

# Electronic Seminar: Visions of Cloning



During 26 February-9 April 1997, subscribers to HRCFS-L, the futures Internet discussion list, engaged in a wide ranging and incisive conversation and debate on several threads flowing from the explosion of news stories on the cloning of the sheep "Dolly" in early 1997. the futures e-mail discussion list, follows below. In some cases, shorter separate statements by the same person have been combined for the sake of continuity and coherence. An edited transcript of issues and concerns raised on HRCFS-L during those electronic discussions follows below. In the order of their first appearance, virtual participants include the following contributors: Devin Nordberg, Charles Bagnall, Adam Dykes, Jim Dator, Cole Jackson, Charlie Smith, Kate Paine, Robert J. Conlan, Pamela Tevebaugh, Richard Salvador, Dwayne Minton, Kenn Kassman, Robin Brandt, Lloyd Asato, Michael R. Ogden, Vincent K. Pollard, Sal Starzun, Stephen Dwight Kiser, Kevin Watson, Claire Gaynor Haeg, Christopher B. Jones, Richard Anthony Lum ("Kaipo"), Jordi Serra and Larry Geller--v.k.p.

DEVIN NORDBERG: Jim, you simply MUST post the shaggy dog clone story! [Editor's note: He never did!]

CHARLES BAGNALL: Ethical decisions on the part of some have never stopped actions on the part of some others. That is not to say ethical discussions should not take place. I believe the contrary. But we have to accept that cloning will proceed, whatever ethical dictums are handed out.

It also opens up interesting research avenues. To date cloning has only been represented by identical twinning. Identical twins are born in similar time and geographical frames. Cloned 'sons' and 'daughters' of another person will enable the possibility looking further into influences on development other than those recognized currently as hereditary and environmental. At present research is indicating that likelihood of very strong genetic influences on growth. We have only been able to speculate and 'believe' in (or not) other influences like astrology and things spiritual.

Having one's 'twin' born at a quite different time and place would present interesting research possibilities.

ADAM DYKES: One thing to think about concerning cloning might be the possibility of cloning portions of people (assuming this can be done).

This would make transplant operations immensely easier (no rejection, no looking for a match, etc.).

JIM DATOR: Hmm. Interesting point, Adam.

Dwayne Minton, what have you to say about this cloning business?

DEVIN NORDBERG: I have a science question about cloning. If someone takes my cells and clones me, would the genetic material bear the same relationship to me that my identical twin would?

If that is the case, then the cloning of humans is not so unique. We have always had identical twins, and we

have many more nowadays as a result of fertility drugs.

Can anyone tell me if that is scientifically accurate?

COLE JACKSON: "Just because you're paranoid doesn't mean someone's NOT following you." (Yossarian in Catch-22)

I would not be surprised to learn later down the road (maybe) that the U.S. government hasn't already done this with humans, even. The tech doesn't look too overwhelming, actually, and within the U.S. establishment there is both the resources available as well as the political/military will to do so. In some nondescript, top-secret lab in the New Mexico mountains or somewhere like that. Human clones incubating, at least, maybe even some have almost grown to adulthood now. Surely the ability to regrow limbs and organs.

But we don't know about it, yet, of course.

If you don't ever hear from me again, it's because "they" have been monitoring us

CHARLIE SMITH: I think they have already taken Cole and left his clone. we'll miss him.

JIM DATOR: Of course for most of you, who have never met Cole, and only know of him via cyberspace, how could you tell whether he is a clone or not. Even IF you met him face to face to face to face?

KATE PAINE: In hot-topic-of-the-day portion of monologue, Jay Leno asked his audience to consider in the sheep cloning thing: "Why'd they use sheep? Think ya' could pick the clone out of the flock? Who'd think they're jivin' here?"

Responses to a CNN U.S. poll: "Would you consider conceiving child as a clone of yourself?" 93% NO, 6% YES.

As brought up earlier, cloning would certainly allow some good investigative science in the nature/nurture question.

COLE JACKSON: Sadly, I think sometimes that besides my dear spouse and little son, only Visa, Mastercard and American Express are likely to really miss me. Come to think of it, in that case a clone might come in handy. HE can pay the bills!

ROBERT J. CONLAN: Last summer's Michael Keaton movie "Multiplicity" was about a man who had himself cloned 4 times so that one clone could pay his bills, another excelled at work, a third enjoyed his home-life, wife and children and while the original set out to have some fun.

Unfortunately the clones didn't like each other.

PAMELA TEVEBAUGH: The funny thing about this movie is the original never did get to have any fun! He cloned himself to get more 'free' time, and then spent it cleaning up the messes made by the clones. Talk about an unintended outcome! Perhaps the lesson to be learned is that our tools will never 'fix' our lives, the sense of inner tranquillity comes from within. Never from a tool.

RICHARD SALVADOR: Aloha. One of the series of "Star Trek: the Next Generation," featured an episode titled "Jurassic Worf," where a long dead Klingon leader and warrior's DNA were cloned. He came back to resuscitate the Klingon culture, but I believe he got into problems with the Enterprise crew with his Klingon thirst for war. As always, I hope similar feats can be made for the later caretakers/leaders of Indigenous Peoples.

Some of the mainstream news suggested cloning Hitler and others of his ilk in order to bring them to justice. But would this be fair, if the previous (i.e., original) thought process is absent in the cloned one? I wonder.

PAMELA TEVEBAUGH: Would we punish an identical twin (knowingly) for the crimes of the other twin? How would punishing Hitler's DNA child punish Hitler?

DWAYNE MINTON: I thought I'd sit back and listen to some the action, Jim, but since you've prompted it.....Cloning is nothing new, been known about and done in "lower" animals for god knows how long. this is the first case where a complex animal has been cloned, though. I think the prospects are very exciting and must admit that society in general is not ready for it, IMHO.

As to cloning Hitler or ourselves, we have to remember that we are shaped just as much by our environment as by our biology. so even if we clone ourselves now, and grow up the child, we may be alike in all genetically determined ways (eye color, body build, disease resistance, etc.) but we will be different in most other ways (personality, behavior, political views), so much that we will not be an identical match. a good illustration of this is identical twins, who have all of the same genetic material (as they are essentially clones of each other) but are often very different individuals.

Taking this into account, what does that mean for society? if we clone to fill our organ banks, is this right? are clones people or do I own my clone because he is constructed from my DNA? or does the company that made my clone own it? The legal ramifications are mind boggling.

I guess the better question is: in our current climate, other than for the pure wonder of it, why should we clone humans? do we even need a reason? I don't think this question can be answered without some idea of the legal climate for clones. are they people, or are they goods?

CHARLES BAGNALL: Dwayne says, "...we may be alike in all genetically determined ways (eye color, body build, disease resistance, etc.) but we will be different in most other ways (personality, behavior, political views), so much that we will not be an identical match. a good illustration of this is identical twins, who have all of the same genetic material (as they are essentially clones of each other) but are often very different individuals."

I would disagree rather strongly with the above assertions. I believe the evidence is strongly moving in favor of an extraordinary influence of genetic material. To the extent that the color of clothes that are worn by identical twins (reared apart from birth), the dates of marriage, the interests and so on are often found to be remarkably similar--much more than chance would allow.

Sure there are behavioral differences but several large (more than 1500 subjects) and reasonably recent studies of identical twins reared apart from a very early age indicate the extremely powerful pull of the gene pool. No, the environmental influences are not paramount in behavioral areas any longer. We are not yet able to interpret what the genetic message is (a choice of brown clothing?, or conservative politics or what but there is little doubt that the genetic pool is strongly influencing what we do, believe in and the way we behave. But we don't know the possible (if any) the influences of those other things time an space of birth, of Ghia influences and son on.

DEVIN NORDBERG: Let me respond to this question: "Are clones people or do I own my clone because he is constructed from my DNA? or does the company that made my clone own?"

Actually, until our technology advances a lot, all of these "clones" will have to reside within a human womb for a while, making someone the clone's mother regardless of how the genetic material is derived. It would be just like an artificial insemination, and the rights of the mother and child are pretty clear. But when we perfect ectogenesis, then we are going to have the problems of corporate breeding of humans and other yucky possibilities.

KENN KASSMAN: With all this talk of cloning, I've decided to open a new insurance company--instead of paying off in cash in case of accidental death, we generate a clone of the policy holder so they can try life again and see if they have better luck the second time around! Any interested investors out there?

Beside the aforementioned insurance company possibility, I really cannot see any personal benefits to myself for having a clone--especially since I find it very unlikely that clones would be considered personal property, anymore than one's children are considered personal property (I'm talking places where human rights are highly advanced, of course. There will no doubt be places in the world where anything is tolerated, just as now).

I mean, I'm still gonna get old and die right? Unless my clone decides to donate some body parts (which is speculative, knowing how selfish he probably is be) he's not much use. I can't use him as a slave (he'd probably be lazy anyway--I'd rather buy an Arnold Schwarzenager clone).

Now if I somehow download all my memories and experiences into my clone's younger brain, that would definitely be an advantage.

Still, if I could do that, I would probably do it to someone stronger, more agile and better looking to begin with.

One advantage I can think of is cloning others. How about if a child accidentally dies? Wouldn't it be nice to be able to grow a replacement? Perhaps it would help heal the loss?

Business managers and those in positions of power will most likely think otherwise. After all, as a manager you want people who are predictable and who you can trust below you. Imagine knowing all the strengths and weakness of your employees.

Business is also likely to change the law to suit their needs. Die owing your credit cards companies a lot of money? They may sue to clone you, so your clone can pay off your debts.

For those in the electorate with a conservative bent, cloning would be great.

Here in Germany we've had Helmut Kohl as Chancellor for about 12 years now--with no signs of him leaving anytime soon. This is because the electorate sees him as predictable. They know what he will do and

feel comfortable with that. Now say we clone him now... by the time he's too old to lead any more, his clone will be the right age to step in and take his place! We could have 120 years of Kohl instead of just 12. I imagine the US will repeal the constitutional amendment limiting presidential terms as soon as they figure this out. Or perhaps they don't need to. Each Ronald Reagan clone could have two terms of his own.

New dynasties will no doubt arise from cloning--I'm sure Bill Gates will have at least a dozen clones made. Training them to be as competitive, ambitious, family- and control-oriented as he is should not be a problem. With his billions, he can give them seed money and start them off in a number of noncompeting industries. The one who amasses the biggest fortune "wins." Of course, one Gates may rebel against all this and go punk, creating a whole new style of nerd-oriented music and fashion (with a percentage for himself, of course).

Yes, the future promises to be wonderful indeed.

ROBIN BRANDT: Does anyone recall whether it has been ironed out legally as to who owns one's DNA? I seem to recall that the U.S. courts determined that some company had the legal rights...to a plant or something? (Yes, I am very clear.)

Suppose someone got some of my cells and wanted to make a clone of me (gods forbid). Because someone got the cells, lets say with my consent--then do I own the clone or does the producer own the clone? Of course, Dolly the sheep, probably doesn't have much to say in this instance, but people may.

Any comment?

JIM DATOR: I am not sure where that stands either, Robin, but I do also recall that there was a big flap about this in the scientific and indigenous people's press a year or so ago. Seems some anthropologists took the DNA from some folks in Papua New Guinea (with their permission, but maybe without their understanding), presumably to "preserve" their genes from extinction, maybe to develop a bio-product (it may be the folks had some genetic resistance to some disease).

I am also vague about all this. Anyone got the FAQs?

LLOYD ASATO: John Varley (Sci Fantasy Writer) writes about this in several of his books (most recently Steel Beach). A "holographic" update is made of your brain and kept in secured storage. When your physical self is killed, a clone is made and implanted with your memories (etc.) from your last update. Great read!

CHARLIE SMITH: I am not sure I even have an idea how to approach Robin's questions. However, I spend a lot of time propagating plants. If I give or sell plants (propagated from cuttings) to someone, I don't believe I retain any ownership interest similarly, if you make bread (or, more likely, beer) and keep a stash of good starter yeast, I don't think you would have any interest in someone else's final product if you just happened to donate the starter. I don't know. these are hard questions. the whole thing makes me a little sheepish.

DWAYNE MINTON: I believe there was a case just a few years ago involving several Marines and the taking of their DNA without permission. I might not be entirely clear about this case (correct me if I'm wrong), but does anyone know the outcome of the case? Didn't the courts uphold their right not give their DNA and remain active?

CHARLIE SMITH: Lloyd--does Varley suggest that we might also have the option of deleting some memories and, perhaps, adding others?

WAYNE MINTON: Charles, I can't deny your claim that behavior and personality have some genetic link, because they most certainly do, but environmental influences are very strong and in my opinion, though I'm certainly no expert in behavior, cannot be ignored. I say this because there are classical studies where behavior can be modified by the environment. I'm thinking of studies on birds, where clutchlings are separated at birth (granted not identical twins) and some are exposed to recorded birdsong; others are not. those not exposed to birdsong cannot sing properly and thus lose a whole range of critically important behaviors (they fail to mate, are predated on more often, cannot hold territories, etc.). the others, expose to taped birdsong acquire the appropriate songs and behaviors that go with them. if anything, there is genetic component (undeniable) that is "molded" through environmental stimuli.

I've never actually read any of the separated-at-birth identical twins studies (other than what shows up in the newspapers or on TV news shows, so I can't really say anymore than what Charles has already said). But marrying your wife on the same day as your identical twin or choosing brown clothes, though interesting, is only a small part of what makes a whole person. does anyone happen know how similar the twins in these studies really were (I am curious now)? I generally have problems with studies on human subjects, because the strict rules generally make it impossible to do "proper and best" study to learn what you want.

PAMELA TEVEBAUGH: Jim, referring to Carl Smith's question to Lloyd ("Lloyd--does Varley suggest that we might also have the option of deleting some memories and, perhaps, adding others?"): If this were possible, and clones could be produced en-masse, recoded at once (and eliminating all living individuals so they cannot taint the newbies) we could get to that society that has no knowledge of, nor interest in oppression/repression!

CHARLIE SMITH: Pam--then we end up having to clone our clones' clones for future generations.

WAYNE MINTON: I forgot one other thing. several countries now (Peru and some of the Pacific Island nations I believe) do not allow the export of indigenous plants or animals. my understanding is that this is in response to the patenting of genetic material, which as far I know, is legal in the US.

The gene for the flavor-savor tomato (the symbol of the end for 'futurist' Jeremy Rifkin) is patented I believe. anyone know for sure?

CHARLIE SMITH: Dwayne--I know the attorney who represented those guys.

I'll see if I can find out the result. I seem to remember, however, that they were court marshaled for failing to follow orders and that the proceedings completely dodged the DNA issues.

LLOYD ASATO: [Responding to the question: Lloyd--does Varley suggest that we might also have the option of deleting some memories and, perhaps, adding others?] This is a theme (cloning as means to immortality)

that Varley uses in many of his novels and short stories. In *Steel Beach* he shows the early attempts at this memory implantation and the horrors (my word) that it created (deviant clones).

One neat thing Varley does with his cloning/memory cube idea is to allow Changes (as it is referred to in his various books). That is the opportunity to switch sexes and body styles.

MICHAEL R. OGDEN [Responding to Jim Dator and Robin Brandt] Dear All: The flap continues within the indigenous peoples groups (& their advocates) regarding the DNA sampling done among a tribal people in PNG. Much of the resulting press was misinformation (par usual!) because it made good copy.

However, if I recall the discussions of this on the ASAO listserv (Association of Social Anthropologists of Oceania = ASAO), the PNG person involved did give their consent and the "patent" was being done in their name (not the research scientist) on a portion of their genetic make-up that enhanced their resistance to malaria.

Since this was being discussed at the time many Indigenous Peoples were protesting the Human Genome Diversity Project (reportedly, the above study was not part of the HGDP...), the media hyped it. Result: the researcher was detained at the PNG international airport, the indigenous person had to come to the researcher's rescue bringing documents clearing them of any wrong-doing (showing at least nascent understanding of what was going on) and the whole thing--ended? NO WAY!! An indigenous rights group in Canada (RAFI) got ahold of the story and created a real flap (see their press release reproduced online at: <http://www.charm.net/~rafi/release01.html>).

This action had the anthropological and NativeNet listservs abuzz for quite some time... it eventually "went away" as an issue for most of the general public because the media lost interest and got distracted by something else (perhaps sheep!).

If you are interested, the following URL points to a RAFI document about Patents, Indigenous Peoples, and Human Genetic Diversity (May 1993):

<http://www.charm.net/~rafi/19932.html>

As well, RAFI has maintained an excellent (though at times slanted) database of resource information about the HGDP and Indigenous Peoples:

<http://bioc09.uthscsa.edu/natnet/archive/nl/hgdp.html>

NativeNet has also maintained a fairly exhaustive listing of the discussions online regarding the HGDP in general, and the patenting of people (particularly Indigenous) at:

<http://bioc09.uthscsa.edu/natnet/archive/nl/hgdp.html>

VINCENT K. POLLARD: Comments by Devin and Kate about cloning and what most people today still would call "natural" twinning suggest a question about some possible lines of future research, that is, unless it is already going on in some secret lab about which we don't know anyway.

For at least thirty years psychologists have carried out studies of identical twins to compare the relative effects of nature (genetics) and nurture (environment).

Typically, such studies entailed a split-sample of (1) twins raised together and (2) twins raised apart. Variance in outcomes (height, personality, test scores, and so on) in such studies has usually been attributed to nurture (environment).

Ethical problems aside, if cloning of human beings has (or will have) been done, what (if anything) might it add to our understanding of "nature vs. nurture" questions?

For one thing, it would probably be hazardous, as someone else suggested, to assume that the clone's personality and values are going to be the same as that of the human from whom it was cloned. By definition, the clone will have been raised in a different environment. Of course, if one cloned a lot of clones from the same human's genetic material, then it would seem likely that one could conduct the traditional "split-sample" twin studies.

On a different note and without necessarily insisting that all scientific research have a chance of achieving a direct practical result, I find the prospect of cloning body parts much more interesting than cloning whole humans.

On the one hand, until population growth levels off or until some inexpensive yet nutritious food is invented, one can wonder about the resources likely to be consumed by people cloned from other humans. On the other hand and if transplant techniques continue to improve, already existing humans suffering from congenital defects, injuries and diseases may be able to live more rewarding lives if cloned body parts become available to them.

These cloned body-part resources, of course, might well become available only to the rich.

However, the concern just expressed here is, in my view, overshadowed by an issue raised by Richard Salvador raised about an unstated (and possibly unfounded) assumption in an earlier paragraph above. With his indulgence, I'll restate his question. And if I have elided some of Richard's nuances, I hope he will refine the focus of the discussion.

However, the view I expressed in an earlier paragraph is too enthusiastic and needs severely to be circumscribed: Only if human body parts (eyes, skin, whatever) could be cloned separately, that is, without, first, cloning a whole human being and, then, KILLING it to "harvest" the parts, would I find the cloning of human body parts "interesting." (The television series "Dr. Who" occasionally confronted these issues, but not usually with extended analysis of the issues.)

Depending on one's perspective, the clone of a human being deserves, arguably, the same (or at the very least, similar) respect as the human beings we know today.

In the case of humans today, for example, organ donations are normally countenanced when the (living) donor donates of her/his own free will. So, people donate kidneys, skin grafts, blood and so on--and will some or all of their body parts to "science."

So, should there be the same or similar standards for clone donations? (Think about the fearful reaction generated by the urban folktale about coerced airport kidney harvesting that has been zipping around the Internet recently. Would clones feel any differently about the prospect of being "harvested" for body parts?)

Therefore, is it too early to institutionalize the clone-focused counterpart of the Committee on Human Subjects that one finds on the campuses of Research I and Research II campuses, as well as elsewhere?

In other words, who will speak up for the rights of clones? Or are they slaves and drones with no Bill of Rights--perhaps by way of analogy of African American slave women raped in the United States by their owners who "fathered" additional workers for their plantations or to be sold in the slave markets?

Those with experience cloning might want to address the prospects and future development of cloning.

In particular, I wonder if, before the cloning of, say, a cornea or kidney, the would-be cloner will have only one option, namely, first cloning a whole human and then "harvesting" the clone for the desired body parts. Even if much later and as technology "advances," body parts can be cloned separately, would that "justify" cloning and then killing the clone for body parts?

It strikes me that a lot of important questions need to be thought through carefully.

SAL STARZUN: Dear Futurists, nearly ten years ago in London, I bought a book called *In His Image* (or *In His Own Image*). If memory serves me right, it was written by David Rorvik. I have been unable to find a reference for it over here and so it was possibly a British publication, or is now out of print.

In that supposedly factual investigative book, the author claimed to have been witness to the successful cloning of a multi-millionaire, who had commissioned Rorvik to cover the story without revealing any names.

DEVIN NORDBERG: Actually, until our technology advances a lot, all of these "clones" will have to reside within a human womb for a while, making someone the clone's mother regardless of how the genetic material is derived. It would be just like an artificial insemination, and the rights of the mother and child are pretty clear.

KATE PAINE: Saw a bit on CNN late last year: Japanese brought a donkey (or some such other large animal) to term inside a laboratory womb, so I'm not so sure about above time frame advances.

CHARLES BAGNALL: I believe the evidence is strongly moving in favor of an extraordinary influence of genetic material. To the extent that the color of clothes that are worn by identical twins (reared apart from birth), the dates of marriage, the interests etc. are often found to be remarkably similar--much more than chance would allow. Sure there are behavioral differences but several large (more than 1500 subjects) and reasonably recent studies of identical twins reared apart from a very early age indicate the extremely powerful pull of the gene pool...

KATE PAINE: I can add credence to the Bagnall post: In remembering bits and pieces of a public radio report on one of those large identical twin early separation studies, I caught that two brothers had wives named Betty and owned '57 Chevies. I did have to mentally put work aside and consider: The Betties could be dismissed as possible coincidence, but the '57 Chevies????

DEVIN NORDBERG: My dad is a fan of classic cars, and apparently '57 Chevies are by far the most popular of them all, so it's not that amazing a coincidence.

I am skeptical about the amount of importance that people give to genes. I recently attended a seminar on neuroscience, and the neuroscientists stated that the Nature vs. Nurture battle is dead, because through new measuring techniques, they have found that both genetics and environment are constantly in effect together. Genes affect how one reacts to the environment, and the environment affects how a gene expresses itself, and if it expresses itself at all. Also, in situations where the biological parents are raising their kids, genetic factors are often exaggerated. For example, when a violent parent has a child, the parent might give his/her child a genetic predisposition to violence. But when that parent hits the child, then the child is receiving environmental factors toward violence, and receiving stimulus for that genetic predisposition to express itself.

Without rambling on for too long, let me say that the political consequences of

overestimating the extent that we are genetically programmed are quite scary. (i.e. "Forget social solutions to social problems, we can't help people who have bad genes, let's just lock them up and throw away the key.")

VINCENT K. POLLARD: Corrections sometimes run the risk of becoming overcorrections, exaggerations and new errors. This posting repeats some points that have already been made.....in order to draw attention to important nuances. For example, to insist that genes are very important is not out of line with the latest research. On the other hand, while I am not averse to the term "genetically programmed," apparently not all the humanly-inherited "programs" are always "running."

Unless one is referring to antique genetic determinism, "nature/ nurture" discussions are not yet moribund. With an important qualification, these continue to be relevant for understanding human development and usefully attract our attention. However, since at least as far back as the late 1970s and early 1980s the focus of (some of) the discussions has shifted. Whether the popular press has picked up on this is for someone else to comment.

Periodically, scholars and popularizers adhering to the "nature" side or the "nurture" side have proclaimed the debate over, that is, that "their" side had triumphed. Often their proclamations were (over)reactions to errors of exaggeration by the other "side"--themselves sometimes overreactions to other overemphases.

At least since the late 1970s and early 1980s (and possibly much earlier), the focus of the controversies had already shifted.

While there still may be human development researchers who will tell you confidently that "It's 90% nature" or "It's 80% nurture," a growing number of psychologists with feet in the biological and social sciences have been claiming, metaphorically, "It's 100%--of both."

While their "100%" appears to torture mathematics (unless you see the percentage as one side of TWO simultaneous equations), their point is that BOTH genetics AND environment are VERY important.

The trope these researchers sometimes use for genetic influence on human development is that of a RUBBER BAND. This metaphor is also nothing new. Indeed, it was so widely accepted that child psychology college textbooks (e.g., by Le Francois) summarizing that investigative literature were already in use ten years ago. To extend the metaphor, differently- sized rubber bands may be stretched to different maximum lengths (before breaking); however, not every rubber band is stretched to the limit.

By way of analogy with human development, they claim, genetic inheritance does matter; and what also matters is what is done with it. Each, they say, places LIMITS on the potential impact of the other. And then, it gets even more interesting.....

On a related point, although it is true that some people may exaggerate the importance of the influence of biological parents, it is precisely for that reason that identical-twin studies are so important.

Carefully controlled identical-twin studies sometimes make it possible to begin distinguishing between the different influences on human development of people with identical DNA. Again, these investigations of interactivity were already being undertaken in the seventies and eighties--if not earlier than that. In many respects those identical-twin studies do not represent a new focus in the psychological literature. More than ten years ago, they were already contributing to what, then, may have been a new appreciation of the crucial importance of both genetic inheritance and environmental influence.

Some of these discussions become very remote from the original research. If one truly wishes to review the analyses of the actual naturalistic and other experiments, one might begin with the latest editions of psychology textbooks by Le Francois or Anita Woolfolk and track down their footnoted references. After reading the published articles (not just the summaries), one might then go to the Social Science Citation Index

to estimate how these specific studies have become part of a trend.

CHARLES BAGNALL: In a recent posting Vincent said, inter alia, "Carefully controlled identical-twin studies sometimes make it possible to begin distinguishing between the different influences on human development of people with identical DNA. Again, these investigations of interactivity were already being undertaken in the seventies and eighties--if not earlier than that."

Well said. My own postings emphasizing the importance of the genetic pool were in reaction to the stress placed by others on the environmental side. I'd agree totally that the interactivity is of key importance. Going back to choice of clothing-it may be that there are genetically determined color preferences that are then "interpreted" in development through fashions that are themselves taken on by different segments of society influenced by all manner of social forces.

Another interesting contribution to this discussion is the work and writing of Oliver Sack, that many will be aware of. Here we have a neurologist with a very keen observant interest in constitutional propensities/neurological events and an extremely compassionate human/social perspective. He is constantly highlighting the interactivity of the nature/nurture dimensions. My own interpretation of his work does, however, contribute to my belief in a primacy of constitutional influences!

STEPHEN DWIGHT KISER: Adam, Your posting reminded me of a movie called "Clonus Horror" I watched as a mere eight-year-old (I'm twenty-eight now, to put that in perspective). The plot was essentially this: Rich folks (do we see the political undertones of the movie already?) would have themselves cloned. The clones were kept in a very controlled environment, where they ate a "perfect" diet of scientifically engineered foods, they exercised extensively, were not allowed to smoke, drink, have sex, etc. As the clones developed, they were given lots and lots of propaganda about this utopia called America, and how they must continue to take good care of themselves before they were allowed to go there. Only when a clone had reached a level of near-perfection (physically speaking) was the trip to America granted. Thus, whenever a clone was allowed to "go to" America, it was always done with lots of fanfare. America, however, was a laboratory where the clone was cryopreserved and stored. When the rich person needed an organ transplant, the perfect match was available. Pretty good flick, even if it was during the mid-1970s.

Cole, no, the military doesn't have anyone cloned. Whatever would make you think that? But, two dark-suited gorillas wearing sunglasses are on their way over to question you.

Dwayne, the case involved the right to privacy of the two marines over at Kaneohe Marine Corps base. The Marines did win. It wasn't an ownership thing, though--it was a privacy thing. The Marines (successfully) argued that while the stated purpose of the DNA data bank the US military is putting together is for identification purposes (i.e. it replaces dog-tags), the potential for privacy abuse is there. So far, the U.S. military has not made any written assurances this data will not be made available to others.

Kenn and others, it's been very interesting to read these thoughts on cloning. One thing I feel compelled to point out is that we are cloning flesh and blood, not anything else. So, to confuse the identity of an individual with his or her clone is a mistake. One could get into a very good epistemological debate here, about how the clone would have its own soul and spirit. Hence, transferring the deeds of an individual to his/her clone would be incredibly wrong. I am inclined to adopt this position. Through cloning, we are simply creating humans in a different way than through copulation. The major difference in the newly created human is that it is GENETICALLY identical to another human. And since we are much more than simply products of our genetics (political structure, environment, psychological experiences, etc. "We are the sum of our experiences.") assuming the clone is the same person as the original is incorrect. It is as much an individual as any other human, except that it looks a lot like someone else.

Remember, when we procreate, we are passing on our genes as well. It's just that the genes from two

different people are mixed, resulting in a human being that is a genetic mixture of the parents. With cloning, there is only one "parent," thus no mixing of genes can take place. That doesn't mean the clone is any less an individual human being. He or she will have their own soul and spirit, just like any other human.

JIM DATOR: I find it interesting that this cloning topic has produced such a large number of excellent comments. Why do you think it has?

PAMELA TEVEBAUGH: I suspect the fact that this threatens our place as the creatures at the top of the totem pole would be one answer to this question. We might actually need to consider another 'species' equal. At the very least, this threatens Western thinking.

DEVIN NORDBERG: IMHO, it's just because cloning is a gee-wizz, sci-fi topic.

STEPHEN DWIGHT KISER: I think it has something to do with the idea mankind is playing God. I personally find it repulsive and arrogant for us as a species to want to scientifically clone ourselves. What's the point? We have enough humans through natural reproduction as it is. By scientifically cloning ourselves, we'll probably create a species that will live twice as long, further complicating our population problem. another possibility is that we can create a slave race (a la "Blade Runner," an excellent movie). I personally disagree with science when it does more than simply observe--when it intervenes, nothing good usually comes from it.

KEVIN WATSON: What about the ability to save the genetic code from species that mankind has helped to send to the brink of extinction? Why not save the genetic code of a large enough population of a species and clone enough pairs to prevent 1) extinction and 2) concentration of the genetic pool to the extent that genetic defects become the norm due to direct relations mating? Perhaps freeze the material until the specie's natural habitat can be reclaimed.

This discussion has centered around the moral aspects of cloning entire human subjects (I say subjects because it is not clear if they would be property or individual human beings). I find it fascinating that we can be so egocentric that we must focus on only the negative aspects of this technology as it relates to mankind and not also see the possible benefits for the ecosystem as a whole. I would not recommend bringing back the dinosaur, but what about the Florida Panther, the California Condor, the North American Timber Wolf, or even the American Bald Eagle (all of which are threatened)?

Steve suggested "Blade Runner." A better example would be Logan's Run....As "Blade Runner" was more of an android flick. Besides, a slave race would not be economically viable, as who would business sell their products to? Wages are cheap for unskilled labor, especially if Third World countries, and the cost of growing, educating, and caring for a slave race would be unjustified.

Now, if the DNA could be manipulated, and a super-race of military clones could be produced... Wait a second, Games Workshop has already done that scenario...

STEPHEN DWIGHT KISER: Kevin, If you'll notice, all those problems you claim could be solved (or at least lessened) by a "rationale dose" of cloning, were caused by humans in the first place. Which takes me

back to my original point--when mankind intervenes instead of observes, problems usually result.

KEVIN WATSON: Steve, I agree, but not to use tech to improve or restore what we destroy is just as stupid as the original action that caused it. If we impact the environment, we should try to minimize that impact. If we are not smart enough to minimize that impact, we deserve the result, the ultimate demise of the human race. Just as the animals I made my point with need a large enough genetic pool to ensure survival, the ecosystem needs a diverse population of species in order to maintain the present state. If that genetic population is not maintained, the environment which allows the present state changes. This results in failure of the present state and Chaos, a period of quick adaptation results and a new state ensues. Systems theory mixed with a bit of Chaos math.

I'm not saying, "Hey, human cloning, what a great idea." My point was that the tech isn't bad, the application of that tech can be. It is all in the way you apply it.

KATE PAINE: It's a dealing with processing of discomfoting stuff, I would offer. The following adds to the discomfort: (I hope we're not in for rounds of discovery one-upspersonship)...

COLE JACKSON: Perhaps because it's sci-fi come true in the developed world that is awash with tech. But also because cloning is such a personal thing--i.e., clones ARE us. Come to think of it, there's a potential business opportunity: Clones-R-Us.

What I find amusing in the media is so many people aghast at the thought of cloning humans--the faux ethics that I believe would go right out the window if cloning becomes feasible for growing back limbs lost in accidents or can save the life of your baby via transplants. Or the enviros who would want to use cloning to save non-human endangered species but draw the line there.

There will be few lines drawn when this is commercialized because the usual market forces will kick in like they do with everything else. So I think we should get used to it and try to manage this tech as well as possible. For example, if you had Donald Trump's money and your child needed a medical procedure that only cloning seemed to have an answer for you don't think you'd go for it? And if you don't have that kind of money, would not you feel discriminated against and therefore be inclined to vote for government-subsidized cloning for the middle classes, maybe even the poor someday?

Because the industrialized world worships tech almost as much as money, I believe every technological development like this merely ups the ante, but no one is ready to turn off the spigot on the tech or resist the profits that accrue thereof. As futurists, maybe we should just factor this development in like everything else and suggest policies for the future that would manage this tech in a sustainable, equitable way.

Oh yes, and I still suspect this is not new tech. Just look at side-by-side pix of Ringo Starr and Yassir Arafat. I would almost be ready to wager that Ringo is the British clone of Yassir. And BTW, did you know that Ringo is the sole ADOPTED child of Mr. and Mrs. Starkey? Moreover, that the Starkeys originally moved to Liverpool from near Roslin where Dolly, the cloned sheep, was "born"?

And there WAS a gunman on the grassy knoll in Dallas that fateful November day in 1963...

COLE JACKSON: One further question. Would a clone have a soul? Its own? Or shared with its host?

DEVIN NORDBERG: Cole, I liked your idea in your previous post that specific technologies are not as important as managing them with sustainability and equity.

As the primary "anti-clone hype" voice on this listserv, let me say once again that a "clone" of Cole would be just his identical twin born at a different time. Although cloning would take just his genes rather than combining two people's genes, the growth and birthing of a "clone" (read: person) would occur just like any other artificial insemination.

Therefore, let us PLEASE lay to rest any ideas that a clone would be in any way not as human as the rest of us, biologically, spiritually, or politically!!!

JIM DATOR: I was going to ask this list what they think of Clinton's ban. I think it stinks! Totally.

But that may be a minority view here?

ROBIN BRANDT: I am ashamed to admit, I am never quite clear on my politics (i.e., national events in the United States)--I don't follow the actors and events well enough. But it is relatively clear that Clinton wants to make certain conservative parties happy. Exactly who or what groups, organizations or political entities that might be, is not clear to me.

CLAIRE HAEG: Interesting question, Cole. It seems to me that there are two schools of thought out there. There are those who think that a person's "identity" (or "soul" if you will) is somehow connected with his or her genetic makeup, in which case the clones are just big cell clusters which can be "owned". Then there are those (like Steve) who think that a person's identity/individuality/soul/whatyouwill is at least significantly affected by environment, in which case a clone would have different experiences from the "donor", and could not be "owned".

I'm inclined to agree with Steve. If you clone yourself to create a whole human being (with a brain) then that clone would have a soul just as your identical twin would have a soul, and you would have no "ownership" over that person. Technically, my daughter shares half of my genetic material but I don't own her, or even half own her. She is busily proving that I can exert no control whatsoever over her, in fact.

If it is indeed possible to clone "just an arm" or "just a heart" then I think that's a very different issue. One which doesn't ring as many ethical bells.

In response to Dr. Dator's "why all the fuss?" question I think we have the abortion dilemma all over again: Is the clone (embryo) a person and what rights does it have?

CHRISTOPHER B. JONES: I have kept out of the debate thus far, but I really don't see what all the fuss is about. So what if we can clone humans? I'm all for it!

Maybe we'll be able to get it right where God failed...

More to the point, cloning isn't really all that impressive, but manipulating genetic factors and THEN cloning--THAT would be impressive. I envision an army of humans adapted to life on Mars or Venus! An

army of Martian Arnolds and Arlenes...yeah, that's the ticket!

One of my favorite books in this realm is David Brin's recent *Glory Season*. In this one the successful people (women, mind you) get to clone their offspring, a clan of clones as it were. Neat idea if you ask me.

The most exciting aspect of human cloning is doing away with MEN entirely.

COLE JACKSON: Well, Chris, you know the saying: "A woman needs a man like a fish needs a bicycle."

Perhaps that is what has many folks, men particularly, moaning and groaning about cloning, i.e. that the last thing that a man can do that a woman cannot do better--transfer spermatozoa to the womb-host as mandatory to continuing the species--has been ripped away.

Maybe now we can get a fix on getting men to take better care of the children they beget rather than focusing on the begetting itself as the ultimate male function?

RICHARD ANTHONY LUM ("KAIPO"): During Jeremy Rifkin's discussion at today's session of the Governor's Conference, he made it fairly clear that he felt Clinton copped out by not banning "private" or "business" research in that area.

JIM DATOR: Rifkin is, of course, one of the leading opponents of all most ALL kinds of genetic research, having gained his reputation on this point, and having come to "the end of work" much more recently. So I am not surprised at his comments.

There is no doubt that Chris is correct, both in asking the question and proposing the answer. It is not only true that Mothers Are An Invention of Necessity (and certainly not necessary much beyond the twenty-first century), but that If Father Knows Best, he'll just, shall we say, withdraw from the scene right now. There is no further use for "men" and "women" at all in reproduction.

Bisexual reproduction is a rather recent evolutionary development (which allowed the explosion in species diversity, and introduced death as a byproduct), and we are now well on the way of inventing a fourth method of reproduction, not only of humans but of all future life forms.

What the US (and the UK) won't do, other nations will, so the Fourth Sex moves on forward, leaving the old Mothers and Fathers in the dust of history.

COLE JACKSON: Netsurfer Digest says there's a website out there dealing with developmental biology, Dolly the cloned sheep, the Oregon monkeys, etc. I have not looked at it yet but thought I'd pass it along for those of you in the inveterate web surfer category or just wanna know everything about the latest cloning efforts:

<http://www.ri.bbsrc.ac.uk/library/research/cloned.html>

ADAM DYKES: Fair warning, this is a personal opinion...(which some of you might well have heard before, though in a different venue).

I have kept half an eye on this barrage of material coming out concerning cloning, and the one thing I have noted is a glut of fear-oriented knee-jerk (to use the old (and much utilized) cliché) reactions. Simply declaring certain types of research unethical will NOT stop them. Somewhere, someone will eventually do it, whatever "it" is.

Fear is a tool, not an excuse. When we feel fear, we should take notice of whatever set it off and assess it. We should NOT allow fear to rule our reactions. We should use our fear, not allow it to use us.

President Clinton's cutting off of funds for cloning research is a fair example of letting fear (yours or others') rule one's actions. Those who wish to conduct such research will simply go elsewhere for the resources they need, and might well be beyond observation, thus preventing the rest of us from keeping an eye on those few who might well do something that needs to be stopped (like dipping people into vats of freezing water to study hypothermia, to use Cole Jackson's example).

Granted, there are some methods of research, as well as some uses of the information so learned that should not be allowed, but simply dropping a proverbial nuke on the whole operation is never a good way to respond.

COLE JACKSON: Dear Adam: Actually, I think I'm pretty much on your side, though I don't think Clinton made his decision out of fear, but as a sop to the radical religious right which has so much real/perceived suck in the U.S. political process today.

Promise to keep my knee from jerking (though it's getting harder to control myself at this age) if you promise not to attribute the freezing water/hypothermia example to me. Never heard of it, nor did I see anyone else mention it on this list though I know I don't keep track of every single message.

I think I'm on the record for managing this technology in responsible ways not suppressing it.

And nukes certainly aren't my style, either.

I like your enthusiasm for the topic, in any event. At least it comes from the heart.

[continuing on a different thread] It didn't take long for a C-R-Us to spring up. DreamTeach Corp. offers DNA licensed from celebrities in labs around the world where no anti-human cloning laws have been established--e.g., Costa Rica, Liberia and Vanuatu.

Check out the prices and availability at:

<http://www.d-b.net/dti/>

JORDI SERRA: In 1985 at the WFSF course in Dubrovnik, Jim Dator suggested that all the participants should donate our genetic material to create the WFSF president for the twenty-first century. Seems that we can do it now.

JIM DATOR: I did???

That sounds like FAR a too intelligent suggestion for me. Must have been YOUR idea, Jordi.

LARRY GELLER: Ah, supply-side economics. Let's look at the demand side--who will be lining up to get our genetic material? I suspect this is what a whole lot of men are worried about as I listen to all the "pooh-poohs" and criticism of cloning on the radio, almost all of it by males.

JORDI SERRA: You are probably right, but considering the people attending that edition of the course I would have pay to see the result of the combination between Jim Dator, Eleonora Masini, Rolf Holfman, Magda Cordell McHale, John Sinton, Basilios Makrakis, Wendy Schultz, Chris Jones, myself and some other I can't remember right now. I kinda try to picture the result of the mix and... well you know what I mean.

[Home](#) | [Back to Contents](#)