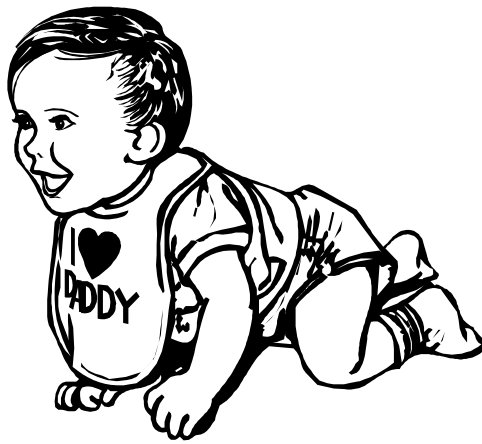


CLONING

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CLONING

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ABSTRACT

Ever since Louise Brown, 21 years ago, captured the headlines of the world, medical expertise has ventured where man had never dared to venture. IVF technology introduced to us the concept of creating artificial humans. Then in 1997 'Dolly' the cloned ewe further captured the world with the possibility of another you. The fantasy, Brave New World, of Aldous Huxley seemed to have become an achievable reality. Fortunately, the rational leaders of the world have seen that reason shall prevail and in general, agree that further progress toward the actual cloning of human beings be prohibited. Hence, Article 11, Universal Declaration on the Human Genome and Human Rights of 1997 states:-

Practices which are contrary to human dignity, such as reproductive cloning of human beings, shall not be permitted.

This affirmation is likely to be confirmed Nationally according to the recommendations of the NHMRC 16 Dec 1998 and already supported in some state legislatures, such as outlined in the 1995 Victorian IVF legislation.

The rate of growth in IVF technology and failure, in many countries, [even in some Australian States and Territories], to provide adequate regulation, has led to many gross violations of human dignity; without thought for generations yet unborn or even the emotional security of children, when denied knowledge of their genetic (biological) 'roots'. In Australia uniform national legislation to halt and more effectively regulate, the expansion of IVF practices needs to be introduced.

The very idea of tinkering with the DNA building blocks for any reason, however altruistic the motivation, fill many with a sense of foreboding, even conscious repugnance. Clearly, the genetic revolution together with the impending conquest of mapping the human genome, the ability to screen or to engineer and interject, human genes, [for the purpose of remedying inherited diseases and human afflictions], are laudable achievements. Nevertheless, even if correcting and / or enhancing genes becomes technically feasible, we must as a society, address a whole range of heretofore unprecedented ethical, moral, legal and social issues. We must seriously consider and seek to be confident that the benefits for earthbound humanity outweigh the risks and provide a balanced appraisal of unselfish allocation of resources.

In the thrust to approve therapeutic experimentation involving human eggs or embryos we have yet to assure the community that we are not on some new eugenic path. Moreover, we must also be convinced that medical/biological scientists, because of their own aspirations or their commendable motives, are not venturing to redefine what we consider to be human life. We must also be assured that they are not permitted to indiscriminately determine what quality or value of life is acceptable and what is not.

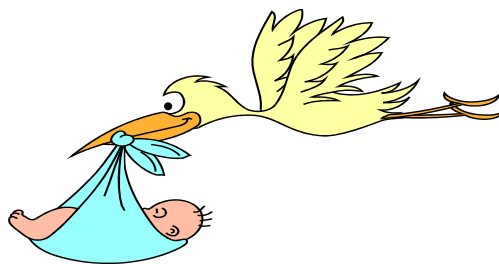
- ⇒ Once the human genome has been analysed and mapped to whom should it be made available?
- ⇒ What legal protection can be applied to limit its availability and ideal discriminate use?

- ⇒ What protections can be applied to restrict public or private companies from access which may restrict insurance, health or employment opportunities?
 - ⇒ In what ways are genetic therapies to be applied, for what purposes and for whom?
 - ⇒ What priorities might be attached to upward of 4000 treatable genetic diseases?
- When secular science ignores any concept of a transcendent creator– God– how might Theist, Pantheist or even an Animist spiritual people /cultures, avoid the imposition of ideas/ practices they find abhorrent or incompatible with their religious adherence?

The prospect of remedying human maladies through the assessment, repair, manipulation, creation and transfusion of human genetic code is ambitious and tempting. In riding the wave of enthusiastic support for genetic science / technology, guarantees remain elusive and successes few. The gap between diagnosis and cure is lamentably still wide.

Initially dramatic success will inevitably be restricted to a small privileged (rich) number. The moral/ethical judgements we must consider cannot be confined to the promises of genetic technology per se but where /how to best direct scientific effort and economic resources.

Our society still focuses upon symptoms of disease and clearly we applaud the discoveries of genetic origins. The promise of genetic intervention for their cure is an exciting goal. Nevertheless, we must ask why channel scarce resources into these esoteric objectives? In so doing we overlook [even ignore] other projects capable of alleviating human suffering by improvements in living conditions & nutrition, avoiding damaging life-styles and relieving human anxiety. Each of the latter are major factors influencing the quality of human health and welfare.



Neil RYAN

CLONING

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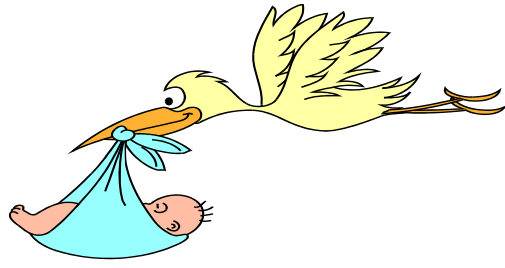
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CLONING

1.0 The Brave New World.

History of bio-science seems to confirm the view that daring animal experimentation eventually leads to similar application to people. In our modern world the internet has now opened the door to DIY (single) parenting options providing frozen sperm or ova; even select embryos. Are we to see select 'human bulls' fathering children in the hope of improving in some way the human herd?

The 'Brave New World' of Aldous Huxley¹ first published in 1932 now seems clearly prophetic. In this Brave New World marriage and parenthood and religious practices were undertaken only by the 'savages' while the citizens of UTOPIA were freed from having to conceive and birth children through sexual union, the tedium of gestation in mother's womb and the pain of labour. Rather, children were 'decanted' from selected buds and embryos grown in bottles containing nutrient equivalent to that found in a mother's womb. All procreation was handled in select hatcheries. Sex was then able to be enjoyed as a common recreational activity and what we might otherwise regard as promiscuity, in the Brave New World- of Utopia, was honoured as sacred. In a mockery of the Christian era a new calendar was numbered AF-[After Ford] even simulating a communion in the name of the Great Ford. A modern parallel is seen in our current day depreciation of fatherhood, new styles of relationships and sex regarded as merely recreational.

IVF and genetic bio-technology has now brought us to the very brink of Huxley's 'Brave New World'. Yet, even this imaginative author, in a 1946 second edition of his book, commented:- *'Today it seems quite possible that the horror of my Brave New World may be upon us within a single century.'*

In 1970 Paul Ramsay,² Prof. of Moral Theology and Ethics at Princeton Theological Seminary, again confirmed that the BNW Central London Hatchery would be possible within 15 to 50 years. He expressed the fear that few philosophers, theologians, moralists even churches or synagogues, would have the persuasive power to prevent the widespread social acceptance of morally objectionable technological achievements, if (and when) they occur.

Joseph Fletcher, the father of situation ethics and pioneer advocate of bio-medical ethics however, expresses his favourable support for cloning and human genetic engineering. He argues that the greatest good is best served for the greatest number, unperturbed by the means of their achievement. In other words the ends are justified by (whatever) the means. Other of us however question such immoderate affirmation. See for example the comprehensive arguments put forward in Genetic Ethics; Do the Ends Justify the Genes?³

Clearly in science and medicine we are in the midst of a genetic revolution and the means for wisely directing the ambitions of a fanciful few, are lagging in the race toward an intolerable Brave New World.

2.0 IVF – 21 years on — has it come of age?

"Pets are for life not just Christmas!" may be a catchy bumper sticker but we might likewise seriously contend- **Babies also grow out of their prams!** Who really cares for the children when they discover they have two or more sets of parents – 'social' parents and biological or 'genetic' parents?

2.1 Use and abuse of IVF!

Just 21 years ago Louise Brown was born in the UK, created by IVF technology. Australia's first IVF child -Candice Reed- turned 19 on June 23. 1999 but also, 11 years ago, here in

Victoria, the more controversial birth of Alice Kirkman. Her smiling face appearing between her two Mums, in National newspapers during the second week of May 99⁴. Alice, is the surrogate child nurtured in Linda's womb from sister Maggie's ovum and a donor sperm. She had just been invited to address 2000 delegates at the 11th World Congress on IVF and Human Reproduction held in Sydney. Then we find, in the same edition of the Age newspaper⁴, the sad lament from another offspring of donor sperm; – 'Jo' – now a mature teenager. She cried out from her 'particular kind of hell', grieving over her sense of incompleteness once she had learned that her (social) Dad was not her (real) biological father. The question remains, will Alice the pre-teen IVF 'celebrity' in 8 or 10 years time also feel a similar sense of lostness? When the cry is:- *'I must have a baby no matter the cost!'* – who really gives thought for the emotional 'soul' of an adorable infant 20 years on?

Before America followed the successful Steptoe - Edwards IVF experiment with Lesley Brown, which gave Louise to her on July 18, 1978, Professor Paul Ramsay of Princeton University, predicted that IVF procedures would give rise to untold moral- ethical - legal and psychological problems for parents, their children and society. Other critics of IVF procedures; religious groups, pro-life organisations and certain feminists, have likewise continued to voice their concerns since 1980. That was over 20 years ago! Now we are well into this "Brave New World" where bio-medical technologists determine who will live and who will die. Prof. Ramsay's predictions are only now a trickle but they will soon become a flood. Present day sperm donor's [also ova contributors] may yet have to wait until AD 2015 before their biological offspring come knocking on their doors, in their search for genetic roots. As from January last year Victorian government legislation gave approval for donor [sperm/egg] offspring children, rights to seek their biological heritage following their 18th birthday. NSW and WA are preparing similar legislation.

A forerunner of the problems likely to arise was seen on SBS TV in December 1997⁵. The documentary – **'My Father the Test Tube'** – interviewed children, from both Europe and North America who were born of donor sperm. Confused emotionally, these young people were seeking for their biological fathers. A similar brief presentation appeared on the 9 TV network⁶ on 20 May 99. We also learn of 'donor' parents who want to find their biological offspring. The common thread expressed was that **IVF had indeed profoundly messed with their sense of identity**; even worse perhaps than adopted children who try to locate their birth mothers and/or biological fathers.

In the USA one donor 'dad' has been credited⁷ with 'fathering' 50 children. Victorian legislation caps at 20. Cases have even been reported where young couples, engaged to be married, have been 'fortunate' enough to have discovered they actually had the same father. But we might also ask: – 'what about those half brothers and sisters who never know?' **Tracing genetic heritage and medical history is thus of special importance.** Who can ever be too sure what habits, addictions, diseases or sins are transferred from one generation to another. The Bible⁸ implies visitations even beyond 3 and more.

The emotional adjustment of IVF mothers and fathers is fraught⁹ with considerable uncertainty and mental anguish. Especially the problems often faced by infertile men who agree to "parent" a child from another man's sperm. They experience a lamentable confusion of soul. What kind of emotional trauma awaits when genetically identical children are cloned from but one parent? *'Do I have a Dad and is my Mum really my twin sister?'*

Lids from these 'cans of worms' have only just begun to be lifted.

2.2 Designer Babies.

The 'Brave New World' of 'designer babies' has indeed arrived. At present we learn of new terms like:- wombs for rent; incubator wombs; host mothers; compassionate surrogates and last year, there was a campaign to seek sperm donors. Advertisements were found in Lesbian periodicals, to write to St George IVF & Fertility Clinic, 172-4 Forest Road, Hurstville NSW, 2220. The Australian Football League has also been targeted. In

addition during October '98 advertisements appeared in Victorian local press papers for egg [ova] donors– Refer Dorec. B 15 Monash IVF, Level 4 89 Bridge Road Richmond, 3121. Likewise¹⁰— 'Click on a Donor' and 'vio-la' home delivered sperm or eggs via the Internet. Other experiments have been undertaken to transplant ovaries from aborted children. And for the career minded, well they can store their 'seed' in sperm and ova banks, so they can have children at a more convenient time. Still, **who really seems to care for the children and their future mental security.**

There is the persistent push for Lesbian couples to access IVF procedures. However, in a society in which 'fatherlessness' is linked to all kinds of dysfunction, drugs, crime and suicide, and mind you, a disproportionately high record of child abuse in 'lesbian families', this cannot possibly be deemed a wise move. In such alternative 'folk' units the Department of Social Security have already been caught up in complex legal issues. In one reported case, cutting the single parent pension from one lesbian 'mum' and directing the sperm donor 'dad', as biological father, to pay \$400 per month for child support¹¹. Later the Family Court ruled that he was not a parent. This situation may well remain, at least until an emotionally confused 18 year old donor offspring presumably comes looking for him, in order to find his/her real identity. Other Lesbian petitioners, claiming to access IVF, have argued before anti-discrimination tribunals but eventually have been disallowed; not being able to prove their infertility. The more wealthy simply seek access in the USA, where clinics¹² have no shortage of gamete donors seeking up to \$1000 for sperm and \$5000 for ova. The Colombia–Presbyterian Med. Centre, Manhattan, have even advertised¹³ embryos for sale– supermarket for babies on the internet.

In NSW lesbian couples and single women may access IVF¹⁴ and receive medicare funding and when the relationship dissipates the Family Court, according to solicitor Lynne E. Shortt, awards against the non-biological partner for child support. Under present legislation there is no age limit to IVF access thus, post-menopausal women are becoming mothers from other's eggs. This was highlighted last year when 53 year old Wendy Kenyon gave birth to triplets. Husband -Phil- reckoned his wife was 'young at heart', but how this family hope to conquer a generation gap of half a century is quite another 'unplanned' venture. '*She will need a lot of family support*'– quotes Age writer 2 June 98. How will she cope with 3 children when she is of an age to be caring for her own elderly mother? How will Wendy at 63 cope with 3 lively 10 year olds? How about when they are teenagers and they then find out she is not even their biological mother? 'Once upon a time' multiple birth families may have looked to the Woman's Weekly or New Idea for 'exclusive' support.

At present 1 in 100 children are born following IVF technology. Meanwhile 2 out of every 5 conceptions are terminated by abortion and both IVF and abortion attract medicare health system subsidies. As biomedical technology advances ever onward, a stage may soon be reached when IVF embryo techniques and saving premature babies meet one another. Then we will truly have artificial wombs; every mother's dream! Child birth for the rich will indeed be painless. The machine will then implement gestation; just drop in the egg and sperm samples and come back in 9 months. What of the emotional health of the artificial child; who knows?

Once we were confident that a strong nation was founded upon strong family units; not any more. We now regard sexual copulation as mere recreation, accept the breakdown of marriage as reality, have progressively removed any bond between father and children and by way of 'kiddie kennels', we now even sever the mother –child bond in like manner. The consequences of this are reflected in the growing hopelessness in a new generation. Meanwhile, we appear 'hell bent' on creating a whole "new age" of artificial children, void of any concept of personal identity and roots.

George Will comments. '*The desire for children is strong and wholesome but life offers no guarantees and good things can have prohibitive costs.*' But who now will really care for the welfare and emotional stability of children created by IVF assisted experimentation?

Over the years we have continued to hear the painful stories of children in search of their roots. Firstly from slaves, adopted children and the 'so-called' stolen generation. Now a new band, created by IVF bio-chemical technology, donor sperm and eggs is soon to join this uneasy quest. Where too the further chaos if 'cloning' is permitted to join this confusing 'merry-go-round'?

Because the secure emotional and personal identity of children is accomplished through known genetic lineage, gestation & infant nurturing, social and spiritual relationships, of two parents of opposite sex, we need always to strive to meet this ideal rather than deliberately experiment with other alternatives just to show that it can be done. The future life of the child must be recognised; not carelessly or synthetically conceived.

2.3 Who Cares?

Originally IVF was driven by altruistic ideals of providing infertile parents with the joy of giving birth to their own child. Yet in contemporary society the demand for rights and threats of discrimination have exceeded these ideals. IVF technology is now a consumers market promoting children for same sex couples and single women; totally disregarding fatherhood. IVF is a booming, uncontrolled, global industry. Donor gamete harvesting and embryo super-marketing, surrogate and incubator wombs seem common place. The innocent smile on the face of a longed for child is captivating BUT who cares for the long term emotional security of children born in such artificial manner. This question remains unanswered; ignored, as new classifications of parents have been introduced.

Dr. Leon Kass¹⁵ [1974] way before the IVF 'quality control' industry took off, called this the 'dehumanisation' of the mystery of procreation. He asked:- *"Is there not wisdom in the mystery of nature that joins the pleasure of sex, the communication of love, and the desire for children in the very activity by which we continue this chain of human existence?"*

This question remains:- *"Is the special bond God has induced into the seed of biological parents to be destroyed by surrogacy of every or any kind? Artificial or cloned children are not the only substitute for a barren womb!"*

3.0 IVF – Now the Next Step = Cloning.

3.1 Regulation

If the scientific community simply regard cloning as little more than an extension of IVF or other kinds of assisted reproduction technology, **what might we now ask is to be the contorted scenario if unregulated genetic manipulation and/or cloning, is also to be unleashed?**

In Australia, Victoria, Western Australia and South Australia are the only states to have regulatory legislation in place limiting access and approval for IVF and embryo research **and prohibiting cloning.** However, without some level of Federal intervention and/or uniform legislation across all states and territories, couples and/or individuals, will simply travel to these other states and territories (or bi-pass regulatory rules overseas or via the internet) seeking the 'best deal' to obtain their own 'artificial convenience' children.

3.2 Playing God?

Molecular biologist Dr. Richard Mulligan [Whitehead Institute for Bio-medical Research] has commented:- *"Given the power of modern molecular biology, we can use gene transfer to essentially make a cell do whatever we want it to— we can 'play God' in that cell."* What do we mean by this expression? Clearly when it comes to 'genetic engineering' and the potential for creating identical human beings—cloning them— then 'playing' is hardly an appropriate word. To the secular humanist God does not exist other than in the human mind while to a Bible Believing Christian the expression 'playing God' implies placing oneself in the position equal to or instead of, God— as a creator rather than an accountable (human) creature. (Rom 1:25 NIV) *"They exchanged the truth of God for a lie, and worshiped and served created things rather than the Creator—who is forever praised. Amen."*

The Ruth Graham¹⁶, wife of Evangelist Billy Graham once wrote that if she were ever to play a major role in a play, she would make every effort to study and learn as much about the person to be portrayed as possible. Thus, if any doctor or genetic scientist is to 'play God' then it would be most appropriate to learn all one could about the creator God.

Today bio-technology is the high fashion in science, perpetually in the media limelight. Ultimate altruism exists which aims to benefit all of humanity, purporting to eliminate all disease and human disability, nevertheless, a disguised focus, directed to commercial economic conquest is inevitably uncovered. The scientist then declares it is not his but society's responsibility to set the acceptable ethically limits to the scientific achievements possible. Today concerns are being raised in relation to genetic designer crops and herds, as they apply to genetically modified food. Internationally the public are asking questions about the nutritional qualities and demanding guarantees from any side-effects and other long-term health issues. This kind of outcry might well be seen as equivalent to the public rebuff to further global expansion in nuclear power production, relating to fears in regard to the dangers of radioactivity and safe disposal of wastes.

These kinds of public suspicion do no auger well for any favourable acceptance of genetically modified humans, whether resulting from gene therapy or the more fanciful application of genetic reproduction or cloning; seen as futuristic eugenic technology.

3.3 Commercial and Personal Interests.

In 1996 actor Michael Keaton cloned himself in the movie film–*Multiplicity*; pre-dating the first reported cloning of a 6 year old ewe, by Prof. Wilmut in 1997 at the Roslin Institute in Edinburgh Scotland. From this time on the imagination of man became captivated and genetic reproductive science took a giant leap into the Brave New World. The Roslin Institute¹⁷ has now become part of the Geron Company in California; reputedly funded by an 83 year old Texas multimillionaire, obsessed in a search for the 'fountain of youth'.¹⁸ One observation¹⁹ that has arisen from the 'Dolly' project is that the mature DNA from the 'parent' ewe precipitated accelerated aging of her 'Dolly' clone. The fear is that Dolly may, in chronological years, die young.

It has been argued that DNA chromosomes shorten with age due to the shrinking of the 'Telomeres' at each end of the DNA. The thesis now put forward is that if these 'Telomeres' can be continually replaced as cells divide; hence ageing might be halted. Dr. Roger Pedersen²⁰ from the University of California, backed by the Geron Corporation is keen to use the Dolly technology to make human embryo clones for stem cell research. Another US Co., Advanced Cell Technology claim to have produced 400 cell human embryos by the same methods used to create 'Dolly'²¹. It now appears²² that the Geron Corporation is a leader in the field of 'telomere' research. Another Geron scientist, Dr Calvin Harley, aims to pursue stem cell development studies with the aim of inhibiting the degeneration of major bodily organs, by continually replacing the aging, organ specific, stem cells. These studies are linked with an Arizona based Kronos Corporation whose Development Director, Christopher Heward' is leading a \$US 3M anti-ageing strategy monitoring clients biochemistry and physiology to identify levels of somatic damage and hopefully strategies to reduce them.

Clearly there seems to be a rich elite keen to extend their lifespan and quite capable of hogging a disproportionate share of costly research resources.

Another publicly listed US company –CELERA– claims to be advancing in the development and patenting of up to 300 human genes. We might then ask if any private company has the 'right' to own this level of humanity and should the community then expect to pay this company when needing to access the supposed treatments. It is difficult to see how any commercial institution can avoid the temptation of focusing only upon alleviation of diseases with the greatest potential commercial reward.

In January of 1998, Dr. Richard Seed (variously referred to as Chicago based physicist and or Harvard biologist)²³ scandalised the responsible scientific community by affirming his intention to establish a cloning clinic in any country where prohibition had not been legislated. He has reputedly been financed by a Swiss-based religious cult- The Raelian Movement- establishing a company called 'Valiant Venture' to provide a 'clonaid' service. In May 98 he²⁴ arrogantly commented ..' *parliament can't stop me. Congress can't stop it we aim to make 500 clones a year.*' Dr. Seed hopes to establish his laboratory in Japan.

Well might we ask if Dr. Seed can be likened to a true to life Dr. Stangelove prepared to stretch the bounds of responsible human research in some remote subterranean cellar laboratory.

It could well be argued that ethical decisions relating to human genetic technology cannot be left in the hands of ambitious scientists for a degree of hypocrisy is often uncovered. Dr. Mark Sauer of the Columbia- Presbyterian Medical Centre while quick to criticise Dr. Seed allows²⁵ his own institute to offer human embryos for sale @ \$ 4000 each.

These kinds of activities simply illustrate how wealthy foundations are capable of circumventing restrictions to public funding or the voluntary moratoriums requested by, for instance, the US Presidency. Human cloning was banned in the US in 1997. However, caught between a desire not to support further cause for abortion and an equal, almost opposite, objective to promote medical research, the US Congress has not drafted legislation prohibiting cloning technology in the private sector. The European Union has also issued a charter banning research into cloning; Britain and Germany however, abstained²⁶ as signatories, claiming the restrictions were too tough. British law nevertheless, prohibits cloning of identical humans. Likewise Victorian state legislation of 1995 and nationally once the recommendations of the NHMRC 16 Dec 1998 are enacted.

4.0 Human Genome Project

A proposal to map the 80,000 plus genes of the human system was first proposed in 1979. It became an International co-operative reality in 1990. The aim of the project being to map and sequence the complete human genetic structure or as Dr. Sinsheimer from Santa Barbara-University of California defines:- '*the complete set of instructions for making a human being.*'- a God map or 'recipe for humans'. The longed for goal (hope) is to identify the defective genes believed responsible for up to 4000 known human genetic diseases. The possibility that diseases may be cured; even eliminated, is the commanding driving force for the modern genetic revolution.

Funding of the order \$US 3B launched the project in 1990 with the expectation of completion within 15 years. Dr Francis Collins (Director of the US Human Genome Project), recently commented that the project was already way ahead of schedule and likely to be completed very early in the next century. In the UK the Genome project is coordinated from the Sanger Centre under the Direction of Dr. John Sulston and one former President of the project is the Australian geneticist Prof. Grant Sutherland.

In the USA the Celera corporation²⁷ has become a commercial rival to the International Human Genome Project; seeking to patent medically useful human genes. Their aim clearly is for commercial reward; not humanitarian altruism.

The question that immediately comes to mind is however :- "*Can human nature be reduced to a mere assemblage of genes?*" Clearly knowing the place and structure of every one of 80,000 genes in no way helps us to understand all the possible combinations that arise. These alone would exceed the grains of sand on many a sea shore or the stars in the heavens. How do genes define the human soul or spirit?

Dr Frances Collins²⁸, Director of the US Human Genome Project, writes:- “ We have over our recent history concentrated in the realms of medicine and pharmacology on treating the symptoms of disease , rarely the cause. In pursuit of causes we are now looking at origins in the genes and as genetic engineering has made great advances in agriculture in promoting disease resistant and more productive food crops we might likewise expect to advance the well being of human kind.”

These are laudable ideals but at the same time in the pursuit of good health and human longevity, we tread the razor’s edge; the fine line between the search for good health and human selection- **eugenics**.

☞ Do we forgo any acceptance of flawed or disabled human creatures and opt instead for their elimination?

☞ How are we to face the emotional paradoxes and cost penalties for their care or do we opt to prevent their very existence?

☞ Is abortion to be further accelerated as a justifiable means of eliminating untreatable or incurable genetic illnesses?

Abortion today is seen as just one facet of ‘procreative liberty’ or women’s right of choice.

☞ Is the Brave New Society now to intervene and prevent couples from marrying or otherwise to prevent the creation of defective children?

5.0 Application of Genetic Data–Ethical, Legal and Social Implications.

Clearly with the promotion of genetic information an increasing number of ethical, legal and social dilemmas must be faced. When it can be shown that the human genome can be manipulated to determine or eliminate certain hereditary diseases or disabilities or even character flaws, where do those already afflicted find comfort, security and acceptance? Are they to be further marginalised and regarded as aberrations of human perfection? What of the future generations who, because of their material circumstances, may preferentially benefit from selective genetic technology? Prevention and treatment of genetic disorders may well be a laudable goal but we must not deny or reject those who through no personal fault do not measure up to the quality control/ eugenic expectations of the ‘Brave New World’. The following are but a sample of a very large number of questions and situations that have to be addressed. In no way can they be deemed exhaustive!

5.1 Medical/ Ethical Dilemmas

5.1.1 Genetic pre-natal screening either via human cell analysis or amniocentesis, for (i) sex selection, (ii) defective genes, (iii) actual or potential diseases or (iv) physical faults.

- What circumstance/s would or should demand genetic screening?
- Should genetic screening become a social health issue and penalties imposed for refusal?
- Who should have access to anyone’s personal genetic profile?
- Should a priority list of genetic disorders be registered and physical characteristics such as intelligence or physique be ignored?
- Couples might be ordered to provide genetic history or undergo genetic evaluation before marriage, in the same way blood tests are required in the USA.
- Who then determines who should or should not have children?
- What then the situation of unplanned pregnancies resulting from promiscuous recreational sexual activity?

5.1.2 Sex selection:

- Sex screening²⁹ to inhibit the passing of male dominant genetic disorders have already been undertaken in UK and USA.
- In India and China sex screening is already causing problems of imbalance and subsequent social disturbance. A trend that preference for female children in western countries is not likely to correct.
- If in any selection process some embryos are found to be defective and others not so, who chooses which ones are to be eliminated and which ones are to be implanted?

- Is pre-natal testing now to be promoted as a quality control measure for perfect children?

A common argument put forward by proponents of the nouveau-eugenic enterprise is that we do not criticise people who seek the very best health and educational opportunities for their children so why should we criticise the selection process before they are born. Peter Singer³⁰ a renowned Australian born ethicist maintains that it is perfectly moral to declare the lives of severely disabled unborn infants as not worth living. A sound rebuttal to Peter Singer's distorted ethics has been recorded by Per Sundstrom³¹.

Only respectful admiration for (a) the fact that human life is sacred from the moment of conception, when the chromosomal endowment of two parents are fused to create one new and unique being and (b) a robust societal ethic emphasising the sanctity and value of human life, will we ever be capable of thwarting the venture into the world of nouveau-eugenics.

Otherwise the world could well have been denied the genius of men such as Dr. Stephen Hawking.

5.1.3 Legal Issues

- Genetic patenting.

The ability to scrutinise the genetic make up of any human being or yet unborn embryo/foetus, demands solid legal guidelines.— Common IVF practices have already out run the legal boundaries. Secure ethical and legal frame-works need to be in place.

- With the availability and apparent community acceptance of abortion, doctors may well be under direction to demand genetic screening or face the subsequent litigation should a defective child be born.
- Parents could well be obliged to sign affidavits waiving any need of pre-natal genetic evaluation to protect medical personnel should a diseased or defective child be born.
- In the event of adverse genetic screening what obligations should then be leveled upon these individuals to forego procreation?
- Are penalties to be imposed upon individuals or doctors who fail to obtain or purposely conceal genetic history / data?

What does this now imply for future mothers and fathers when parental acceptance becomes dependent upon varying degrees of hereditary disease history and genetic testing. Pre-marital and pre-natal testing of the kind outlined undermines all past concepts of family structure and unconditional love, unselfish sacrifice and acceptance of the worth of every human life. Yet still we hear respected leaders³² in relevant scientific communities, expressing views that:- *'parents have no right to burden society with malformed or mentally incompetent children.'*

"...parents have no right to add to levels of human suffering".

- Genetic predisposition in criminal law.— Cases have been cited where genetic factors have been used by defence barristers implying that genes prime certain individuals to behave in socially unacceptable ways. Is this not an ultimate form of blame shedding defence?

Genetic origins might correlate with some particular human trait or pre-disposition but this surely does not justify the choices leading individual people to enter upon immoral behaviour.

Today instead of the old line *'the devil made me do it'*, people are lamenting their victim status and blaming their genes. Dr. David Persing³³ a Mayo Clinic Geneticist says that our genetic heritage may induce inborn tendencies toward forms of immoral or damaging behaviour – addictions or proclivity to violence. Yet our genes do not give excuse. We are all capable of making real moral choices when we know the consequences of adverse actions.

5.1.4 Genetic Discrimination:- Application of Genetic data / treatment

- Health insurance costs : Some states in the USA^{34, 35} have legislated to prohibit insurance companies using genetic information in any discriminatory fashion. Yet discriminatory premium rates have not been covered.
- What priorities might be offered for say; screening and remedy for sickle cell anaemia; a malady confined mainly to black Africans and afflicting 1 in 10 Afro-Americans?

Cases ³⁶ have already been recorded of employment limitations imposed upon 'carriers' of sickle cell.

- Will a new form of anti-Semitism arise if Ashkenazim Jews from eastern Europe are selectively screened for Tay Sachs syndrome? In this particular 'ethnic' group it is not unknown for them to terminate pregnancies following positive identification of Tay Sachs.
- Seeking attachment to indigeneity. In the US ³⁷ a new clamour has arisen to identify with 'Indian Blood' [identifiable through unique deletion in a short segment of mitochondrial DNA] The objective is to share in the spoils [gambling fortunes] from reservation Casinos.
If a similar unique DNA code relating to Australian Aboriginality were to be found, a new rush to claim indigeneity, tax, welfare benefits and land rights, may be foreseen here.

5.1.5 Social / Employment Issues

- Under what conditions is genetic information or demands for genetic testing, to be made available to or by, insurance companies, employers, institutions and membership of trade, professional societies or unions?
- How will confidentiality be secured?
- How will discriminatory application of the information be avoided?

We have all too recently been faced with issues of social / job discrimination concerning HIV or AID's. Other forms of actual discrimination are far less visible. Examples of genetic preference have been reported by Paul R. Billing's et al ³⁸. Other significant cases of genetic discrimination researched by Lisa Geller and Vital Lapham has been reported in Scientific American by Tim Beardsley³⁹.

In 1994 a US Committee ⁴⁰ considered many of these ethical and moral issues and US congress has called for a comprehensive genetics privacy legislation and individual states have already drafted genetic anti-discrimination laws.

6.0 Genetic Technology and Morals

Proponents of human genetic technologies are quick to argue that the benefits achievable far outweigh any risks. Most concur that medical science would be seen as irresponsible if the new discoveries are not used to seek cures for many inherited diseases, birth defects and /or disabilities. As early as 1982 the New York Times⁴¹ noted that as soon as scientists are able to repair genetic disorders it will become harder to argue against adding genes that confer desired qualities, like better general health, looks or brains; adding that:- *'there is no discernible line to be drawn between making inheritable repairs of genetic defects and improving the species.'*

6.1 Drawing the Line.

17 years ago the ominous question was asked:- *"Is there any way we can draw a distinction between laudable and morally acceptable manipulations of the genetic code?"* Once we accept that it is acceptable to tamper with the genetic code for some specific healthful purpose how do we logically halt its progress toward new age eugenics? IVF over the last two decades has seen the leap from natural two parent, random conception and birth to designer babies, through human assisted reproduction involving up to 5 contractual participants involving, biological, genetic and social parenting plus, gestation 'rights'.

In the absence of any regard for purposeful design of this earth and its creatures and hence a creator -God-, the evolutionary thesis holds sway. Namely, that biological life originated as a chance event from some, as yet undefined, coincidental molecular transformation and then after eons of years, human kind eventuating. From this pulpit Joseph Fletcher ⁴², the father of situation ethics, asserts that humanity must now be in charge of its own evolutionary destiny. Otherwise it will kill us. In concert with Dr. Joshua Lederberg ⁴³ both propose that clonal reproduction of human beings should be on an equal opportunity basis with natural sexual union.

Cloning advocates with all the benevolence they can muster cannot deny that the road to success must necessarily be littered with the residue of 1000's of rejected grotesque failures. The well publicised cloning of 'Dolly' often fails to highlight that she only resulted after 277 tries. Another fact concerning 'Dolly' is that as she was cloned from the DNA of a middle-aged ewe, it seems her life span may well be chronologically short.

Natural human clones – identical twins– resulting from the splitting of an initial fertilised human egg or zygote, occur in about 1 in every 350 births. Modern IVF technology could easily replicate this. However, such science would not be very exciting. But since we do not find identical twins offensive why should we cry out against those who strive to create another identical person. The question we all must face is do we want another you? More particularly, when this you is likely to be nurtured from your own womb.

6.2 Winners and Losers.

IVF, after 20 plus years has, a common success rate^{44, 45} of little better than 10% yet one in 100 births result from assisted reproduction procedures. In Victoria, regarded as a world leader in assisted reproductive technology, the quoted birth success is about 1 in 28 treatments. About half of the IVF patients achieve a conception after three treatments; some endure as many as 20. Sadly a majority of initial pregnancies end in miscarriage and of course, its associated emotional distress. IVF advocates might respond that natural [trial and error] sexual reproduction rates may not be much better, particularly for women on the low side of their fecundal peak.

We have already commented upon the trauma of the lives of children denied intimate knowledge of their genetic heritage. In addition, insufficient research has been undertaken to ascertain the extent of emotional vulnerability of women who do not consummate their hopes for a child from any IVF program, and what of the burden of debt for no result? Meanwhile the media continue to portray the IVF success stories. Who ever bothers to assess the relationship breakdowns that are another sad spin-off or other physical and emotional side effects resulting from the unprecedented stress endured. 'When is someone going to give us the actuarial facts about IVF?' asks Germain Greer⁴⁶, pioneer feminist commentator.

Why in a society already alert to the problems of single parent offspring, should the concept of cloning be added to our already precarious future of uncertainty? Who would even dare to predict how anyone would relate to another identical self in a our depreciating 'me' society?

Prof. Paul Ramsay⁴⁷ adds this summary statement:- *"into the vast technological alienation of man, limitless dominion over procreation means boundless servility of mankind and womanhood. The conquest of evolution, by setting sexual love and procreation radically asunder, entails depersonalisation in the extreme. The entire rationalisation of procreation-its replacement by replication-*can only mean the abolition of man's embodied personhood"* .

6.3 Halting another Aryan tyranny.

The world has already witnessed at least one master Aryan tyranny, through racial eugenics, yet the proponents continue to follow the same convoluted logic:-

1. Cloning introduces a scientific route to immortality.
2. Cloning will perpetuate genius whether academic , artistic or athletic.
3. Cloning could provide control of the selected ratio of the sexes
4. Cloning provides a rich science base for the study of human reproduction.
5. Cloning could potentially reduce the risk of disabilities; free from disease or other regressive genes.
6. Cloning could provide a reservoir of spare human organs.

At present there seems to be international agreement, confirmed by the NHMRC recommendations, 16-Dec-1998, that cloning for reasons 1-3 above, should be prohibited. However, the use of cloning technology for the latter three (4-6), loosely categorised as

therapeutic, might well be encouraged. Distinctions between appropriate therapies and those which are inappropriate are hard to codify. If future developments are to be appraised by social acceptance we could well be caught between the proverbial 'rock and the hard place'. Not to pursue further genetic investigation and/ or intervention would seem to be tragic but to fail to establish clear limits could well prove disastrous.

6.4 Life and Liberty.

James Watson⁴⁸, a founding Director of the Human Genome project and co-discoverer of DNA, states that:-'..... *the only way to ensure that history does not repeat itself is for scientific and medical communities to remain constantly vigilant for abuses of genetics.*' Yet without any public policy we may just as well ask a fox to care for our chickens.

As far back as 1971 Dr. Watson⁴⁹ foresaw that human cloning would bring only despair:- '*The concept of child parent bond, not to mention everyone's values about any individual's uniqueness, could be changed beyond recognition.*' How right his prophesy! Fundamental to these kinds of considerations we continue to face the social dilemma that legalisation of abortion has interjected:- In 1992 in the US⁵⁰ a new definition of 'liberty' set a new precedent:- "*It is the right to make intimate and personal choices central to personal dignity and autonomy. It is the right to define one's own concept of the existence of meaning, of the universe and the mystery of human life"*" *Our obligation is to define the liberty of all, not to mandate our own moral code #"*

Law then is no longer enshrined with reference to any transcendent 'moral law' as an authority but rather rests upon mere human decision.

Taken to its extreme this definition of liberty implies that every individual has a right to define for themselves what constitutes life. Even those scientists manipulating the very cells from which life ascends must agree that there is more to creating life than mere biological chemistry. Nobel Laureate and co-discoverer of the structure of DNA, Dr. Francis Crick records that:- ' . '

How do **we** master such life? This remains our most formidable question! Only when we ignore a transcendent creator –God– do we declare ourselves masters of our own destiny.

In Britain⁵¹ it would seem that a determination has been made that 'real life' initiates only with the development of a nervous system equivalent to a 14 day old fertilised human egg or blastocyst. Seemingly this gives opportunity for bio-chemists or medical scientists a 14 day period to tinker with a human embryo.

6.4 Questionable Pursuits.

The issue most people feel uneasy about is the destruction of embryos or foetuses once tissue cells are harvested. Pro-abortion advocates understandably may see no significant ethical difference between, new forms of DNA transfer, organ generation and harvesting using human eggs and embryos and, the legal termination of any pregnancy. For them moral judgements are not at issue.

We also now venture into the sphere of transgenetic experimentation. Raising the paradoxical ethics of incorporating human genetic material into animals. Pigs with added human genes⁵² to function as hosts for organs for human transplantation or proposals for using mice⁵³ as incubators to ripen human sperm. The aim is to retransplant the mice-matured sperm back into the men from which under-developed sperm were taken.

Another weird approach has been reported by scientists from the Advanced Cell Technology, Worcester, Mass. USA⁵⁴. They have succeeded in fusing human DNA and cow cells to create transplantable cells. Planted into surrogate cows they develop not as hybrids but normal calves from which compatible human tissue or milk with human serum albumin, may be obtained.

Therapeutic stem cell research with the aim of creating transplantable cells and injecting them to repair defective human organs carries the most laudable ambitions. It was recently reported that the NSW Institute of Technology have devised an insulin gene

capable of transplantation into the liver of diabetics with the capability of tricking the liver into performing the function of an otherwise defective pancreas. This we may deem to be acceptable research while at the other end of the scale we learn of the ambitions of the Geron Corporation⁵⁵ to develop stem cells inhibiting the attenuation of telomeres with the object of maintaining robust DNA preventing cells from aging; the elixir of youth. Is this the kind of work we deem to be inappropriate?

Who determines the priority order of diseases, physical defects or even psychiatric afflictions that the bio-genetic medical research funding be allocated to? How do we dissuade or regulate private companies from addressing only those areas where commercial pay-off is the most attractive?

7.0 Sources of Human Genetic Tissue.

While the focus is upon choosing whether or not selected areas of stem cell research should or should not, be approved we overlook one area not usually reported in the euphoria of exciting science. That is the sources and supply of human tissue, cells, embryo or even fetuses. Unfortunately this author is not sufficiently familiar with this field of science to offer a qualified opinion; only to ask leading questions.

- How and from whom or where are human eggs obtained?
- From whom is consent obtained?
- Are residual eggs from any IVF procedure still the 'property' of the donor?
- Who is to authorise any harvesting of eggs from aborted fetuses?
- Who approves the 'withdrawal' from the Monash egg bank?⁵⁶ Or the present ~50,000 embryos in cold storage?⁵⁷

The first is the primary question of concern; namely the donated eggs (ova) from which nuclei can or are, removed and other substituted DNA introduced. By this cloning technology are the so called undifferentiated stem cells created. Theoretically these may be grown to promote stem cells available to treat conditions such as leukaemia; even AID's. These have been given the name embryoids, presumably to distinguish them from actual embryos. The term somatogenic embryoid has also been applied. However, it has not been effectively argued that this embryoid is void of any capacity to develop into an embryo. One equivalent to that from which 'Dolly' was engineered. Embryoids may not be capable of developing a placenta but it would seem outrageous that any laboratory should condone the manufacture of selectively defective human cellular structure from human eggs. Fortunately the 1995 Victorian 'cloning' legislation was sufficiently far cited to place limits upon research involving the alteration of the genetic constitution of a human ova. However, no restriction appears to have been imposed upon exporting or importing embryos for the purpose of conducting research otherwise banned in Victoria. Earlier in this submission it was noted that embryos have even been advertised on the internet. This is a matter which the Commonwealth should address.

The principal moral/ ethical issue that must be addressed is:- by what right has any person to condone the sacrifice of any life, however premature, for the purpose of extending the life of some one else, especially where other profit motives are at stake?

It has been argued that these applications of cloning or genetic engineering, are but the mere extension of the altruistic case of parents, Mary and Abe Ayala, who purposely conceived a child for the sole aim of providing compatible bone marrow to save the life of an earlier child. The clear difference here however, is that the 'saviour' child is still a much loved girl. One should hope that this kind of altruism is not extended to organ donation. Any form of illicit transfer of human organs, particularly from destitute third world people for rich dying westerners [a totally contemptuous practice] should be prohibited and extensive penalties imposed.

8.0 Imposition of Genetic Science and Religious Conflict.

From a Christian (Biblical) perspective human kind' even though possessing a marred or defective Divine image [of God] retains authority before a creator God to dominion over nature; but not domination. As Godly representatives mankind is free to radically change

or utilise nature through invention, innovation and the application of physical, chemical or bio-chemical laws for human benefit. Accountable before God mankind also faces moral (or spiritual) sanctions and limits as to how far he might impose his own purposes upon the natural created order.

Secular notions of mankind's creative genius do not appreciate nor have the same respect for this moral order. There is therefore no restraint to human effort to tinker or change even to re-create. Genetic 'engineers' and medical researchers may well be convinced that they are capable of functioning out of pure benevolence. They then remain oblivious to any absolute moral restraints; even ignoring the potential for commercial gain, from their creative talent and/or the discriminatory application to those who can afford the high price tags.

Unless there is a call back to the moral order of Christian Biblical principles, unrestricted freedom to genetic tinkering and change, will inevitably introduce unforeseen risks and dangers. The whole world laments the introduction and consequences of thalidomide and the enormous fraud, deception and commercial exploitation resulting from Dr. Alfred Steinschneider's⁵⁸ mistaken confidence in having found a cause (sleep apnoea) and answer for SIDS (Sudden Infant Death Syndrome).

The secular humanist is either unable or unwilling to support any rational (least of all absolute) basis for his intuitive or assumed moral ethics or values. All too often secular science forgets that the very roots of modern science are founded upon Christian world views^{59, 60}.

In our present multicultural-pluralist society we must in addition, respect other religious world views of Divinity and not, rough-shod, impose or coercively introduce, secular ideals. There is a need to take account of the differing ideas of time with respect to life, other than linear concepts recognised by secular evolutionists. Cyclical ideas of the Pantheist [Hindu or contemporary New Ager] and the eternal spiritual concepts of animist aboriginal people. Christian, Jew and Muslim alike respect more than mere bio-chemical material concepts of human life, while the Pantheist and Animist recognise the greater reality of the spiritual.

To the secular humanist the absence of a transcendent creator promotes human kind to a level where he is responsible for his own destiny. He is his own creator, engineer of the future and controller of nature; even human nature. In this role there are no longer any boundaries in which to maintain the pro-creative urge. IVF experimentation has almost demonstrated an ability to exclude the pro-creative union of male and female. Cloning would further rob us of individual human uniqueness, creating another me or you, and introducing the potential for same sex (lesbian) parenting. When cloning technology is seen as the next logical advance after IVF assisted reproduction, the secular scientist fails to show any rationale for prohibiting or abhorrence of, either fabrication or destruction of, human 'seed' whether ova, sperm, embryos or foetuses.

9.0 Paradox & Quandary at the Last Frontier.

History continues to reveal that there are always erudite visionaries who believe it is right to correct the limited potential of human kind; to correct our physical, mental and social structures. Some have been warlords, others philosophers—even economists; today the medical biologist [geneticist] presents his vision of the future; tempted as never before to play God. While Brave New World fantasy now appears achievable, other of us would ask:— *'Is the reality a mere vapour which imagination and prediction can never hope in actuality implement or perform — a vast crevasse between diagnosis and cure?'* There is recognition, on one side of the crevasse, that we have a technology that can save multitudes from disease and affliction, but on the other, acknowledgment that we only have the resources to construct but a few discrete planks needed to create even the

most fragile bridge: a paradox that threatens to create more problems than can be solved. A course involving profound questions about:-

- ☞ choosing who may live and who should die,
- ☞ rights and privileges of individuals,
- ☞ of discrimination,
- ☞ worries concerning abuse and misuse,
- ☞ of giving false hopes and seeing ambitions dashed,
- ☞ of rejection and acceptance of what constitutes a quality or worthy life,
- ☞ of perplexing and innumerable moral and ethical dilemmas.

Meanwhile, as a community we focus on the wonders of medical and biological genetic engineering and lose sight of the fact that human kind cannot be reduced to a mere assemblage of DNA; that :-

- (a) character and personality are shaped by love and acceptance,
 - (b) health and longevity can still be achieved by adopting nutritious dietary practices,
 - (c) dangerous lifestyles can be avoided
- and
- (d) adopting communal responsibility and unselfishly surrendering our lusts for rights,

we can all live long, healthful and helpful lives.

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