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Human Cloning: Myths, Medical Benefits and Constitutional Rights

transcribed remarks of
MARK D. EIBERT*

Good afternoon, everyone. I'm very pleased and honored to be here today. I'd like to start by thanking Nicole Nemirofsky, John Minton and the other members of the *Hastings Law Journal*, not only for having the wisdom to invite me, but also for the incredible amount of hard work that they put into making this symposium possible.

What I'm going to do today is the following: I'm going to spend a few minutes talking about what cloning is *not*, because you cannot have a rational discussion about cloning without understanding that. I'll then mention, very briefly, what the primary medical use of cloning is going to be. And finally, I'm going to spend most of my time on cloning and the Constitution, and the law generally—past, present and future.

If you've been going to the movies, reading popular fiction or watching television for the last thirty years or so, you have learned a huge amount about human cloning. The problem is, just about everything you learned is scientifically false. In the movie *The Boys From Brazil* for example, you learned (or thought you learned) that an evil cloning genius like Dr. Joseph Mengele, played by Gregory Peck, could use cloning to replicate Adolph Hitler—and the Third Reich along with him, unless the good guys could stop him in time.

In less serious movies like *Multiplicity* with Michael Keaton and Andie McDowell, you learned (or thought you learned) that cloning was a way of copying people and that the clone would emerge from his "vat" fully grown and with all the memories, experiences and understanding of the original person. And taking that analogy one step further, you learned (or thought you learned) that if you made a clone of a clone, it would be like making a copy of a copy, with each successive copy getting fuzzier and less distinct, until you ended up

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with a fuzzy copy like Michael Keaton number four, who was a gibbering idiot.

The problem with these movies and other cloning fiction is that the whole idea of cloning as a way to copy people is scientifically false. Even the National Bioethics Advisory Commission admits that common public views of cloning and the fears they engender are “based on gross misunderstandings of human biology and psychology.”¹ Let me explain just a few of the reasons why.

It’s true that cloning will produce children who are almost, though not quite, genetic twins of their parents. But we already have one and a half million genetic twins living in the United States. We call them “identical twins,” but scientifically speaking, it would be *more* accurate to call them “naturally occurring clones.” This, for example, is a slide of some *real* human clones, twin babies in their crib posing no threat to anyone.

We know a lot about naturally occurring clones, thanks to Professor Segal and other twin studies researchers. And the one thing that we know for sure after more than a century of scientific and social scientific study is that so-called identical twins are *not* identical.

Physically, for example, naturally occurring clones have different fingerprints, and the organic structures of their brains are different as well, among many other differences I could name.

Intellectually, naturally occurring clones have different IQs. A recent analysis of 212 separate and independent studies of twin IQs concluded that only about 48% of your IQ is determined by your genes.

And natural clones also have different personalities. Anyone who has ever known twins as I have—I’m both the son of a twin and the father of twins—knows that each member of the pair is a unique and special individual with their own personality. That’s why the law and society and everyone who knows them, treats identical twins as unique individuals.

Children conceived with the aid of cloning will have all the same differences as so-called identical twins—plus several more.

There will be small genetic differences. Although most of the DNA will come from the DNA donor, a small amount of mitochondrial DNA will come from the egg that’s used in the procedure. It doesn’t affect any major characteristics, but it is enough that these children will not really be identical twins.

There are going to be gestational differences too because these children will grow in a different uterus; and uterine environment plays a tremendous role in all sorts of different aspects of fetal

1. NAT’L BIOETHICS ADVISORY COMM’N, ETHICAL AND POLICY ISSUES IN RESEARCH INVOLVING HUMAN PARTICIPANTS (2001).

development. That's why doctors tell you not to smoke or drink during pregnancy.

Most importantly, these children are going to be born to different parents. They will have different siblings and different friends. They're going to attend different schools. And they're going to be raised in an entirely different culture. When I was a kid, after school I would sit down in front of a black and white TV and watch "Leave it to Beaver" or "Gilligan's Island." But these children are just as likely to go up to their room after school and surf the World Wide Web. In other words, the *nurture* part of the "nature versus nurture" equation will be *totally* different.

By now you're probably beginning to realize why Dr. Segal, in her book *Entwined Lives: Twins and What They Tell Us About Human Behavior*, concludes that "identical twins are clones, but clones are not identical twins." They're just too different. But even that's not all.

I have a beautiful but elderly calico cat named Tribble. If I used cloning to give Tribble the kitten she never had, what would it look like? Interestingly, it would *not* look like Tribble. Tribble's calico coat has patches and splotches of different colored fur—black and orange and white. Where Tribble's back is covered mostly with black fur with a few spots of orange, her cloned kitten might have a mostly orange back with a few spots of black. Where Tribble has a face that is half black and half orange, her cloned kitten's face might be all black or all orange, or some other pattern or combination of colors.

The reason is a phenomenon called "random inactivation of the X chromosome," which works like this. Chromosomes are structures that carry genes. If you are a male mammal, say a male law professor or a tomcat, you have one X chromosome and one Y chromosome—that's what makes you a man. But if you are a female law professor or cat, you have two X chromosomes. You get one from your mother and the other from your father, which means that all the genes on those X chromosomes are different. What happens when you have two different X chromosomes—two different blueprints for the same set of genetic characteristics—in the same mammal? Which one gets used? Well, nature has a very fair way of deciding that—it decides it *randomly*. In every cell in Tribble's body, one of her X chromosomes is switched off—and whether the one from her mother or the one from her father gets switched off is determined *randomly*.

What cells are on the X chromosome? Well, the X chromosome of a cat has about 5,000 genes—among them, the genes that determine *fur color*. The reason that the patches and splotches of different colored fur on a calico's coat looks random is because they *are* random. And that means that you could clone Tribble a hundred times, and what you would get is a hundred adorable calico kittens,

not one of whom looks exactly like Tribble, and not one of whom looks exactly like any of the other Tribble clones. In other words, *every clone is different*—even with respect to thousands of genetically determined characteristics. The same would be true of humans conceived through cloning. And that's not even mentioning the random interaction among different genes, and between genes and the environment, which will also make every human conceived through cloning genetically unique.

My final example is Chang and Eng Bunker, the *original* Siamese Twins—they were joined at the chest and had only one liver between them. Today we would call them “conjoined twins.” They came from Siam—the country we now call Thailand—in the nineteenth century. They were lured to America by their employer, Mr. P.T. Barnum, who promised them a career in show business.

Chang and Eng were as much alike on *both* nature *and* nurture as any two humans could be. They were “identical” twins, so both their nuclear and their mitochondrial DNA was identical. They gestated in the same womb at the same time, were born at the same moment, were raised in the same family and educated at the same schools. Indeed, they lived for 63 years joined at the chest. They had as close to the same *experiences* as any two people could have. When they married, they even married sisters.

In spite of all that, Chang and Eng had radically different personalities. Chang was an alcoholic, a moody and introverted person who was said to be abusive to people around him. Eng was a lifelong teetotaler, an optimist who loved people, children and parties. Everyone who could stand to be around Chang long enough to get to know Eng loved Eng.

The point I'm trying to make is this:

Cloning creates ordinary children who grow up to be unique individuals, just like everyone else. That is a scientific fact. This is the most important thing that I have to tell you today, because once you understand this scientific fact, most of the arguments against human cloning disappear—including almost all of the so-called ethical arguments. They evaporate like fog when the sun comes up. These children are not going to be harmed, restricted or burdened by the manner in which they are conceived. They are not going to be freaks leading second-hand lives. They are going to be ordinary people and unique individuals with as much of an open future as anybody has. And there is no *scientifically valid* reason why anyone should consider them or treat them as mere copies, or why these children should think of themselves that way. The truth is, *you cannot “copy” a human*, not even with cloning.

So, now that we know cloning is just another way to produce ordinary children, we're ready to ask the next question: who in his

right mind would *want* to be “cloned”? Once you understand that cloning has nothing to do with copying people, you can eliminate the megalomaniacs, the ruthless employers, the dictators, the narcissists, and the people who want to bring back Elvis or Hitler or Christ, because cloning has nothing to offer them. It can't do what they want.

The only thing that cloning is really good for is building families—families that are composed of genetically related but unique individuals, a lot like the families in which most of us grew up. And the first group of people who are interested in having ordinary children through cloning is people who are hopelessly infertile.

About ten to fifteen percent of the population of the United States is infertile. That's about 12 million Americans of child-bearing age.

Medically, infertility is classified as a “disease” by every relevant medical society. Legally, infertility is a disability—the kind that entitles you to protection from discrimination under the Americans with Disabilities Act, according to both the U.S. Supreme Court and the Equal Employment Opportunity Commission. Psychologically, infertility is a devastating condition—it frustrates one of the most basic and most powerful biological drives that every human has. One analogy that you hear over and over again from infertile people is that being diagnosed as incurably infertile is not like having your child die, it's like having *all* your children die, and all of your grandchildren too—all at the same time. That's why infertile people are so motivated, why they spend year after year after year undergoing painful and expensive treatments that in most states are not covered by health insurance, and that have very low rates of success.

Now most people know that IVF is one way that infertility is treated. The first IVF baby, Louise Brown, was born in 1978, and she recently graduated from college. But you might not know that IVF doesn't work for everyone. If you're a 21 year-old woman with blocked fallopian tubes, IVF is a miracle cure. You take the egg out above the blockage, mix it with sperm in a dish, put it back in below the blockage, and you have a good chance of having a baby. But for people who cannot produce viable eggs or viable sperm, IVF has nothing to offer them. The only way to get a good embryo out of the dish is to put good ingredients into the dish in the first place. There are millions of Americans who cannot produce viable eggs and viable sperm—that's why they're infertile.

What makes cloning so revolutionary as an infertility treatment is that it is the only treatment that does not require the patients to produce viable eggs or viable sperm. If they can spare a few cells

scraped from the inside of their cheek, they too can have biologically related children and families, just like healthy people do.

I want to add something to what one of the other speakers said. He talked about what he considers different “alternatives” that infertile people can use instead of cloning to have children—like asking their fertile spouse to produce a child with a third party through sperm or egg donation. The speaker even suggested the infertile person’s brother or sister be used, assuming they had one, assuming they were young enough and healthy enough to do it, and further assuming that they would be willing to do such a bizarre thing. The problem with his suggestion is that infertile people *are not interested* in having their fertile spouse have a child with someone else—whether it be a stranger or with their brother or sister—and then spending the rest of their lives raising somebody else’s child. Infertile people want their *own* children, just like healthy people do, and for exactly the same reasons. This is a fundamental biological drive, and as we’ll discuss later, a constitutional right.

I’d like to take a moment to give you a little bit of the history of IVF, because I really believe George Santayana’s observation that those who do not remember history are doomed to repeat it.

In the 1970s, the scientists who later produced Louise Brown published a paper announcing that after thousands of tries, they had finally succeeded in getting a human egg to fertilize in a petri dish. The nearly universal reaction to the news was condemnation. People thought that making babies in test tubes was scary and repulsive, and it reminded them of the Frankenstein story. And there was an immediate groundswell of public sentiment to outlaw IVF.

All the same arguments that are now made against cloning were made against IVF. It would produce deformed children with birth defects. It would produce psychological harm to the children when they found out that they weren’t “real” babies, they were just “test tube babies.” The structure of the American family would be destroyed. God would be offended and wrathful. And so on. The reason that the arguments sound familiar to us in the cloning debate is that they were being made by many of the *same individuals*. The leaders of the current anti-cloning movement *are the very same people* who argued that IVF should be outlawed 20 years ago. And they almost succeeded. Public opinion polls in the 1970s showed that over 85% of the American public thought IVF should be outlawed—which is about the same percentage as today tell pollsters they think human cloning should be outlawed. If you know the history of IVF, the current cloning debate is just what Yogi Berra called “*déjà vu* all over again.”

So what happened? How did we go from a world where 85% of the public thought IVF should be a crime to a world where it is not

only legal, but a \$2 billion a year business? What happened is that in 1978, the first “test tube baby,” Louise Brown, was born in England, and became the focal point of a media frenzy not unlike the one that accompanied the O. J. Simpson trial. Louise Brown’s chubby little face graced the front page of newspapers all over the world for awhile. And people looked at those photos and said “ten fingers, ten toes, she cries and wets her diapers, Mom’s grinning from ear to ear—that’s just an ordinary baby. What’s so terrible about that?” And the popular sentiment to outlaw IVF melted away.

It is now 24 years later. The public accepts IVF, which has brought children, families and happiness to more than a million disabled people worldwide. And we now know that *all* of the arguments against IVF were wrong. *The same thing is going to happen with cloning*—and pretty soon, too.

Now let’s turn to the law. What I as a trial lawyer find most interesting are the profound constitutional and legal issues that anti-cloning laws raise. Can the government really ban cloning? I am going to suggest that under current constitutional principles, the answer is “no.” There are a lot of reasons, having to do with reproductive freedom, scientific freedom, religious freedom, the constitutional right to travel, the limitations of federal authority under the Commerce Clause in the case of the federal government, and so on. Today I’m only going to have time to talk very briefly about the first of those issues—reproductive freedom.

Let’s start with a few of the *highlights* of the legal arguments of infertile people, for whom cloning will soon be *the only way possible* to have biologically related children and families.

“Reproductive freedom” means a lot more than just the right to have an abortion. The Supreme Court has ruled many times that every American has a constitutional right to *have* children and to make all sorts of private reproductive decisions without government interference. That right stems mostly from the constitutional right to privacy, because reproductive decisions are some of the most private, most personal, and most life changing decisions that any individual can make. The statement that is quoted most often in reproductive freedom cases originally comes from a Supreme Court case about contraception, but is quoted in practically every reproductive freedom case in the last 30 years. This is where the Supreme Court said that “if the right of privacy means anything, it is the right of the individual, married or single, to be free from unwarranted governmental intrusion into matters so fundamentally affecting a person as the decision whether to bear or beget a child.”²

2. Eisenstadt v. Baird, 405 U.S. 438 (1971).

Now some people argue, "Oh, but that only applies to sex. Disabled people who need medical help to achieve pregnancy don't have the same reproductive rights as healthy people do." There are only four or five cases on that question to date, but so far all of them say, "Yes they do."

In 1990, for example, the state of Illinois tried to outlaw a variety of reproductive tests and techniques that were related to IVF and could be used in treating infertility. The district court, later affirmed on appeal, struck that law down as unconstitutional—after apparently applying strict scrutiny, I might add. The court reasoned that "it takes no great leap of logic to see that within the cluster of constitutionally protected choices that include the right to have access to contraceptives, there must be included the right to submit to a medical procedure that may *bring about*, rather than *prevent* pregnancy."³ So it looks like you have a constitutional right to high-tech baby making, at least if you're infertile, and a number of state appellate courts have reached the same conclusion.

Some people argue that these and other cases only protect sexual reproduction. But when you read these cases, it becomes immediately clear that what is protected is not the means, it's the end. What is protected—as described in a large number of Supreme Court and other federal cases—is variously described as the "right to procreate," the "right to conceive children," the "right to bear and beget children," the "right to have children," the "right to have offspring," the "right to initiate a pregnancy," the "right to found families," and so on. What is constitutionally protected is *the right to a biologically related family*. And that is what cloning, and only cloning, can accomplish for several million infertile Americans. That is what the proponents of anti-cloning laws want to steal from disabled people—their families. And contrary to an argument that you heard earlier, the right to a family is not a "new" right. It is a right that predated the Constitution and has been part of our American tradition forever.

But the right to privacy isn't the only constitutional principle that protects people from government intrusion into their private reproductive decisions. There is also equal protection—the principle that some people cannot be deprived of their basic rights, where others are not, unless there is a very, very good reason. In 1942, for example, the state of Oklahoma passed a law that required the sterilization of criminals following their third conviction of a crime of moral turpitude. This was a "eugenics" law. It was intended to prevent convicts from passing down their criminal genes to their

3. *Lifchez v. Hartigan*, 735 F. Supp. 1361 (N.D. Ill. 1990), *aff'd*, 914 F.2d 260 (7th Cir. 1990), *cert. denied*, 111 S.Ct. 787 (1991).

children. The plaintiff in that case was a man who had been convicted of theft and of two separate armed robberies with a gun. When the state of Oklahoma attempted to sterilize him, he claimed that his 14th Amendment equal protection rights were violated. The Supreme Court agreed, reasoning that “procreation is one of the fundamental rights of man” and that “the sterilized convict is forever deprived of a basic liberty.”⁴ And because the law affected a fundamental right, which the Court described as “the right to have offspring,” the Court ruled that strict scrutiny applied. The state of Oklahoma couldn’t carry its burden of explaining why some people should be sterilized but not others, so the Supreme Court struck the law down.

By the way, although I understand that some of the earlier speakers believe that the burden of proof should be on the person whose right to reproduce is eliminated, that is most certainly *not* the law. Such a rule would require the reversal of two hundred years of constitutional law. The burden is *always* on the government.

Skinner is one of my favorite reproductive cases for a couple of reasons. First, it was one of the first cases to clearly and unambiguously recognize that procreation, not just abortion, is a fundamental constitutional right. And second, *Skinner* means that anti-cloning laws must be reviewed under a strict scrutiny standard. And that’s appropriate because, from the point of view of an infertile man or woman, anti-cloning laws are the practical equivalent of forced sterilization. If you have trouble understanding that, just consider the kind of legal landscape that anti-cloning laws create. They create a world in which healthy fertile people still have the constitutional right to procreate freely, as often or as seldom as they want, and for any reason or for no reason at all. Legally disabled infertile people on the other hand, are forever denied the fundamental right to procreate in *the only way possible* for them. Contrary to an earlier speaker’s argument, this is not a question of banning somebody’s *preferred* method of procreation. It is a question of banning the *only* method millions of disabled people have. That is *invidious discrimination* against the disabled.

As the Supreme Court said in *Skinner*, “when the law lays an unequal hand on those who have committed intrinsically the same quality of offense and sterilizes one and not the other, it has made as invidious a discrimination as if it had selected a particular race or nationality for oppressive treatment.”⁵ That’s pretty strong language in defense of convicted criminals. The only difference here is that infertile people haven’t committed *any* offense. I am really looking forward to watching the lawyers who have to defend anti-cloning laws

4. *Skinner v. Oklahoma*, 316 U.S. 535 (1942).

5. *Id.* at 541.

explain to a court, under a strict scrutiny standard, why legally disabled people should have less of a right to have children and families than convicted criminals have. I think the Scopes Monkey Trial of the 21st century will be quite interesting.

You heard an argument this morning that the *Skinner* case and some other cases that I mentioned were “really” about—or really *should* have been about—relationships, women’s rights, bodily integrity and so on. You’ve even heard one speaker argue that although *Roe v. Wade*⁶ doesn’t actually say what he wants it to say, his views were really “in the background” of that case. The trouble is that the reproductive freedom cases don’t say any of the things the prior speakers argued they “should” say. They are not about “relationships.” (Although infertile people have the same kinds of relationships that fertile people do, and having and raising biologically related children serves the same functions in those relationships as it does for healthy people). These cases are about due process, equal protection, the right to privacy, the right to make your own reproductive decisions without government interference, and the right to have a biologically related family. Academics always write articles about what courts *should have* ruled, and that’s fine—that’s their job. But as a trial lawyer, I have to take the law as it is. Judges must do the same.

As for equality, anti-cloning laws are about equality too. They are about the equality of disabled people and healthy people, with respect to their most fundamental constitutional and human rights.

Now it’s time for another historical footnote, this time legal history—the history of eugenics laws. The eugenics law that the Supreme Court struck down in *Skinner* was not unusual. In the early part of the 20th century, thirty-six American states had eugenics laws—laws that required the forced sterilization of people who were thought to be at risk of producing defective children. So using the best genetic science of their day to decide who was likely to have an imperfect child, thirty-six states forcibly sterilized people who were mentally retarded, people who were mentally ill, people with dreaded diseases such as leprosy, convicted criminals, and so on.

When people hear the word “eugenics” today, they usually think about Adolph Hitler waving his arms and ranting about creating a master race. But it was not nuts with arguments like that who convinced thirty-six state legislatures to begin campaigns to forcibly sterilize some of their constituents. Their strongest argument was that eugenics laws were necessary to protect the safety of children. That’s right—the argument was that if a child was *at risk* of being born defective, the State could decide—in place of the parents—that this

6. 410 U.S. 113 (1973).

child was better off never being born at all. It wasn't until the Vietnam War that this type of logic became famous when an American Army officer looked straight into a television camera and explained to the folks back home that he "had to destroy the village in order to save it."

The most successful (if you want to call it that) American eugenics law was California's. By the time the Nazis came to power in 1933, California state officials had rendered more than 30,000 sick and disabled Californians physically unable to have children and families. So when the Nazis came to power and they wanted to convince their public and their legislature that eugenics laws were good, effective and democratic, they sang the praises of the California law and they modeled the Nazi eugenics law, in part, on the one that came out of Sacramento. Thanks to that, over the next few years, Americans got a pretty graphic description of what can happen when politicians are given the power to decide who is perfect enough or politically popular enough to be allowed to be born. And attitudes towards eugenics started to change. By 1942 the Supreme Court, which had previously upheld a eugenics law, was now striking them down. By the 1960s, virtually all of America's eugenics laws had been either struck down as unconstitutional, repealed, or fallen into disuse. At least in America, governments got out of the business of regulating the reproduction of their citizens.

Until now. Once again, thanks to public hysteria over cloning, California and four other states have singled out a group of legally disabled people and forbidden them by law from having children and families. Once again, the state is deciding who is likely to be perfect enough, well adjusted enough or politically popular enough to be allowed to be born. Once again, five U.S. states have official "Reproductive Police" who are charged with preventing and punishing unauthorized breeding by their citizens. In an Orwellian touch reminiscent of the new speak and double think of the novel *1984*, the Reproductive Police here in California are known as the Department of "Health Services." Once again, politicians are enjoying their chance to play God. And once again, eugenics laws are making a comeback in the United States. That's what anti-cloning laws are—eugenics laws.

This is not unprecedented, but it is radical. In fact, it is the most radical shift in power from the individual to the government that has happened in my lifetime. I'm not surprised that the politicians want to seize control of reproduction and science—areas that have been largely outside their control. What does surprise me is that when demagogues exploit public fear to seize power and ask the people to give up their constitutional rights, they usually have something real and scary to work with. A foreign invader, a terrorist attack, civil

disorder, a natural disaster. Here, demagogues are asking you to give up your constitutional right to make your own reproductive decisions in exchange for nothing more than a promise to protect you from twins.

Before we move on to talking about the future, I'd like to address two other arguments that you heard this morning. First, you heard people opine that the right to choose abortion that was established by *Roe v. Wade* does not necessarily imply a right to reproduce, either through cloning or any other way. *Roe*, as you will recall, is the case that established the principle that every woman has a constitutional right to make her own reproductive decisions, even if the overwhelming majority of the electorate and the legislature of her state believes that her choice is as ethical, and as harmless to children, as, say, infanticide.⁷ That is the belief that was the basis for all the state anti-abortion laws that *Roe* swept away, and about half of all Americans still hold that view today—far more than half in some states.

In order to uphold an anti-cloning law, a court would have to undermine that basic principle—essentially say that every woman has a right to choose, as long as she chooses abortion. One of the most common questions infertile people ask me is, “how come healthy people have a constitutional right to *abort* their children, but I can't have just one to raise and love?”

More specifically, a court that wanted to uphold an anti-cloning law would also have to undermine one of the pillars that supports *Roe*—the holding that protecting the safety of unborn children is *not* a compelling state interest, at least not until the end of the first trimester of pregnancy. I'm no biology whiz, but I'm pretty sure that the moment of conception occurs sometime *before* the end of the first trimester. How could a court hold that the safety of unborn children is *not* a compelling state interest when it tries to protect that potential life from someone who intends to *kill it*, and has a 100% chance of success, but that it *is* a compelling state interest when the state tries to “protect” it from people who are doing everything humanly possible to save its life and ensure that it is born normal and healthy? Does the state that has no compelling interest in preventing people from *intentionally* inducing a miscarriage suddenly have a compelling interest in preventing people from assuming a higher than average *risk* of miscarriage? The answer is, either protecting the safety of unborn children is a compelling state interest or it isn't, and if it is then *Roe v. Wade* is on very, very shaky ground—it might even have to be overruled. It would also give the government the right to outlaw all high-risk pregnancies—and there are literally millions of

7. See *Id.*

people for whom pregnancy through sexual intercourse poses a greater danger of producing dead or defective children than cloning does (more about that later).

The supporters of abortion rights need to ask themselves whether preventing the birth of a few more twins is really worth undermining *Roe*? Should women be allowed to control their own bodies, or should they only be allowed to control their own bodies when their decisions are politically correct? And what happens when the arbiters of political correctness change?

You also heard the argument that cloning can be outlawed because it's not safe enough yet. The first thing I will say is that the argument relies on a lot of myths.

For example, you were told that Dolly was the result of 277 "tries," implying that the other "tries" resulted in miscarriages and dead or deformed lambs. The truth is that the Dolly adult somatic cell cloning experiment started with 277 *unfertilized eggs*, only 29 embryos resulted from nuclear transfer, the 29 embryos were transferred to the uteruses of 13 sheep, and only one of the 13 sheep became pregnant—with Dolly. There were *no* miscarriages, *no* dead lambs, and *no* deformed lambs in that experiment. The safety record of that particular experiment was 100% perfect.⁸

And if you judge the success rate of the Dolly experiment in the same way that IVF clinics and federal regulators judge the success of fertility treatments—the ratio of live births to uterine transfers—you find that the success rate—one birth from thirteen tries—is *better* than the success rate for IVF during the first 12 years of worldwide clinical practice. Of course, the success rates have improved substantially since then, with at least two labs getting a better success rate with cloning than the best fertility clinics get with IVF today.⁹

You also heard that cloned animals have shortened structures called "telomeres," which means that they might grow old much faster than other animals. That theory was put forth by Ian Wilmut in a letter to the editor in 1998, and it got a lot of press. But two different groups of scientists subsequently tested that theory in experiments with mice and cows, and both found that cloned animals have telomeres that are the same length or slightly longer than those of other animals, and thereby conclusively disproved that theory.¹⁰

You also heard that cloned animals are often born severely deformed, which makes you think of sheep with two heads or six legs

8. *Viable Offspring Derived from Fetal and Adult Mammalian Cells*, 385 NATURE 810 (1997).

9. *Eight Calves Cloned from Somatic Cells of a Single Adult*, 282 SCI. 2095 (1998).

10. *Extension of Cell Lifespan and Telomere Length in Animals Cloned from Senescent Somatic Cells*, 288 SCI. 665 (2000).

or something. But that has never happened. Nature weeds out embryos that are that severely defective at a very early stage—which is why three out of every four embryos produced through sexual intercourse dies before birth, usually before the woman even knows she is pregnant. What “deformed” means in the context of cloning is mostly a condition called Large Offspring Syndrome (LOS), in which the fetus grows unusually large, and the enlarged animals sometimes have subtle organ defects—defective hearts, lungs, livers, and so on.

But the evidence is overwhelming that LOS can't happen in humans. That's based in part on decades of IVF with humans, cows and sheep—cows and sheep frequently get LOS as a result of IVF, whether the embryos are produced through cloning or not—and humans never get it. Why that's so was discovered last August, when researchers at Duke University found that humans and other primates have a second functioning copy of a certain gene that protects against LOS, something that cows and sheep don't have.¹¹ And even if it unexpectedly turned out to be a problem with human cloning, scientists have already developed a preimplantation genetic diagnosis test that is able to weed out LOS embryos. By the way, LOS and environmental factors are responsible for about two thirds of all bad outcomes with animal cloning—meaning cloning would be much safer with humans than with animals.

You've also heard that cloned animals might be normal at birth but develop unexpected problems later in life. An interesting theory, but it was recently debunked by a mega-study of cloned adult animals, which proved that they are doing just fine.¹² And in January 2002, an experiment reported in the scientific journal *Science* also revealed that the experiment that the theory was based on was faulty.¹³ The theory was based on an experiment that used less stable embryonic stem cells to produce animals with incomplete imprinting. It turns out that when adult somatic cells—the only kind of cells that would ever be used in human reproductive cloning—were used, there were no imprinting problems.

So much of what you have heard about cloning's “safety” is either scientifically wrong, or unsupported by scientific evidence. Certainly it's grossly exaggerated and misleading.

But even if it were true, safety is simply not the real issue with cloning. It never has been. How do I know? First, because every day, hundreds of thousands of Americans make reproductive and medical treatment decisions that pose serious and often

11. *Divergent Evolution in M6P/IGF2R Imprinting from the Jurassic to the Quaternary*, 10 HUM. MOLECULAR GENETICS 1721 (2001).

12. *Cloned Cattle Can Be Healthy and Normal*, 294 SCI. 1893 (2001).

13. *Faithful Expression of Imprinted Genes in Cloned Mice*, 295 SCI. 297 (2002).

overwhelming risks of causing miscarriages and dead or defective children—and nobody bats an eye.

You can start with people for whom sexual reproduction is inherently more dangerous than cloning. For example, fertility drugs are legal, even though for decades they have been causing high order multiple births and related miscarriages, mental retardation, and birth defects. There's no law against older women having children, either through sex or through IVF, even though they are at much greater risk of having babies with Down Syndrome. Woman and men who are known carriers of serious genetic diseases and defects like Tay-Sachs disease, sickle cell anemia, hemophilia and so on, are legally allowed to have children even though they have a 25% risk of producing seriously or even fatally ill babies. That's a *much* higher risk than cloning poses even at its present state of development. Women with HIV and even AIDS are legally allowed to risk having an AIDS baby in an effort to have a healthy one. And of course the greatest risk possible to the safety of an unborn child—abortion—is a constitutional right.

If you make a list of all the perfectly legal reproductive decisions that people make every day that pose a risk of producing a dead or seriously defective child, and rank them by how risky they are, cloning isn't even in the top ten. If you add non-reproductive medical treatment decisions—like choosing to undergo chemotherapy for cancer while pregnant—cloning isn't even in the top 50. And if you add *all* the choices people regularly and legally make, cloning isn't even in the top 100. If the legislature really wanted to prevent miscarriages and the birth of defective babies, they would have outlawed smoking cigarettes and drinking vodka during pregnancy long ago.

Second, there are thousands of experimental medical treatments for everything from cancer to diabetes to myopia, that are currently in animal trials and not *yet* safe for human use. Animals used in these medical experiments die and suffer other “bad outcomes” all the time. But nobody proposes to *outlaw* these experimental treatments, the way they did with cloning—the experimental treatment for infertility. When the California legislature outlawed cloning, it treated it differently, and with much greater hostility, than it treats *any* other experimental medical treatment. Including stem cell treatments, which are at the same stage of safety as cloning—indeed most of the “bad outcomes” cited in support of laws against reproductive cloning actually came out of biotech industry experiments—but the politicians decided to keep stem cell treatments legal anyway.

Third, if safety were the real issue, the politicians would be pouring public funds into cloning research to make it safe as quickly

as possible. But those who cry the loudest about safety have had those public funds for safety research cut off—the public funds that finance over 90% of basic scientific research.

And it doesn't stop there. By outlawing the *goal* of the research whether it is safe or not, by outlawing the human clinical trials needed to ensure and prove safety, by vesting the Reproductive Police with draconian powers to punish anyone that may have "gone too far," and by otherwise treating the technology with severe and open hostility, the legislature has done everything in its power to ensure that cloning is *never* made safe for infertile people. One of the primary purposes and effects of anti-cloning laws is to *chill research* and block every effort to make cloning safe.

In every case and in every way, people who claim that they want to outlaw cloning because it is not *yet* safe enough for clinical use do the exact opposite of what concern for safety logically requires. How can we reconcile this stark contradiction? There's only one way. In the mouths of people who oppose cloning, the word "safety" is what lawyers call a *pretext*—meaning "a false or weak reason or motive advanced to hide the actual or strong reason or motive."¹⁴

Anti-cloning laws are *not* about protecting anyone's safety. Especially not the safety of the infertile population or their unborn children—that group doesn't want any "protection," it just wants the government to leave them alone.

So what does the future hold for human cloning? Well, sometime pretty soon a child conceived through cloning will appear on the front pages of all the newspapers in the world. (And by the way, cloning *will* be safe soon—reasonable safety is not that far away at all.) And when that picture appears, a lot of ignorant people are going to raise a new hue and cry to outlaw cloning. But there will be several hundred million infertile people across the world who are going to see those same pictures and they are going to say across the breakfast table to their spouse, "Look honey, here's a baby that they got without even needing sperm, or without even needing eggs." Within thirty days, there will be a cloning clinic in California. Within six months there will be a dozen. Legal or illegal, it doesn't matter—it will be the same either way.

I know this for three reasons. First, because I get e-mails, phone calls and letters from infertile people almost every day asking where they can go to participate in clinical trials of cloning. Most of them assume, often erroneously, that cloning is illegal in their jurisdiction, but they want to find an underground clinic that will do it for them anyway. There are no underground clinics yet, at least not that I know of, but given the rapid pace of scientific improvement in cloning

14. BLACK'S LAW DICTIONARY 1206 (7th ed. 1999).

techniques it won't be long before there are. When motherhood is outlawed, mothers simply choose to become outlaws.

Second, lots of infertile people already have the skills, knowledge, resources and so on, needed to making cloning a reality. There are thousands of infertile biotech executives, infertile physicians, infertile scientists, infertile animal cloners and so on, who really don't need any help to do it. That is the trouble with a minority that constitutes 15% of the population and looks just like everyone else. They know everything that everyone else knows. Once science discovers something, it is there for everyone to use. Anyone who thinks that if we just word the statute cleverly enough or make the penalties vicious enough we can have a world full of cloned human hearts and cloned human bladders for organ transplants, and cloned human embryos for stem cell research, but *not* cloned human beings, is very naive.

Third, I know people will not obey anti-cloning laws because I remember history. This is not the first time that politicians have passed laws against human nature. Let's take an example—abortion. When I started high school, abortion was a crime. The penalty in my state was twenty years in prison, for both the doctor and the patient. But when I graduated from high school four years later, abortion was a constitutional right. Although the political process brought in a few states, most states made the leap kicking and screaming on a single day when the Supreme Court decided *Roe v. Wade*.

According to the reproductive freedom project of the ACLU, citing historical studies, between 400,000 and 800,000 *illegal* abortions were performed in the United States each year—year after year—under the abortion-as-crime model. That's the number of Americans who decided that when it came to their own private reproductive decisions, they were just going to *break* the law, *and* who were able to find health care providers who would help them do it. And contrary to a lot of the political rhetoric, the great majority of illegal abortions were performed by physicians.

But that's only half the story. Again according to the ACLU's Reproductive Freedom Project, when abortion was a crime, illegal abortion clinics produced thousands of maternal deaths each year. But once abortion became a constitutional right, that number dropped to practically nothing. Some of that was due to improvements in medical care, but most of it was simply the difference between legal, regulated medical care and underground medical care. In jurisdictions where cloning is illegal, infertile men and women will simply be forced to go to underground clinics. They'll have to go to the Raelians, the Richard Seeds and all the other colorful people that you heard about this morning, rather than to the IVF clinics at Stanford or UCSF. If that happens, the anti-

cloning laws themselves will be responsible for thousands of dead and deformed children. One of the main reasons that I am pro-choice on cloning is that unlike the politicians, I *really* care about the safety of infertile people's children, and anti-cloning laws are the biggest threat to the safety of children since thalidomide.

Similarly, people argued earlier today that cloning has to be outlawed because any children conceived through that procedure would be psychologically harmed by knowing that they are "clones." Of course, that argument is based on a scientific fallacy—the false idea that children conceived through cloning will simply be copies of other people. Since the scientific truth is just the opposite, that argument is specious.

But there *is* a risk of psychological harm to children here, a risk that comes from *anti-cloning laws*. No matter what the law says, children will inevitably be conceived through cloning and, in states where cloning is illegal, those children will live their lives with an unprecedented stigma. I'm even tempted to call it a "badge of slavery." Sooner or later, these children will learn that the state used all of the coercion, threats and brute force at its command to prevent them from even being born. They'll learn that it was illegal and even "unethical" for their parents to conceive them. And they'll learn that their very existence is considered such a threat to society and all its wonderful values that their society doesn't even want them to exist. As Harvard Law Professor Laurence Tribe warns, anti-cloning laws risk creating "a particularly pernicious form of *caste system*, in which an entire category of persons, while perhaps not labeled untouchable, is marginalized as not fully human."¹⁵

Anti-cloning laws do more than victimize and discriminate against disabled people. They also victimize and discriminate against children. If merely attending a segregated school can affect the hearts and minds of children in a way unlikely to ever be undone, what do you think learning that their very existence is the fruit of a crime, and that every breath they draw is against public policy, will do to the hearts and minds of these children?

I don't know how people can argue that these children will be psychologically harmed by their *parents*—at least their parents *want* them. Some people have argued earlier today that, "Gee, even if the parents know better and even if they love their children, other more ignorant people who believe anti-cloning propaganda will think that these children are mere copies and will say and do things that will psychologically harm them for that reason." But the solution to ignorance is education, not blaming the victims and preventing them

15. Laurence Tribe, *On Not Banning Cloning For The Wrong Reasons*, in CLONES AND CLONES 221 (Martha C. Nussbaum & Cass R. Sunstein eds., 1998).

from being born. I could prove, beyond a reasonable doubt if I had to, not with the rank speculation that this anti-cloning argument is based on, but with real expert and lay witnesses and a thousand psychological studies of real and existing people, that *every* African American child born in this country today *will* suffer psychological harm from ignorant people who believe in untrue racial stereotypes. But no one would suggest banning motherhood for African American women—for the good of the poor children, of course. The solution to ignorance is education, not blaming the victim.

I'm going to conclude by telling you that there is only one question of lasting social significance that cloning presents to us. Just one. The scientific questions are going to work themselves out, and probably pretty quickly, as science always does. The so-called ethical questions are all based on the scientifically false idea that cloning creates copies of people, and in any event they are *never* going to be worked out. We are never going to agree on the "ethics" of cloning any more than we agree on the ethics of abortion after fifty years of vitriolic debate. The only question that really matters in this debate is: *who decides?*

Who should decide whether and how a particular individual should have children—the individual or the government?

Who should decide which classes of children are likely to be perfect enough, well adjusted enough, politically popular enough or socially desirable enough to be allowed to be born—the prospective parents or the politicians?

Who should decide how much risk is acceptable for a mother and her unborn child—should it be the mother in consultation with her physician? That's the way it is and has always been with every other reproductive decision, including many that pose a *much* greater risk of producing a defective or dead child than cloning. Or should the legislature decide, making a single risk-benefit analysis and imposing it on every patient, regardless of their personal medical condition, regardless of their personal ethical and religious beliefs, regardless of the judgment and skill of their physician, and regardless of how the technology may have changed in the several years since the art of political compromise was last used to draft medical treatment protocols?

Who should decide which scientific truths the public is ready to see and hear—the scientists, or the platform committees at political conventions?

The word "copy" is the *scientific* fallacy of the anti-cloning argument. As you listen to anti-cloning arguments just think to yourself, "If the child is just an ordinary child and a unique individual, is this true?" And you'll find that in almost every case, it is not.

If the word “copy” is the scientific fallacy, the word “we” is the legal fallacy. People who are afraid of cloning are always wringing their hands and crying, “what are *we* going to do about cloning? Should *we* allow it to occur?” But they are missing the point. *We* don’t decide whether John and Mary Smith can have children. *They* do. That is a private decision, not a political one. It has been for well over two hundred years, and there is nothing so horrible or horrifying about twins that would justify changing that.

This question of *who decides* is the heart of the cloning debate. It is the only question from this debate that will still matter five years from now. Thank you for your attention and I really look forward to hearing your questions.