufman, *Infertility in Women: Diagnosis and Treatment* (Philadelphia, 1966), p. 178.
19. December 2, 1997, p. A1.
20. *Clone*, p. 39.
21. Paul Ramsey, *Fabricated Man: The Ethics of Genetic Control* (New Haven,

- 1970), p. 122.
22. *Instruction on Respect for Human Life*, introduction, sec. 4 (citation omitted).
23. *Ibid.*, chapter 1, sec. 6.
24. See R. Abraham ibn Ezra, *Commentary of the Bible*, Leviticus 19:19, and R. Judah Leib Krinsky, *Karnei Or*, *loc. cit.* See also R. Abraham Chill, *The Mitzvot: The Commandments and Their Rationale* (Jerusalem, 1974), p. 236.
25. See the supercommentary to Ibn Ezra of R. Shlomo Zalman Netter, Leviticus 19:19, published in the Horeb edition of the Pentateuch (Jerusalem, London, New York, 5711). A similar interpretation was earlier advanced by *Ohel Yosef* and *Mekor Hayyim* in their respective works on Ibn Ezra published in *Margoliot Tovah* (Stanislav, 5687).  
*Mekor Hayyim* also understands Ibn Ezra's comments regarding interbreeding of animal species in a like manner. However, these scholars' understanding of the passage in question is less than compelling. Cf., R. Abraham Chill, *The Mitzvot*, p. 236.
26. See R. Samson Raphael Hirsch, *The Nineteen Letters of Ben Uziel*, Eleventh Letter; *idem*, *Horeb*, sec. 327.
27. Rambam, *Guide for the Perplexed*, Book III, chap. 37, regards the *hukkim* as prohibitions designed to stem idolatrous conduct. The actions in question, he asserts, were cultic practices associated with pagan worship and sacrifice. According to Rambam's understanding of these commandments, there is no hint of a negative attitude with regard to intervention by man in the natural order.
28. Cf., R. Joseph B. Soloveitchik, "Confrontation," *Tradition*, vol. VI, no. 2 (Spring-Summer, 1964), p. 20.
29. It is indeed the case that one finds occasional comments in rabbinic writings representing those prohibitions in phraseology that is general and unqualified; see, for example, the sources cited *supra*, note 25. Nevertheless, It seems to this writer that those comments must be understood in the manner herein indicated.
30. Maharal of Prague speaks about natural objects created during the six days of creation in juxtaposition to matters which are "above," or which transcend, nature. The latter were created only in potential but are actualized by man. The prime example of that phenomenon is fire that was produced by Adam. Thus man's role is "completion" (*hashlamah*) of the process of Creation. Insofar as "completion" of creation is concerned it is the divine plan that such development take place. Maharal asserts that it is the divine will that even interspecies such as the mule come into being, although not in circumstances that involve violation of Torah law. Thus crossbreeding was permitted to Adam because emergence of interspecies is integral to "completion" of the universe. According to Maharal, crossbreeding by a person who is not commanded otherwise (or in situations in which the prohibition does not apply) does not constitute a violation of the divine will or of the divinely ordained *telos* because "the way of Torah is one thing and the way of completion is another matter entirely." See R. Judah Loew, *Be'er ha-Golah*, chap. 2, s.v. *be-Masekhet Pesachim*.
31. The *Midrash* includes "heaven" and "earth" as well as well as "universe" in

this reference. A somewhat different version is presented by the Gemara *Haggigah* 12a. In *Haggigah* the reference is to containment of the portion of the earth covered by the waters of the sea. The comment "Enough!" with regard to the "earth" and "heaven" (despite contemporary theories of an expanding universe) should also be understood as connoting a similar concept. However, if so, the term "universe" appears to be redundant. Moreover, understood in this manner, the comment seems inappropriate in the context in which it appears, viz., in conjunction with the commandment to Abraham concerning circumcision. It is that problem that led *Tiferet Yonatan* to understand the comment as having an additional connotation.

32. *Commentary on the Bible*, Genesis 2:2 and Exodus 20:10; *Horeb*, sec. 144; and *The Nineteen Letters*, Thirteenth Letter.
33. Cf., *Midrash Tehillim*, Psalm 3. *Midrash Tehillim* states: R. Elazer said, "The sections of the Torah were not given in order for, had they been given in order, anyone who would read them would be able to create a universe, to resurrect the dead and to perform wonders. Therefore the order of the Torah was concealed."
34. Maharsha cites anonymous sources who regard the term "*havraya*" used in this context as the plural form of the Aramaic equivalent of the Hebrew "*haver*" that appears in Deuteronomy 18:11. If so, the term refers to animal charmers or magicians and is indeed employed in that manner by the Gemara, *Shabbat* 45a. See parallel occurrences cited by Marcus Jastrow, *Dictionary of Talmud Babli, Yerushalmi, Midrashic Literature and Targum*. See also Moshe Baer, "On the *Havrayya*," *Bar Ilan: Annual of Bar Ilan University* (Ramat Gan, 1983), vol. XX-XXI, pp. 83-86 and Moshe Idel, *Golem* (Albany, 1990), pp. 27-28.
35. It should be noted that a fourteenth century commentator on the *aggadot* of the Talmud, R. Shem Tov ibn Shaprut, *Pardes Rimmonim* (Sabionetta, 5314), p.13a, asserts that the anthropoid was not veridical but an *ahizat einayim*, i.e., an illusion in the form of man. According to *Pardes Rimmonim*, Rava produced an illusion in order to test R. Zeira; the latter perceived its real nature and, accordingly, commanded it to return to dust. See also Gershom G. Scholem, "The Idea of the Golem," *On the Kabbalah and Its Symbolism*, trans. Ralph Manheim (New York, 1965), p. 188.
36. For the relationship between speech and reason see this author's *Contemporary Halakhic Problems, II* (New York, 1983), pp. 368-370. See also R. Bahya ben Asher *Commentary on the Bible*, Genesis 2:7, and *idem*, *Kad ha-Kemah, II* (Lvov, 5698), 103b. [For other kabbalistic sources disassociating speech from reason see Scholem, *On the Kabbalah*, pp. 193-194.] The human soul is an ontological entity and is either identical with, or the source of, man's rational faculty. The vital or animating force in living creatures, including man, is not uniquely human and hence even in man is referred to as the animal or animating soul.
37. See *infra*, note 52.
38. See *infra*, note 51 as well as notes 56-57 and accompanying text.
39. This work is published in Abraham Epstein, *Beitrage zur jüdischen Altertumskunde* (Vienna, 1887), pp. 122-123.
40. Cf., Rambam, *Hilkhot Avodah Zarah* 1:1. For an even more precise com-



- parison with the generation of Enosh see Scholem, *On the Kabbalah*, p. 181.
41. Translated by Idel, *Golem*, p. 64. See also the translation published in Scholem, *On the Kabbalah*, p. 179. The Hebrew text appears in the Hebrew version of Scholem's work, *Pirkei Yesod be-Havanat ha-Kabbalah ve-Samalehah*, trans. Joseph Ben-Shlomoh (Jerusalem, 1976), p. 400.
  42. Translated by Idel, *Golem*, p. 67. See also the translation published in Scholem, *On the Kabbalah*, p. 180. The Hebrew text appears in *Pirkei Yesod*, p. 401. The text of this work was published by David de Guenzburg, "La Cabale à la veille de l'apparition du Zohar," *Ha-Kedem*, vol. I (1907), p. 115.  
See also Joseph Dan, *The Early Kabbalah* (New York, 1986), pp. 54-55 and Idel, *Golem*, p. 67. Cf., Gershom Scholem, "The Golem of Prague and the Golem of Rehovoth," *Commentary*, January, 1966, p. 64.
  43. See the various reports cited by Scholem, *On the Kabbalah*, pp. 158-204, and by Idel in his work, *Golem*. See also Byron L. Sherwin, *The Golem Legend: Origins and Implications* (New York, 1985). For accounts of the most widely known *golem* story, that of R. Judah Loew of Prague, see Yudel Rosenberg, *Nifla'ot Maharal* (Warsaw, 1909), trans. J. Neugroschel, *Yenne Velt: The Great Works of Jewish Fantasy and the Occult* (New York, 1976); Chaim Bloch, *Der Prager Golem* (Berlin, 1920), trans. H. Schneiderman, *The Golem of Prague* (Vienna, 1925); and Gershon Winkler, *The Golem of Prague* (New York, 1980).
  44. Idel, *Golem*, p. 229, note 22, observes that it is unlikely that R. Elijah was the grandfather of *Hakham Zevi* since the latter was born in 1660 while R. Elijah died in 1583. Idel assumes that the reference is to a great-grandfather.
  45. A similar report regarding the same figure appears in late seventeenth century Christian sources. See Scholem, *On the Kabbalah* pp. 200-203. See also Idel, *Golem*, pp. 207-211.
  46. See also R. Jacob Emden's account of the *golem* created by R. Elijah as presented in his *Megillat Sefer* (Warsaw, 5656), p. 4 and in his *Mitpahat Sefarim* (Altona, 5529), p. 45a.
  47. If an anthropoid is not deemed to be human solely because it lacks a human soul it might nevertheless have the status of an animal. If, however, it is not a human because it does not have human progenitors it should, for the same reason, not be considered to be an animal. For a discussion of whether painless, but purposeless, killing of an animal involves the prohibition of cruelty to animals (*za'ar ba'alei hayyim*) see this author's *Contemporary Halakhic Problems*, III (New York, 1989), pp. 205-217.
  48. R. Joseph Rosen, *Teshuvot Zofnat Pa'aneah* (Jerusalem, 5728), II, no. 7, goes further in remarking that, for purposes of Halakhah, a creature produced by means of *Sefer Yezirah* has no cognizable existence and for that reason the anthropoid in question was commanded by R. Zeira to return to dust. If those comments are taken literally, it would follow, for example, that it could be permissible to cut the hair or pare the nails of a *golem* on *Shabbat*.
  49. For a discussion of those sources see *Contemporary Halakhic Problems*, I (New York, 1977), pp. 326-339.

50. The phrase "*ma'aseh yedeihem*" is employed by *Hakham Zevi* in the sense of "handiwork" or "artifacts." The source for this comment is apparently *Bereishit Rabbah* 30:6 and is cited by Rashi, Genesis 6:9. However, in that source the phrase is "*ma'asim tovim*" meaning "good deeds."
51. R. Chaim Joseph David Azulai, *Mar'it ha-Ayin, Sanhedrin* 65b, dismisses this argument with the observation that R. Zeira would have been entirely justified in destroying the anthropoid because of a fear that he might wreak havoc. See also, *infra*, notes 56-57.
52. R. Chaim Joseph David Azulai, *Birkei Yosef, Orach Hayyim* 55:4, cites a letter of R. Judah Leib Katz, a son of the *Sha'ar Efrayim*, who finds support for the view that an anthropoid cannot be included in a *minyan* in the talmudic report that R. Eliezer chose to emancipate his slave in order to complete a quorum. Why did R. Eliezer not simply create a *golem*? queries this scholar. Since he did not do so, Rabbi Katz infers that a *golem* would have been ineligible to serve in that capacity. *Birkei Yosef* dismisses that argument for three reasons: 1) R. Eliezer may have refrained from creating an anthropoid as an act of piety; 2) creation of a *golem* requires extensive preparation and cannot be undertaken at will; 3) emancipation of a slave is simpler and preferable because it involves no transgression whatsoever when undertaken for a valid purpose. *Birkei Yosef* notes conflicting authority with regard to the latter point. R. Chaim Pelaggi, *Ruach Hayyim, Yoreh De'ah* 1:18, cites an earlier authority who asserts that a newly created anthropoid may have the status of a minor. Cf., *infra*, note 59 and accompanying text. *Ruach Hayyim* observes that, according to that view, it follows that an animal created in a similar manner may not be offered as a sacrifice until the statutory eight day period following birth has elapsed and cites an authority to whom that question was a matter of doubt.
53. R. Chaim Eleazar Shapira, *Darkei Teshuvah, Yoreh De'ah* 7:11, raises the question of whether an animal slaughtered by a properly supervised anthropoid may be eaten and cogently relates that issue to the question of whether a *golem* is deemed to be a human being. *Darkei Teshuvah* asserts that, according to *Hakham Zevi*, the anthropoid is human and hence an act of slaughter performed by an anthropoid renders the meat of the animal permissible. It is thus clear that *Darkei Teshuvah* assumes that *Hakham Zevi* regarded the anthropoid both as a human being and as a Jew. If so, it is unclear why the anthropoid cannot be counted in a *minyan*. If the reason is, as stated by R. Zadok ha-Kohen of Lublin, because the anthropoid is not included in "speak to the children of Israel" as cited later in the text, the anthropoid should for the same reason be excluded from the category of individuals competent to perform ritual slaughter.
54. *Hesed le-Avraham's* view is followed by his descendant R. Chaim Joseph David Azulai, *Mahazik Berakhah, Orach Hayyim* 55:1, and *idem*, *Mar'it ha-Ayin, Sanhedrin* 65b. See also R. Daniel Trani, *Ikkarei Dinim* (also cited as *Ikkarei ha-Dat*), *Orach Hayyim* 3:15. It is of interest to note that with reference to counting a *golem* in a *minyan*, *Mishnah Berurah* 55:4 cites *Ikkarei Dinim* together with *Hakham Zevi*.
55. Published as an addendum to R. Zadok's *Resisei Lailah*. A translation of this material is provided by Idel, *Golem*, pp. 220-223.
56. Cf., *Bereishit Rabbah* 34:2 in which Adam is depicted as a *golem* "stretched

out from one end of the world to the other" and *Bereishit Rabbah* 14:10 in which Adam is described as a *golem* extending in height from earth to heaven. It was only after Adam sinned that he was reduced to human proportions although, according to the earlier cited *Sefer Gematri'ot*, he remained enormous in height.

57. Cf., *Teshuvot ha-Rashba*, I, no. 413, who opines that the feat can be performed only on the sixth day of the week, the day on which animals were created.
58. Cf., however, R. Chaim Joseph David Azulai, *Mahazik Berakhah*, *Orah Hayyim* 55:1 and *idem*, *Mar'it he-Ayin*, *Sanhedrin* 65b, who declares that under no circumstances is it possible for man to create an anthropoid who is endowed with reason and ascribes that position to Maharsha, *Sanhedrin* 65b, as well. In *Mar'it he-Ayin* he declares that only God has the power to breathe "into his nostrils the breath of life," i.e., of reason, as described in Genesis 2:7. This is actually the earlier cited view of *Hesed le-Avraham*, although *Hesed Avraham* less categorically confines his statement to a depiction of an anthropoid created on the basis of *Sefer Yezirah*.

Scholem, *On the Kabbalah*, pp. 198-199, and Idel, *Golem*, p. 55, cite sources that attribute this position to the early-day scholar, R. Shmuel he-Hasid, the father of R. Judah he-Hasid. Those sources associate that view with a hymnal phrase in the High Holy Day liturgy, namely, "Intelligence and speech are "[the prerogative] of the Life of the Worlds."

*Mahazik Berakhah's* categorical declaration that "the sages have no power to endow [the anthropoid] with reason" makes it more difficult to understand R. Zeira's attempt to converse with the anthropoid as described in *Sanhedrin* 65b. According to *Mahazik Berakhah's* view, it must be assumed that R. Zeira did not immediately perceive that man cannot create a rational anthropoid and hence he could not conclude that the anthropoid did not have the status of a human until it became clear that the anthropoid lacked the power of speech.

R. Moses Cordovero, *Pardes Rimmonim*, chap. 34, sec. 10, ascribes a vitality to the *golem* higher than that of the animal soul but nevertheless not human. According to *Pardes Rimmonim*, the parts of which the creature is formed strive upward toward their source in the upper world and come closer to their source in that world than does an animal. According to *Pardes Rimmonim*, the *golem* does not die as an animal does but simply returns to its element, the earth. Accordingly, causing a *golem* to return to dust is not an act of murder. See Scholem, *On the Kabbalah*, pp. 194-195. *Pardes Rimmonim's* position seems to be similar to, but not identical with, that of *Hesed le-Avraham* who seems to equate the vitality of the *golem* with that of an animal. Cf., however, Scholem, *ibid.*, p. 194, note 4.

R. Judah Loew, *Hiddushei Aggadot Maharal me-Prague*, *Sanhedrin* 65b, similarly states that man cannot create an anthropoid capable of speech. Maharal makes this assertion on the basis of the curious argument that man cannot create his equal any more than God can create His equal.

On the other hand, a commentary on *Sefer Yezirah* of uncertain provenance but attributed to R. Sa'adya Ga'on speaks of the power to produce an anthropoid endowed with a soul. See Scholem, *On the Kabbalah*, p. 192. Probably of greater significance are the earlier cited sources that

- depict the *golem* created by Jeremiah and Ben Sira as endowed with speech. See *supra*, notes 39-42 and accompanying text. *Sefer ha-Bahir*, sec. 136, also indicates that, were it not for sins, man might create an anthropoid capable of speech.
59. For an analysis of the various views concerning this matter see *Contemporary Halakhic Problems*, II, 365-375.
  60. With the exception of the source adduced by *Ruah Hayyim* as cited *supra*, note 52, no rabbinic writer has suggested that the anthropoid, upon creation, has the status of a newly born infant and must wait thirteen years before attaining legal capacity as an adult.
  61. This is also the position of *Teshuvot Sedah ha-Arez*, *Yoreh De'ah*, no. 1, and of *Ruah Hayyim*, *Yoreh De'ah* 1:18. Cf., however, the anonymous interlocutor in *Teshuvot Sedah ha-Arez* and *Darkei Teshuvah*, *Yoreh De'ah* 7:11, who suggest that such an animal may require slaughter and its *helev* and blood may be forbidden because of *mar'it ayin*, i.e., because an onlooker may suspect that a transgression is taking place. This is also the position of the author of *Darkei Teshuvah*, R. Chaim Eleazar Shapira, as expressed in his *Divrei Torah*, *mahadura revia'ah*, sec. 75. *Ikkarei Dinim*, *Yoreh De'ah* 1:22, remarks that "perhaps" the creature requires ritual slaughter because of *mar'it ayin*. See also *infra*, note 62.
  62. Interestingly, Malbim observes the onlooker would not have suspected a violation of the prohibition against milk and meat because it was commonly known that Abraham created animals in this manner. It should be remembered that the final section of *Sefer Yezirah* reports that Abraham mastered the methods therein described and succeed in performing acts of creation. See Scholem, *On the Kabbalah*, pp. 169-172.
  63. A sephardic authority, R. Abraham Anakava, *Teshuvot Kerem Hemed*, I, *Orah Hayyim*, no. 3, discusses in great detail the question of whether it is permissible to create a *golem* on *Shabbat*. See also R. Moshe Sternbuch, *Mo'adim u-Zemanim*, IV (Jerusalem, 5431), no. 319.
  64. As noted *supra*, note 58, *Pardes Rimmonim* actually represents a fifth view since he regards the *golem* as a loftier being than a brute animal. Nevertheless, insofar as the halakhic status of such a creature is concerned, there is no difference between his position and that of *Hesed le-Avraham*.
  65. This seems to be true for R. Chaim Joseph David Azulai as well. Hida declares that a *golem* is not human because it is impossible under any circumstances for man to create an anthropoid endowed with reason. A product of homologous reproduction would undoubtedly be endowed with reason. As such, it must be regarded as created by God—albeit with human cooperation, as is the case with regard to sexual reproduction—and hence, according to Hida, such a being would be entirely human in nature.
  66. Since they make no specific mention of an anthropoid endowed with reason, it is possible, but not demonstrable, that those scholars would concede that a *golem* created by man and possessing reason is human.
  67. See *Kovez He'arot*, no. 33, sec. 8; *ibid.*, no. 59, sec. 12; *Kovez Inyanim*, *Hullin* 17a; and *Kovez Shi'urim*, I, *Pesahim*, sec. 120.
  68. See *supra*, note 49 and accompanying text and *Contemporary Halakhic Problems*, IV (New York, 1995), 240, note 10.

69. For a discussion of the sources upon which this conclusion is predicated see *Contemporary Halakhic Problems*, II, 91-93.
70. More problematic is the status of a clone produced by removing the nucleus of a cell derived from an animal of one species and inserted in the cytoplasm of a cell of an animal of a second species and gestated by an animal that is a member of a third species. The halakhic issue is whether the principle of *hosheshin le-zera ha-av* extends to a "father" who contributes non-genetic material.
71. If the individual from whom the cell is taken is a male his status is clearly that of a "father." If the individual is a female it would be reasonable to assume that her status is that of a "mother" and that the clone, in effect, has two mothers. This assumption is based upon the premise that *hosheshin le-zera ha-av* is a principle with regard to parenthood rather than with regard to paternity specifically.

There are numerous halakhic differences attendant upon status as a "father" or as a "mother." The most obvious and also the most theoretical is whether the admonition required for capital punishment for "wounding" must be couched in language warning against wounding a father or wounding a mother. Even were we in a position to impose capital punishment the question would remain theoretical since *hosheshin le-zera ha-av* remains an unresolved halakhic issue.

The issue is more actual with regard to whether a paternal or a maternal sibling relationship exists between the clonee and other progeny of the clonor. Levirate obligations and the effectiveness of *halizah* as a means of nullifying the levirate links are limited to brothers sharing a single father but not to brothers sharing a single mother. Thus, if a female donor of a nucleus were to be regarded as a "father" rather than a mother, levirate obligations would exist if two such male clones were produced and one of them was to die without issue.

There are also differences with regard to consanguineous relationships. For example, a marital relationship with the mother of one's maternal grandfather is rabbinically forbidden but such a relationship with the grandmother of a maternal grandfather is permitted. However maternal grandmothers in the female line are prohibited no matter how many generations they are removed. See *Shulhan Arukh, Even ha-Ezer* 15:2-3. Hence the son of a woman cloned from the nucleus of a female would be permitted to marry the donor's grandmother if the donor is deemed to be a "father" but not if the donor is deemed to be a "mother."

R. Joseph Babad, *Minhat Hinnukh*, no. 189, tentatively suggests that, if an androgynous male who sires a male child and then has a sexual relationship with the child involving the father's female organs, the parties may be liable for incest between a son and his "mother" and also suggests that if the androgynous father engages in a male homosexual relationship with the child they may be liable for incest as well as for homosexual activity. *Minhat Hinnukh* certainly suggests that gender itself, rather than the male or female sexual act, may determine motherhood or fatherhood. However, in applying the principle of *hosheshin le-zera ha-av* it is not necessary to resort to *Minhat Hinnukh's* hypothesis. *Hosheshin le-zera ha-av* simply results in recognition of the non-gestational parent as a parent by virtue of

application of the more general principle of *yozei*. It then seems reasonable to assume that, if the "parent" is a female, her status is that of a "mother" even if the result is that the child has two mothers. Unlike the case of the androgenous father who sires a child, there is no apparent reason to convey the status of a "father" upon the female donor. On the other hand, one might insist that a non-gestational parent is, by definition, a "father" rather than a "mother." That hypothesis is certainly contradicted by *Minhat Hinnukh's* speculative comments.

72. The Gemara clearly recognizes the theoretical possibility of a converse situation, *viz.*, of a human-like creature being born to an animal. If born to a member of a kosher species the Gemara questions whether or not the offspring may be slaughtered for food since, although it possesses a "hoof," it does not have the characteristic split hoof of a kosher species. From the very formulation of the question it is manifestly evident that the Gemara did not regard a creature of this nature as enjoying the status of a human being.

The principle that identity of the mother as a human determines the status of her progeny regardless of the physical characteristics of the offspring might appear to be contradicted by a discussion of the Palestinian Talmud, *Niddah* 3:2. Describing hypothetical human offspring, the Palestinian Talmud states:

Suppose it is entirely human but its face is animal-like and it reads from the Torah. Can one say to it, "Come and be slaughtered?"

Suppose it is entirely animal-like but its face is human and it plows the field. Can we say to it "Come and perform *halizah* or levirate marriage?"

On the surface, the Palestinian Talmud seems to declare that the human status, or advance thereof, of creatures having mixed physical characteristics should be determined on the basis of the creature's rational capacity. However, *Pnei Mosheh*, in his commentary *ad locum*, points out that the statement is made in an *ad absurdum* vein and its import is to assert that such questions could not arise because such a creature cannot survive for any period of time. The creature's lack of viability is of direct relevance to the purely technical question of whether the mother is subject to the impurity associated with childbirth. That issue is a matter of controversy between the Sages and R. Meir as is recorded in the Mishnah that serves as the focus of the discussion.

Notice must also be taken of the controversy recorded in the Mishnah, *Kelayim* 8:5, with regard to whether creatures known as *adnei ha-sadeh* defile as humans. It may be suggested that the crux of the controversy is whether the creatures in question are anomalous descendants of humans, presumably as a result of genetic mutation, or an independent animal species. However, Rabbenu Shimshon, in his commentary *ad locum*, cites a comment of the Palestinian Talmud indicating that *adnei ha-sadeh* are creatures tied to the ground by a structure resembling an umbilical cord and that, on the basis of rabbinic exegesis, R. Jose, whose opinion is recorded in the Mishnah, regards them as grouped together with humans solely for purposes of ritual defilement.

73. *Contemporary Halakhic Problems*, IV, 240, note 9 and *Bioethical Dilem-*

- mas: A Jewish Perspective* (New York, 1998), pp. 251-253. Exemption from further obligation to procreate is a concomitant of recognition of a paternal relationship with regard to a child born *sine concubito*.
74. If contrary to what is here stated, it is to be assumed that even creation of an anthropoid by means of *Sefer Yezirah* satisfies this requirement it should then follow that in cloning it is the physician or technician who performs the cloning procedure who fulfills the obligation of procreation rather than the passive donor of the cell.
  75. R. Eliezer Waldenberg, *Ziz Eli'ezer*, XV, no. 45, has advanced a similar position with regard to *in vitro* fertilization. It is his contention that the many authorities who maintain that a sexual act is not necessary for fulfillment of the commandment with regard to procreation maintain that position only because both production of the gametes and fertilization of the ovum are entirely natural. *Ziz Eli'ezer* contends that *in vitro* fertilization, which he describes as effecting a change "in the order of creation," is entirely different and that as an "unnatural" form of procreation it can not lead to fulfillment of the *mizvah*. That position is challenged by R. Avigdor Nebenzahl, *Assia*, no. 34 (Tishri 5743), cited by Abraham S. Abraham, *Nishmat Abraham, Even ha-Ezer* 1:6, note 5, sec. 3, on the grounds that, despite the "unnatural" externality of *in vitro* fertilization, the intrinsic physiological process involved in fertilization and conception are entirely natural. That certainly is not the case with regard to cloning.
  76. In his tentative assertion that a *golem* may be counted toward a *minyan* because "He who receives an orphan in his home, Scripture considers it as if he had begotten him" and because "the deeds of the righteous are their progeny" *Hakham Zevi* certainly did not intend to intimate that the commandment of *peru u-revu* can be fulfilled by performing good deeds or even by raising an orphan in one's home.
  77. An intriguing problem is presented in the hypothetical case in which the cloned cell is a male sperm. In such a situation the nucleus of the ovum would be reproduced by the genetic material of the sperm but the remaining cytoplasm of the female gamete enters into the reproduction process. If such a procedure ever becomes possible, the child will not really be a clone since it would possess only half of a full complement of genes, but that is not a matter of halakhic relevance.
  78. Paul Ramsey, "Shall We 'Reproduce'?" *Journal of the American Medical Association*, vol. 220, no. 10 (June 5, 1972), pp. 1346-1350, and vol. 220, no. 11 (June 12, 1972), pp. 1480-1485; and *idem*, *The Ethics of Fetal Research* (New Haven, 1975).
  79. Paul Ramsey, *Journal of the American Medical Association*, vol. 220, no. 11, p. 135.
  80. This also appears to be the understanding of R. Samuel Ehrenfeld, *Teshuvot Hatan Sofer*, no. 137.
  81. See *Shulhan Arukh, Even ha-Ezer* 9:1 and commentaries thereto; cf., however, *Ozar ha-Poskim, Even ha-Ezer* 9:1, sec. 1.
  82. For additional sources that subscribe to this view see *Ozar ha-Poskim, Even ha-Ezer* 9:1, sec. 1.
  83. For additional sources maintaining that the prohibition is biblical in nature see *Ozar ha-Poskim, Even ha-Ezer* 9:1, sec. 1.

84. Although "wounding" or causing harm to another person even indirectly must be regarded as biblically forbidden, it is unlikely that causing such harm to an unborn child who would otherwise not be born is included in the prohibition against harming a fellow man. Were that to be the case it would necessarily follow that all unions likely to result in progeny suffering from *any* genetic defect would be forbidden.
85. Cf., *Teshuvot Hatan Sofer*, no. 137, who appears to assert that such marriages are prohibited in all situations in which there have been three occurrences of any serious disease deemed to be hereditary.
86. *Contemporary Halakhic Problems*, IV, 302-309.
87. Cf., *Clone* p. 17.
88. The most frequent discussion of this issue in a medical context is in conjunction with post-mortem dissection of a corpse. For a survey of the conflicting positions regarding this matter see J. David Bleich, *Judaism and Healing* (New York, 1981), pp. 162-168.
89. For a discussion of the propriety of destroying nascent human life generated in this manner and at this very early stage of development see *Contemporary Halakhic Problems* IV, 24, note 10 and *Bioethical Dilemmas*, pp. 209-211.
90. For a series of quotations from the writing of kabbalists enveighing against actual implementation of practical Kabbalah see R. Moshe Hillel's introduction to his edition of R. Elijah Ba'al Shem Tov's *Toldot Adam* (Jerusalem, 5754), pp. 38-39. See also Joshua Trachtenberg, *Jewish Magic and Superstition* (New York, 1939), p. 22.