



REPRO TECHNO BINGO



As the world's population grows, so too, ironically, does infertility – involuntary childlessness. Ever-spookier solutions to make extra babies proliferate. Will children soon become a manufactured consumer product like any other? asks GILL BARRON

Children? There are lots of them out there. They come in two basic sorts – other people's, and your own. Of the seven billion humans alive today, about 27 percent¹ are under the age of fourteen. Clearly nearly all of them are in the "other people's" category. Most are growing up in a family, but worldwide, around 100 million kids are abandoned, parentless, living on the streets or in orphanages.² They are the offspring of adults who could, and did breed, but either wished they hadn't, or were unable to follow through on the two decades of devoted support it takes to raise a child.

Meanwhile, some 350,000³ babies are being born each year by In Vitro Fertilisation (IVF) to couples – and to increasing numbers of single people – who long for a child "of their own" but are unable to conceive by ordinary means. IVF is now quite an old and socially normalised technology which has, since 1978, brought about five million⁴ children into the world (who could not otherwise have been born) and undoubtedly created a great deal of happiness and fulfilment thereby. Presumably the children are also quite glad it works – glad to be alive. In population terms, this number of extra added humans is negligible, a spit in the ocean. In terms of carbon emissions and potential overconsumption, well – let's worry about that later.

There is a school of thought that says we are just vehicles for our genes: it is the genes' own need to reproduce that drives their carriers (us) to breed. Whatever the real root of the irresistible compulsion for parenthood, pre-existing children in need of adoption⁵ do not, in these cases, satisfy it. Those parents who choose IVF instead have clearly come to the conclusion, by whatever train of thought, that it's their own child they want, not anybody else's, and they have made the painful, expensive and not always successful decision to pursue that goal via the test-tube option. People who find themselves unlucky enough not to be able, spontaneously, to have the children they want may become deeply frustrated and depressed about it. This sadness may, in time, resolve itself: perhaps, after all, through the traditional solution of fostering or adopting, or by co-parenting nephews and nieces within the extended family, or through a coming to terms which allows absorption into other worthwhile occupations. Or, nowadays, by going for IVF: a tantalising possibility that can't be ignored – the last card for the desperate.

IVF's 36-year-old track record seems to show few if any bad side-effects for the child (we know nothing of the possible later-in-life health consequences) so for many if not all onlookers, it is hovering at an acceptable level of technological intervention in human biology, certainly if compassion for the would-be parents is part of the equation. Whether egg meets sperm in bed or lab is no longer of much ethical concern.

But the technology has of course moved on, as it always does, and far more complex interventions are now on offer. A line is being crossed, beyond which lie possibilities we can barely even imagine. "Going shopping" for a baby comes next. Not any old baby, but the perfect ultrasuperbaby, the baby of your wildest Hollywood dreams. The technique is called germline engineering: more on this shortly.

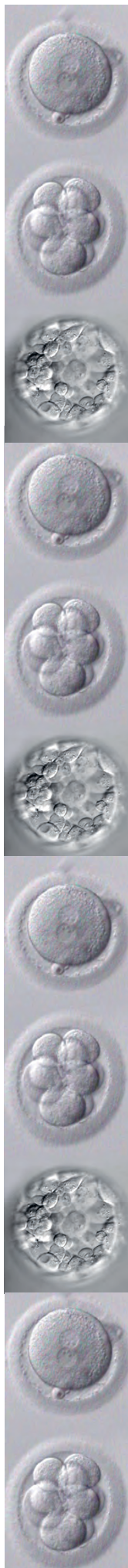
Why, though, should normal fertility have gone into decline on such a scale? A huge array of environmental factors, even down to burnt toast⁶ are under investigation. Exposure to chemicals at work brings major risks: for example, firemen's risk of damaged sperm is high, due to inhaling fumes from burning carpets, paint and plastics. But almost any exposure to the industrialised world carries some threat to the delicate, front-line body chemistry involved in producing sperm. Eggs are equally vulnerable, but in different ways. As fertility declines, so surplus eggs and sperm from those who still have them have now become a saleable commodity.

Baby Super Market

The London Underground is awash with posters advertising conception assistance with donor sperm. The London Women's Clinic boasts: "Not only do we have a diverse cultural mix of donors but they also come with degrees, MBAs and PhDs and from a variety of professions from biologists to chefs to solicitors and police officers". So that's alright then. Or pop along to the International Fertility Fair, "The Fertility Show" at Olympia next November – this year's exhibitors numbered over 80, and a random trawl through their websites reveals a highly-developed and very slick commercial network⁷. Evidently they have tapped into a huge potential market, and the advertising normalises the idea that achieving pregnancy "needs a little help". No-one here is any longer questioning the ethics of selling babies as a commodity. *The Land* would have attended the show except that – well, here is their press policy:

We've promised visitors to The Fertility Show anonymity, a safe, secure and discreet environment and no cameras. Fertility issues are a silent epidemic, they are still a taboo and we have to deal with the fact that many people facing problems are particularly sensitive. So we've made a few decisions to help them feel comfortable about attending the show. This includes not issuing press passes and definitely no cameras.

Fair play – except it's not the customers we were interested in, but the stall-holders. With names like "Mindfulness Muma-To-Be" you have to wonder what sort of professional services they might be offering. Or what level of ethical oversight is being applied. Where treatment is futile because of poor prognosis, to continue exploiting the hopes of desperate would-be



pregnant couples is not good for their health. There are calls for such treatment to be tightly regulated – and yet the responsible body in the UK, the Emerging Science and Bioethics Advisory Committee (ESBAC), have taken little interest.

Dearest Daddies

Much recent conflict in religious circles has revolved around the definition of marriage, as being traditionally “between a man and a woman for the procreation of children”. The non-heterosexual community, now enabled to form official, lasting pair-bonds through the institution of civil partnerships, have begged to differ from this definition and in some cases male couples have sought to become joint parents through the agency of a surrogate mother, now known as a “gestational carrier”, in a procedure crudely but quite accurately dubbed “rent-a-womb”. It would appear that the methods employed are not only elaborate but also hugely expensive – around \$90,000 per baby⁸. Frozen embryos created in the test-tube must be implanted in a hormonally-prepared womb, in a clinic, possibly by the aptly-named Dr Pang, after inordinate amounts of paperwork – a far, cold cry from the old-fashioned spot of hanky-panky that used to suffice for conception. And yet we are still in the familiar world of sperm-meets-egg here, and they still meet in the time-honoured way, at least insofar as a bunch of sperms still compete to be the one who gets to the egg first. There is no “quality screening” or pre-selection for “desirable” traits going on. The marvellous randomness of life is still operating, and as a result babies remain uniquely their own person, whom parents must accept gratefully for who they are, with all their faults and gifts.

Super Baby Market

For how much longer will potential parents be willing to accept the fallible little human being that nature provides, as and when she or he comes along? Family planning, once a phrase that denoted simple contraception for the sensible spacing-out of pregnancies, has reached extraordinary heights of sophistication. Postponing pregnancy altogether until some fabulously perfect future moment – after retirement, perhaps – is now one of the perks available to higher-flying female executives in such futuristic enterprises as Apple and Facebook⁹: “We continue to expand our benefits for women, with cryopreservation and egg storage as part of our extensive support for infertility treatments”. Facebook offers up to \$20,000 (£13,000) for egg freezing for female employees. A typical round of egg freezing costs about \$10,000, with \$500 or more in fees each year for storage. It is now commonplace to defer parenthood until well into a woman’s forties, so as not to limit her career opportunities. The snag is: left to nature, high fertility occurs when a woman is young enough to have the energy that caring for small children requires. By 40, the energy has declined – but never mind, she can now afford to employ a nanny, or nursery, so she can carry on working to afford the nanny, or nursery. This is likely

to cost month-by-month more than the mortgage on a house, so perhaps it’s a good idea to pay off the mortgage before having the baby? But raising one’s child through the agency of others does rather seem to cancel out the point of having them at all.

The most curious thing about this procedure is that – in some cases – the cryopreserved (deep-frozen) eggs are pre-fertilised. “The idea behind “fertility preservation” is that by removing and fertilising their eggs in their 20s, women will have a better chance of becoming pregnant in their 30s and 40s.” But pregnant by whom? Some long-forgotten boyfriend? This is basically donor sperm again, but with a possible 20 year interval during which the embryo, the proposed baby, is sitting around in a deep freeze, while life goes on outside it. This raises some peculiar existential questions we are hardly equipped even to think about. But the child who was this embryo may well “go through life feeling a bit wierd” when it considers its origins.

Three Parent Babies?

Human eggs for IVF (or even cloning) purposes, cost anything up to £50,000 for those of celebrities. These eggs of course carry not only the DNA of their originator but also potential for avoiding genetically-caused diseases. Merging the genetic material of two eggs is now possible, to prevent the transmission of mitochondrial disorders. But unpredictable interactions between the 37 mitochondrial genes of the cell cytoplasm in one egg and the 23,000 chromosomal genes in the cell nucleus of another, can cause a minefield of unforeseeable side-effects. There is a biotech arms race going on, and who gets there first wins the big bucks. The US think we are “not ready” for this sort of thing, but the UK government’s typically shilly-shallying verdict is that this technique is “not unsafe”.¹⁰ However – nobody knows, yet. The hapless IVF children/adults-to-be born from such experiments are essentially guinea-pigs. “All scientists know that when you do a biological experiment it sometimes works and sometimes doesn’t. If it works 70-80 percent of the time you are really lucky ... [but] you won’t know for generations.”¹¹ These aren’t lab rats, but thinking human beings. Once conscious that their very being is shaped by the dubious skills of some anonymous lab technician, what anxieties must they live with?

Better and Better and Better

The three-parent child has the excuse of being a medical intervention, to enable genetically damaged people to have healthy children. This still falls, although at a considerable stretch, within the definition of “somatic gene therapy” which doesn’t try to engineer a whole new person, but just to sort out the cells that are causing trouble. What, though, of the attempts by Advanced Cell Technology in California to do away with “birth mothers” altogether? They imagine a future in which “desirable” chromosomes could be cherry-picked from celebrities and “assembled into a human being with 46 parents, all male – a child

with 46 fathers and no mother.”¹² Calling this construct a “human being” seems a bit inaccurate. It would in fact be a product of the aforementioned *germline* genetic engineering.

This “germ” means the germ from which life germinates - as in wheat germ, rather than measles. Eggs and sperm, in other words. As Bill McKibben explains in *Enough*, (essential reading on this subject), the way it’s done involves taking a week-old living embryo, extracting one of its few cells, and adding to, deleting and modifying the genes therein, with the express purpose of “improving” that human being. McKibben quotes James Watson, the DNA pioneer, enthusiastically promoting “going for perfection” with germline, because “who wants an ugly baby?”

“Artificial chromosomes containing predesigned genes could be inserted. They [the engineers] would then take the cell, place it inside an egg whose nucleus had been removed, and implant the resulting new embryo inside a woman. The embryo would, if all went according to plan, grow into a genetically engineered child. ... meeting the particular choices made by parents, and by the companies and clinicians they were buying the genes from. Instead of coming solely from the combination of his parents, grandparents and so on back through time, those genes could come from any other person, or animal ... and they will pass to his children, and on into time.”

McKibben goes on to explain:

“Parents can gain complete control over their destiny, with the ability to guide and enhance the characteristics of their children, and their children’s children as well ... But these won’t be our genes precisely; they’ll belong as much to whatever multinational created them. And these kids won’t be our kids, not exactly. The gulf between their generation and ours will be enormous, their evolution accelerated. ... Children will in some sense be of a different species.” But “if the number of enhanced individuals is sufficiently small, we may be able to ignore them. They would be, by definition, ‘freaks’”.

That is perhaps the only reassuring thought in this whole gut-churning scenario. Such designer shopping alternatives will hopefully only ever be available to the obscenely rich, and their offspring will exist in a minority ghetto; an evolutionary cul-de-sac. A being so perfect will have nothing to strive for and so either have to die of boredom or join VHEMT [see p43].

Clone-a-Rama

None of this can happen without cloned embryos— but these already exist, in great numbers, for the convenience of scientists in stem cell research. How to police the thousands of labs out there, to ensure that anonymous scientists chasing a fast buck don’t try out enhanced embryos on paying parents? Only the thinnest of ethical barriers stops these procedures slipping into legality; and as we have so often seen,

we are already willing to accept all sorts of repro-tech-no-fixes if they satisfy what we class as a “need”. As the need for a baby, any old baby as long as it’s “ours” is

outgunned by the need for a “better” baby than next door’s, so the methods to achieve that start to lose their yuck-factor and become normalised. But what’s perfection anyway? A daughter like Barbie Doll and a son like Schwartzenegger will still act the goat at bedtime and refuse to eat their sprouts. At least, one must hope so.

Womb at the Top?

After all that, the idea of ordinary pregnancy seems almost prehistoric. But fear not! Because that faulty old human gearbox, the uterus, is also in line for a rejig, an upgrade – the Mark II WonderWomb is on its way. First came womb transplants – originally taken from dead women to implant in other women born without one, or otherwise damaged. After many fits, starts, and failures, live children have started being born by this route, although huge amounts of immunosuppressant drugs are required to avoid rejection of the bathtub (as it were) along with the baby. The idea is to leave the “borrowed” womb in place for a few years while the required family is produced, and then extract it - possibly even recycle it via another would-be-mother.

It might be simpler just to have a womb on wheels, an external incubator in which the foetus could grow to term with no inconvenience to the mother. This idea, “ectogenesis”, has been around for years - in 1970 the feminist Shulamith Firestone was promoting it, saying that an artificial womb would “free women from the tyranny of their reproductive biology.” Taking this a long leap further, the University of East Anglia bioethicist Anna Smajdor argues that it is “a *prima facie* injustice” to expect women to have babies at all: they take all the risks and society reaps the benefits. Therefore there is a “moral imperative for ectogenesis”, to quote the title of her extraordinary paper¹³, odder even than the dozens of trashy science-fiction novellas that gloat over this possibility. But with space-age materials, computerised thermostats, robot pumps and sluices, what’s now to stop us? Maybe only the fact that very few people in this dear old world are really quite that crazy.

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