1. Today the Sheep…

Kenneth L. Woodward

克隆技术是科学界一大奇迹，它给社会带来了各种影响，同时也引起了人们的思考："今日克隆羊，明日是否就要克隆牧羊人呢？"对此，人们众说纷纭。

[1] Twenty years ago, when only the lowly *tadpole* ① had been cloned, *bioethicists* ② raised the possibility that scientists might someday advance the technology to include human beings as well. They wanted the issue discussed. But scientists *assailed* ③ the moralists' concerns as *alarmist* ④. Let the research go forward, the scientists argued, because cloning human beings would serve no *discernible* ⑤ scientific purpose. Now the cloning of humans is within reach, and society as a whole is caught *with its ethical pants down* ⑥.

[2] Today the sheep—tomorrow the shepherd? Whether the cloning of human beings can be ethically justified is now firmly, perhaps permanently, on the nation's moral *agenda* ⑦. President Clinton has given an advisory panel of experts just 90 days to come up with proposals for government action. The government could prohibit the cloning of human beings or issue regulations limiting what researchers can do. But the government cannot control the actions of individuals or private groups deter-

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mined to clone humans for whatever purpose. And science has a way of *outdistancing*[8] all ethical restraints. "In science, the one rule is that what can be done will be done," warns Rabbi Moses Tendler, professor of medical ethics at Yeshiva University in New York.

[3] Some ethicists regard the cloning of humans as inherently evil, a morally *unjustifiable intrusion*[9] into human life. Others measure the morality of any act by the intention behind it; still others are concerned primarily with the consequences—for society as well as for individuals. Father Richard McCormick, a veteran Jesuit ethicist at the University of Notre Dame, represents the hardest line: any cloning of humans is morally *repugnant*[10]. A person who would want a clone of himself, says McCormick, "is overwhelmingly self-centered. One Richard McCormick is enough." But why not clone another Einstein? Once you program for producing superior beings, he says, you are into eugenics, "and eugenics of any kind is inherently discriminatory." What's wrong with duplicating a *sibling*[11] whose *bone marrow*[12] could save a sick child? That, he believes, is using another human being merely "as a source for replaceable organs." But why shouldn't an infertile couple resort to cloning if that is the only means of having a child? "Infertility is not an absolute evil that justifies doing any and every thing to overcome it," McCormick insists.

[4] Other ethicists see possible exceptions to a general rule against cloning. Tendler opposes cloning on Biblical grounds. But if a *sterile*[13] second-generation Holocaust survivor wanted a male heir to continue an otherwise doomed family line, the Rabbi says he might advise the man to clone rather than use donor

sperm. Boston College moral theologian Lisa Sowhill Cahill is "not yet convinced that cloning human beings is inherently evil." The mother of identical twins, Cahill questions whether creating a clone necessarily violates the dignity of the original or of the genetic copy. As with other ethicists, what most concerns Cahill is the *commodification*[14] of human beings and their genes. Forget *hubris*[15], consider commerce. What's to prevent the transfer of a dollop of DNA to a wealthy bidder who wants an especially beautiful, swift or smart child?

[5] Beyond the arguments of experts, the nation's religious communities "will play an important role in the national debate over cloning," says Quaker ethicist James Childress, a member of the president's advisory panel. All theologians agree that a clone would have a soul like everyone else. Although the pope has yet to address the cloning issue, the Vatican has repeatedly condemned the use of human *embryos*[16] for *nontherapeutic purposes*[17]—which is what cloning requires. Islamic courts have not ruled on cloning, either, but Muslim scholar Abdulaziz Sachedina, a medical ethicist at the University of Virginia, worries about the long-term implications of separating reproduction from human relationships. "Imagine a world with no need for marriage," he asks. Protestant ethicist Allen Verhey of Hope College in Holland, Mich., warns that cloning would program parents to "think of their children as products." And Buddhist scholar Donald Lopez foresees real problems for the theory of *karma*[18]. Would the clone inherit the karma of the original person? And, he wonders. "What did the sheep do in previous life that result-

ing in its being cloned in this one?"

[6] But to judge by what American society currently permits, the nation is already far along the road toward *tacit*⑲ acceptance of cloning. "In our society there are two values which will allow anyone to do whatever she wants in human reproduction," observes ethicist Daniel Callahan of the Hastings Center in Briarcliff Manor, N. Y. "One is the nearly absolute right to reproduce—or not—as you see fit. The other is that just about anything goes in the pursuit of improved health." Perhaps the message of Dolly is that society should reconsider its casual ethical slide toward assuming mastery over human life. Do we really want to play God?

Notes:

①蝌蚪 ②生物伦理学家 ③猛击 痛击 ④大惊小怪的人 ⑤可辨明的 ⑥ with one's pants down 乘人不备，这里是调侃的说法 ⑦(委员会等的)待办事项或待讨论事务 议程 ⑧在行程上快过 超过 把……抛在后头 ⑨无法理喻的侵犯 ⑩令人厌恶的 使人反感的 ⑪兄弟姐妹 ⑫骨髓 ⑬不能结果实的 不能生育的 ⑭商品化 ⑮傲慢 自大；自恃 ⑯胚胎 ⑰非治疗目的 ⑱羯磨(佛教名词,指今生来世的因果报应) ⑲心照不宣的；暗含的

今日克隆羊,明日是什么

肯尼斯·L·伍特伍德

[1]20年前，当只有低等动物蝌蚪被克隆时，生物伦理学家们就提出一种可能性，即将来科技会进步到可以克隆人的程度。他们希望能够讨论这个问题，但是科学家们指责这些伦理学家的担忧是杞人忧天。他们争辩说，克隆人并没有明确的科学目的，所以让这个研究继续进行下去吧。而现在，克隆人已是举手可得之事，整个社会猝不及防地遇到了一个窘迫的伦理问题。

[2]今天克隆羊，明天是否就克隆牧羊人呢？是否应该从伦理学的角度判断克隆人的问题，如今已经永久地、毫无疑问地提到了社会伦理学的议程上。克林顿总统要求一个专家顾问小组在90天内提交一份报告，对政府应采取的措施提出建议。政府可以禁止克隆人，或是制定一些措施限制科学研究的发展，但是政府却不可以控制个人或是私人团体克隆人的行动，不论他们是出于什么目的，而且科学有办法超越所有的伦理限制。纽约耶和华大学医学伦理教授拉宾·莫斯·泰德勒警告说："在科学上，有一条规则是，可以完成的事就一定要去完成。"

[3]一些伦理学家认为克隆人从根本上说是邪恶的，从伦理角度而言，是对人类生命的一种无法理喻的侵犯，其余的人则用隐藏其后的意图来衡量这一道德行为。还有一些人从一开始关心的只是它对社会和个人所产生的影响。理查德·麦克密克神父，诺特戴姆大学的资深天主教伦理学家，代

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表了最强硬的反对阵线，他认为，任何克隆人的想法从道德上说都是令人厌恶的。他说：“一个想克隆自己的人是一个绝对以自我为中心的人，一个理查德·麦克密克就已经足够了”，但是为什么不去克隆另一个爱因斯坦呢？他说，一旦你计划去复制一些伟人时，你就进入了优生学的领域，“任何一种优生学从根本上说都是一种歧视。”但是复制一个兄弟姐妹，用他／她的骨髓来拯救一个病危的孩子又有何错呢？他相信，那只是用另外一个人作为“可替换器官的来源”罢了。但是，如果一对不能生育的夫妇能够拥有一个孩子的唯一方法就是求助于克隆的话，他们为什么不能这么做呢？麦克密克坚持说：“不能生育并不是绝对的邪恶，以致于有理由不择手段来战胜它。”

[4] 其他一些伦理学家则指出一些可能例外的情况。泰德勒站在宗教的立场上反对克隆，但是如果一个纳粹大屠杀的幸存者的第二代不能生育，他想要一个男性继承人来传宗接代，否则他的家族会面临绝种的危险，拉宾说他也许会建议那人用克隆技术复制一个后代，而不是用捐献的精子。波士顿大学神学家丽萨·索赫尔·开赫尔还“不确信克隆人是否从根本上说是邪恶的”。作为一对完全一样的双胞胎的母亲，开赫尔对制造克隆人是冒犯了原人、还是冒犯了基因复制人的尊严提出了质疑。和其他伦理学家一样，开赫尔最关心的问题是人及其基因的商品化。忘掉那自恃傲慢，考虑一下商业前景吧。如果一个有钱人出高价将他的遗传基因转变成他所期盼的一个美丽、聪明、可爱的孩子，又有什么能够阻止他呢？

[5] 除了专家们的争论以外,国家宗教界也‘在公众对克隆问题的争论中起着重要的作用”，总统顾问小组的成员、贵格会伦理学家杰姆斯·查杰斯说。所有的神学家们都一致认

为，一个克隆人会和其他人一样有思想、灵魂，尽管教皇尚未对克隆问题提出任何意见，但梵蒂冈一直在谴责将人类胚胎用于非治疗性目的，而这一点却正是克隆所要求的。伊斯兰法庭也还没有对克隆问题做出定论，但是穆斯林学者、弗吉利亚大学的医学伦理学家阿卜杜拉斯·萨彻底那却对将生育与人类分离开来所产生的长期后果表示忧虑。“设想一下，一个不需要婚姻的世界会是怎样的吧！”他问道。新教徒、密歇根州霍兰德希望学院的伦理学家阿兰·沃黑警告说，克隆可能会使父母们“认为他们的孩子是产品”。佛教徒、学者唐纳·勒普斯预见到今生来世的因果报应问题。克隆人真的会连原来的人的因果报应都全部继承下来吗？而且，他很想知道“克隆羊前生到底做了什么，以至于今生要被人克隆呢？”

[6] 但是现今美国社会已允许克隆技术的存在，并且已沿着公众默认的道路大大前进了一步。纽约布洛克力夫、黑斯廷斯中心的伦理学家丹尼尔·卡拉汉观察到“在我们的社会，有两种价值观，允许人们在生育问题上做任何他们想做的事。一种是，只要认为合适，人类对生殖或不生殖有几乎绝对的权利；另一种是，为了改善健康状况，任何事情都能做。”也许多利羊所传递的信息是，如果有人认为可以主宰人类生命的话，社会应当对这一偶然道德滑坡进行一番重新审视。难道我们真的想扮演上帝吗

2. The Biotech Century

Walter Isaacson

20世纪的医学几乎很难增加健康人的寿命，然而，下一次的医学革命却着力进行基因工程的研究，力图改变这一切。因为 21 世纪是一个生物技术的世纪。

[1] Before this century, medicine consisted mainly of *amputation* ①saws, morphine and crude remedies that were about as effective as bloodletting. The flu epidemic of 1918 killed as many people (more than 20 million) in just a few months as were killed in four years of World War I. Since then, *antibiotics and vaccines* ② have allowed us to *vanquish* ③ entire classes of diseases. As a result, life expectancy in the U. S. jumped from about 47 years at the beginning of the century to 76 now.

[2] But 20th century medicine did little to increase the natural life-span of healthy humans. The next medical revolution will change that, because *genetic engineering* ④ has the potential to conquer cancer, grow new blood vessels in the heart, block the growth of blood vessels in tumors, create new organs from *stem cells* ⑤ and perhaps even reset the primeval genetic coding that causes cells to age.

[3] Our children may be able (I hope, I fear) to choose their kids' *traits* ⑥; to select their gender and eye color; perhaps to

tinker ⑦ with their IQs, personalities and athletic abilities. They could clone themselves, or one of their kids, or a *celebrity* ⑧ they admire, or maybe even us after we've died.

[4] In the 5 million years since we *hominids* ⑨ separated from apes, our DNA has evolved less than 2%. But the next century we'll be able to alter our DNA radically, encoding our visions and vanities while *concocting* ⑩ new life-forms. When Dr. Frankenstein made his monster, he wrestled with the moral issue of whether he should allow it to reproduce: "Had I the right, for my own benefit, to *inflict* ⑪ the curse upon everlasting generations?" Will such questions require us to develop new moral philosophies? Probably no. Instead, we'll reach again for a time-tested *moral notion* ⑫, one sometimes called the Golden Rule and which Immanuel Kant, the millennium's most *meticulous* ⑬ moralist, *gussied up* ⑭ into a categorical imperative: Do unto others as you would have them do unto you, treat each person as an individual rather than as a means to some end. Under this moral precept we should *recoil* ⑮ at human cloning, because it inevitably *entails* ⑯ using humans as means to other humans' ends—valuing them as copies of others we loved or as collections of body parts, not as individuals in their own right. We should also draw a line, however fuzzy, that would permit using genetic engineering to cure diseases and disabilities (*cystic fibrosis* ⑰, *muscular dystrophy* ⑱) but not to change the personal attributes that make someone an individual (IQ, physical appearance, gender and sexuality).

[5] The biotech age will also give us more reason to guard

our personal privacy. Aldous Huxley, in Brave New World, got it wrong: rather than centralizing power in the hands of the state, DNA technology has empowered individuals and families. But the state will have an important role, making sure that no one, including insurance companies, can look at our genetic data without our permission or use it to discriminate against us.

[6] Then we can get ready for the breakthrough that could come at the end of the next century and is comparable to mapping our genes: mapping the 10 billion or more *neurons*[19] of our brain. With that information we might someday be able to create artificial intelligences that think and experience consciousness in ways that are indistinguishable from a human brain. Eventually we might be able to *replicate*[20] our own minds in a machine, so that we could live on without the "wetware" of a biological brain and body. The 20th century's revolution in infotechnology will thereby merge with the 21st century's revolution in biotechnology.

[7] But this is science fiction. Let's turn the page now and get back to real science.

Notes:

①切断术；截肢术 ②抗生素和牛痘疫苗 ③征服 克服 抑制 ④基因工程 ⑤干细胞 ⑥特性 品质 ⑦调整 修补 ⑧名人 ⑨人科 ⑩调和,编造 ⑪使承受 处以刑罚 ⑫道德观念 ⑬仔细的 谨小慎微的 ⑭打扮得花枝招展 ⑮弹回,跳回,产生反作用 ⑯使……成为必要 ⑰囊纤维化 ⑱肌肉营养不良 ⑲神经元 ⑳复制,自我复制

生物技术的世纪

沃尔特·艾萨克森

[1] 本世纪前，医术主要包括应用截肢锯、吗啡以及一些像放血术那样有效的原始治疗手段。1918 年的流行感冒仅仅几个月就杀死了多达 2000 多万人，相当于第一次世界大战 4 年中死亡的人数。从那以后，抗生素和牛痘疫苗已经使我们能够征服各种疾病，结果，美国的人均寿命从本世纪初的 47 岁上升到了现在的 76 岁。

[2] 20 世纪的医术却几乎很难增加健康人的寿命，但是下一次医学革命却会改变这一切，因为基因工程在治疗癌症，使心脏长出新的血管,阻止肿瘤中血管的生长,用干细胞培植新器官,甚至重新编排引起细胞衰老的基因密码等方面,都有可被挖掘的潜力。

[3](我希望,同时我又担心)我们的孩子能够选择他们自己孩子的特征,挑选孩子的性别、眼睛的颜色,或许还可以调整孩子的智商，塑造他们的个性以及运动特质。他们可以克隆自己,或是克隆一个孩子、一个被崇拜的名人,或是在我们死后再克隆我们。

[4] 自从人和猿类动物分开后的 500 万年来，人类的 DNA 进化了不足 2%,但是在下个世纪,我们将从根本上改变我们的 DNA。在创造新的生命形式时，将我们的幻想和虚荣心译成密码。当弗兰肯斯坦博士制造他的怪物时，他为是否应该允许这个怪物有生殖能力的问题挣扎不已："为了我自己的利益,我有权让子孙后代来承受诅咒吗？"这样的问题是否

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会引起我们思考，从而发展新的伦理哲学呢？也许不能。相反，我们会再一次谈及一些经过时间论证的道德观念，有些人将这些道德观念称为金科玉律。伊曼努尔·康德是近千年来最为谨小慎微的道德伦理学家，他将这些道德观念当作需要绝对遵从的命令：你怎样对待别人，别人就会怎样对待你。尊重每一个人，而不要将他们视作达到某种目的的工具。在这样的道德戒律下，我们应该禁止克隆人类，因为人们将不可避免地将克隆人作为其他人达到目的的工具——我们会将克隆人当作是我们所爱的人的复制品，或是身体各个部位的组合，而不是作为拥有自己的权利的个体。我们应该画一条界线，尽管这条界线也许会模糊不清，那就是，我们应该允许使用基因工程来治疗疾病或是残疾（囊纤维化，肌肉营养不良），但是不允许用它来改变使人成为个体的个人属性（智商、外表、性别、性的特征）。

[5] 生物技术的时代也会为我们捍卫个人隐私，提供更多的理由。奥尔德斯·赫克斯利在《勇敢面对新世界》一书中说了这样一段错误的话：DNA 技术武装了个人以及家庭，而不是将权利集中到国家的手中。但是，实际情况是，国家将扮演一个重要的角色，它使我们确信，没有任何人，包括保险公司，可以在不经过我们允许的情况下查看我们的基因数据，或是用它来歧视我们。

[6] 那么，我们可以为在下个世纪末会做出的突破做好准备了，这个突破可以与我们绘制的基因图(绘制出 100 亿或是更多的脑神经元）相比。我们有朝一日能够用这样的信息创造出人工智能，这种人工智能可以用和人脑没有区别的方式有意识地去思考和体验。最终，我们将能够在机器里复制我们的大脑，这样我们就能够在一个没有生物大脑和身体的“湿件”的环境下继续生存。20 世纪的信息技术革命在此将的

21 世纪的生物技术的革命融合在一起。

[7]但这仍然还是科学幻想，让我们翻过这一页，还是回到现实的科学中来吧。

3. If You Think We Think Alike, Think Again

男女之别在于脑，作者通过生活的体验、生物科学和实验，验证得出男女的大脑有本质区别的结论。本文从不同方面加以探讨，读来饶有趣味。

[1] After 20 years of marriage, my husband still doesn't understand me. Why, he wants to know, am I always doing three things at once? How is it that I am never *at a loss for words?* ① And how can I recall the names of a couple we met on holiday years ago?

[2] Now I know what to tell him: it's my brain.

[3] Although there are obviously cultural reasons for our differences in emotions and behaviour, recent break-through research reveals that the root of many puzzling gender differences may lie in our heads. Men's and women's brains have much in common, but they are definitely not the same—in size, structure or sensitivities. Overall, a woman's brain like her body, is 10 to 15 per cent smaller than a man's, yet the regions *dedicated to* ② higher cognition such as language may be more densely *packed with* ③ neurons.

[4] According to researchers, here are the most important

ways women's brains differ from men's.

[5] "Whatever women do — even just wiggling their thumbs — their neuron activity is more greatly distributed throughout the brain," says psychiatrist and neurologist Dr Mark George.

[6] When a man puts his mind to work, neurons turn on in highly specific areas of the brain. When a woman does, her brain cells light up such a patch work that the scans look like a night view of *Las Vegas* ④.

[7] One possible though controversial explanation: *the corpus callosu* ⑤, the bridge of fibres running down the centre of the brain, is thicker in females, which may allow more "crosstalk" between the emotional, intuitive right hemisphere and the rational, just-the-facts left. As a result, the female brain may make connections that might not occur to a man. Some call this skill a form of emotional intelligence; others think of it as women's intuition.

[8] Yet, at least in some instances, men may be better able to focus intensely. This may explain why my husband can immerse himself in a book, or the newspaper while the phone rings and the dog barks.

A woman's brain responds more intensely to emotion

[9] When George scanned the brains of men and women as they recalled emotional experiences, he found the sexes *respond differently to emotions* ⑥, especially sadness. Though prompted by the same kinds of experiences, melancholy feelings activated neurons in an area eight times larger in women than in men. The way our brains react to sadness may, at least in theory, increase

vulnerability to depression, which is twice as common in women as in men.

[10] The female brain may also detect others' emotions more accurately. Neuropsychiatrist Dr Raquel Gur and her husband, psychologist Ruben Gur, did brain scans on volunteers who viewed photographs of actors depicting various emotions. Both sexes knew happiness when they saw it, but the men had a much harder time recognising sadness in women. "A woman's face had to be really sad for a man to see it," Ruben Gur says.

Women have a way with words

[11] Girls generally speak sooner and read faster. The reason may be that females use neural regions on both sides of the brain when they read, say Drs Sally and Bennett Shaywitz, *Yale University professors of paediatrics and neurology* ⑦. In contrast, males draw only on neural regions in *the left hemisphere* ⑧.

[12] As adults, women also tend to be more verbally adept. In tests women think of more words that start with the same letter, list more synonyms and come up with names for colours or shapes more quickly than men.

[13] Perhaps even more important the female brains dual-hemisphere language processing helps women who suffer stroke or brain injury recover more easily. "Because women activate a larger network of neurons than men when they speak or read," says George, "they're less vulnerable if part of the brain is damaged."

Women navigate differently from men

[14] On the road, women pay more attention to what they see, particularly to landmarks like the coffee shop on the corner

or the church across from the play ground. When retracing a route or giving directions, women rely on such landmarks, while men think in terms of direction and distance ("half a kilometre west, then north for two kilometres").

[15] "I suspect men are born with some *biological component* ⑨ that gives them an edge in spatial tasks," says science writer Deborah Blum, who notes that males consistently score higher in exercises such as mentally rotating an object in three dimensions. It may explain why my husband can park a van in a space the size of a postage stamp.

Facts of Life

[16] Buffoonery Ninety-five per cent of members The Three Stooges Fan Club are men.

[17] "The Stooges are not good-looking, have no steady jobs and have bad table manners—why would any woman like them?" responds club president Gary Lassin.

[18] **Exercise.** According to a New York survey, men work out primarily to improve appearance, while for women the biggest reason is health. It is not surprising, then, that men look in the mirror more often during their workouts.

[19] **Gambling.** Enter any *casino* ⑩ and you'll see the women at the slot and videopoker machines, while their husbands occupy the blackjack and craps tables. "Men and women tend to gamble for different reasons," says psychologist Linda Chamberlain. "For men it's the competition, the action. For women it's more a form of escape."

[20] **Romance.** Despite any gender gap, it would seem that men and women are fated to be together. In America, over

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