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# A Final Critique of C-13

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## Introduction

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The following is a clause-by-clause critique of *Bill C-13: An Act Respecting Assisted Human Reproduction and Related Technologies*, giving an explanation of the weaknesses of individual clauses, definitions and prohibitions. This is undertaken as a summary of the problems that repeated and prolonged analysis of the bill has uncovered over the past year. We also hope to provide an insight into the fundamental philosophical errors which make the bill unsupportable.

The bill is founded upon a materialistic philosophy that assumes a human being is no more than a biological machine, a collection of cells and biochemical functions. It presents a utilitarian concept of the value of an individual human being: that value derives from his or her usefulness to another, whether it be for disease therapies or the enjoyment of parenthood.<sup>1</sup>

Such a utilitarian ethics therefore misdefines “the common good” as the “greatest good (utility) for the greatest number in society.” It is not only a mistake, but it is academically incorrect for people to assume that utilitarianism, even in its bioethics form, is somehow “neutral”, and for that reason should be used in a multicultural, pluralistic, democratic society. It is not “neutral”; it is a normative ethics. Therefore, how can the Canadian government justify its use in public policy decision-making?

Under this utilitarian ethic, the bill sanctions, and in places mandates the objectification of the human person. No other legislation has so concretely proposed a normative Canadian ethics based on an extreme form of materialistic utilitarianism as the accepted philosophy of our nation. This bill represents an event horizon in political philosophy.

## I. Philosophical Assumptions

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### **Clause 2. Principles: “The Parliament of Canada Recognizes and Declares That...”**

This section fails to affirm the rights of the child to be naturally conceived and born within the context of marriage. It fails to acknowledge the primacy of the family as the fundamental unit of society. It fails to acknowledge the humanity or even the existence of the child before birth.

**2(a)** *“the health and well-being of children born through the application of assisted human reproductive technologies must be given priority in all decisions respecting their use.”*

The clause only mentions the well-being of children born; the child before birth is disregarded as is the well-being of future generations of children yet to be conceived.

**2(b)** “the benefits of assisted human reproductive technologies and related research for individuals, families and for society in general can be most effectively secured by taking appropriate measures for the protection and promotion of human health, safety, dignity and rights in the use of these technologies and in related research;”

2(b) fails to define the terms “health,” “safety,” “dignity,” or “rights”.

- **Health**

The term “health” has been afforded such a broad interpretation since the institution in Canada of abortion on demand that it has become effectively meaningless. In the field of bioethics the term is applied to both individuals and to whole communities which often results in serious ethical conflicts. For example, the claim is often made that the psychological (or social, or even financial) health of the woman would be damaged if she were to be “forced” to carry a child to term and the health of the child is given secondary or no consideration. Similarly, it is frequently claimed that the “social” or even “spiritual” health of a woman can be damaged if she is not allowed to become a parent. The health and rights of the embryos created and then frozen are not considered, nor is the physical health of the child who may suffer from genetic abnormalities.<sup>2</sup> The psychological health of the child, who will one day discover that she was a product, manufactured to order, is also not considered.

By applying a loose, ideological, rather than medical, interpretation of the term “health,” the bill fails to address the real health risks associated with the artificial means of procreation. For example, if the bill were concerned with the health of children born through the use of the various techniques of artificial human procreation, it should have included clauses restricting the use of intracytoplasmic sperm injection<sup>3</sup> which has been shown to cause abnormalities in the child.

The term “health” is often used to justify eugenics practices such as genetic pre-selection of embryos. It is also being deconstructed in international research ethics by bioethicists in order to bypass the conditions of the Nuremberg Code and the Declaration of Helsinki regarding human research subjects. In this case the term health is equivalent to the use of the term “hygiene” by the Nazis to sanitize their murderous programmes of positive eugenics in the nineteen thirties. The disability rights community is rightly apprehensive when this term is used to justify a genetic pogrom against the disabled in IVF labs.

- **Safety**

Since the term “safety” is not defined, the question, “safety for whom?” cannot be addressed. The safety of the embryo is ignored and considered unimportant. The social, spiritual and psychological safety of children conceived through artificial means is not considered. The safety of all Canadian children and families is not addressed when heterologous or homologous<sup>4</sup> *in vitro* fertilization, (IVF) and “surrogate motherhood” are allowed to invade the integrity of family life. The safety of patients is obviously jeopardized when one considers the disastrous results of recent experimental therapies using embryonic stem cells. The genetic safety of the human species is denied by later clauses in the bill which allow the random manipulation of the genetic make-up of certain individual human persons through processes such as recombinant gene transfer and eugenic selection of embryos. The unrestricted use of donated sperm also

creates a danger to the public safety by allowing large numbers of children to be manufactured from genetic material of the same father.

- **Human Dignity**

Human dignity cannot be served by encouraging practices such as IVF, which are inherently hostile to it.<sup>5</sup> Furthermore, the sanction of cloning in later clauses of the bill (see notes on clause 5(1)(c) below) is a grievous assault against the inherent dignity and uniqueness of the human person.

- **Rights**

The Canadian Charter of Rights and Freedoms has the following to say about the right to life:

7. Everyone has the right to life, liberty and security of the person and the right not to be deprived thereof except in accordance with the principles of fundamental justice.

9. Everyone has the right not to be arbitrarily detained or imprisoned.

The use of embryonic human beings for experimentation, the creation and genetic manipulation of embryonic human beings in IVF labs to the specifications of clients, their freezing and storage in commercial labs, are all activities sanctioned by the bill which are in violation of the Charter rights of human beings. If human rights are going to be protected in Canada, they must be applicable to all human beings regardless of their age, size or medical condition.

It is the universally accepted finding of the science of human embryology that the human embryo is in every meaningful way a human being. It is only the political theory of our times that asserts that it is not. The differences between the human being at the embryonic stage and at any later stage of development are differences of accident, not substance, i.e.: of size, environment, level of development and degree of dependency. The biologically and ontologically *human* nature of the living embryonic being is not changed at any stage of its development. The embryo is one and the same person as the child who is born later.

All rights, therefore, that pertain to human beings must pertain to them at the embryonic stage as at all others. This includes all rights set forth in international agreements to which Canada is signatory, such as those protected by the Nuremberg Code Directives for Human Experimentation.<sup>6</sup>

“...through these procedures, with apparently contrary purposes, life and death are subjected to the decision of man, who thus sets himself up as the giver of life and death by decree.” *Donum Vitae, Part II, Intro.*<sup>7</sup>

The so-called cryogenic storage of embryos is an offence against the right to freedom that is inherent in all persons.

“The freezing of embryos, even when carried out in order to preserve the life of an embryo - cryopreservation - constitutes an offence against the respect due to human beings by exposing them to grave risks of death or harm to their physical integrity and depriving them, at least temporarily, of maternal shelter and gestation, thus placing them in a situation in which further offences and manipulation are possible.” *Donum Vitae, Part I. Question 6.*

The child has a right to be conceived within the context of marriage.

“The child has the right to be conceived, carried in the womb, brought into the world and brought up within marriage: it is through the secure and recognized relationship to his own parents that the child can discover his own identity and achieve his own proper human development.” *Donum Vitae, Part. II. Question 1.*

**2(c)** “while all persons are affected by these technologies, women more than men are directly and significantly affected by their application and the health and well-being of women must be protected in the application of these technologies;”

2(c) fails to identify the role of parents with regard to assisted reproduction technologies or to recognize the rights of the father. It is not simply “persons” as individuals who are affected by the use of reproductive technologies, but families and therefore society as a whole. The bill throughout fails to recognize the primacy of the so-called, “traditional” family as the fundamental unit of society. This clause presents a new, untenable model for human society that is derived from a political ideology and is inconsistent with the empirically derived understanding of the reality of human nature.

## **Informed Consent**

**2(d)** *the principle of free and informed consent must be promoted and applied as a fundamental condition of the use of human reproductive technologies*

2(d) fails to define the term “free and informed consent.” Very few people have the full knowledge of the possible consequences to themselves, their children, their families or to Canadian society of the use of IVF and related practices. IVF procedures are invasive physically and can be injurious to the future fertility of the woman. They are lethal to the great majority of human beings manufactured by them. It is being discovered that children conceived by IVF are subject to higher rates of genetic abnormalities and resulting illness and disability.

Furthermore, IVF represents a grave threat to the integrity of the family and, therefore, to the stability of society. The use of sperm, oocytes or other genetic material introduces what amounts to an adulterous infiltration into the unity of the marriage bond. A child born through the use of these procedures would be justified in asking who his true parents are.

Without knowledge of the full humanity of an embryonic human being, a person can be convinced that the child conceived is of no inherent value, is merely “genetic material,” a “ball of stem cells” or some other euphemism, and can be treated as property to be disposed of or not according to convenience. Informed consent is impossible in such a climate of disinformation.

**2(e)** *persons who seek to undergo assisted reproduction procedures must not be discriminated against, including on the basis of their sexual orientation or marital status;*

2(e) shows that the intention of the bill is not to safeguard the integrity of the family, and therefore the well-being of women, men and children, but to undermine it and promote a narrow,

politically motivated concept of family life and human procreation that is deeply antithetical to the beliefs of most Canadians.

*2(f) trade in the reproductive capabilities of women and men and the exploitation of children, women and men for commercial ends raise health and ethical concerns that justify their prohibition;*

2(f) the term “ethics” is used frequently in the text of the bill but no definition is given of the particular system of normative ethics being used. “Ethics” is merely the application in real life of a given philosophy. There are as many systems of ethics as there are schools of philosophical thought.

For example, according to what particular “ethics” is “trade in the reproductive capabilities of women and men and the exploitation of children, women and men for commercial ends” not acceptable? If the “ethics” referred to in 2(f) are those of the Natural Law Theory, there is an inconsistency since the bill explicitly allows a number of practices which the ethics of the Natural Law would preclude. These include the use of living embryonic human beings for research. If for example, the “ethics” referred to are those of dialectical materialism, ESCR would be acceptable, but so would the commercial exploitation of human reproduction.

It is a common misconception that the term “ethics” is synonymous with “morality” and that therefore, an act that is “ethical” is necessarily right and good. Ethics are relative to the philosophy proposing them; morality is absolute and is not subject to the changing whims of the philosophical fashions of the day.

*2(g) human individuality and diversity, and the integrity of the human genome, must be preserved and protected.*

2(g) the terms “individuality” and “diversity” are not defined. This clause says nothing, but terms like this can be open to any interpretation in the courts with unforeseen and often unintended results.

## II. Definitions

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### **Clause 3: “Interpretation and Application”**

With regard to the problems with the definitions, a great deal has been written elsewhere so I will focus my critique on only a few areas. The principle needs to be re-stated that for a thing to be meaningfully prohibited or restricted by a piece of legislation, it stands to reason that the thing must be accurately defined in that piece of legislation. That is, the definition given must conform to the actual thing or procedure that is being pursued in research laboratories.

If a term is not defined accurately in a piece of legislation, the real procedure cannot be considered to be covered by the legislation. If a certain procedure is not specifically articulated in a bill, then the prohibition in the bill does not apply to it. Furthermore, the courts are under no

obligation to correct scientific errors in the wording of a law, but merely to apply them as legal precedent – “*stare decisis*” – and interpret the intention of the bill using the faulty language.

The terms used in the bill in regard to the use of embryos, the creation of human clones, the creation of chimeras, and genetic research on embryonic human beings, all fall under the aegis of the science of human embryology. If the definitions given in the bill for these and similar terms are not in accord with the findings of this field, which are determined and sanctioned by the *International Nomina Embryologica Committee*, and the *Carnegie Stages of Early Human Embryological Development*, the “gold standard” of human embryology, they cannot be considered to be scientifically accurate or legally appropriate.

## Undefined Terms

A number of terms that have unknown or legally ambiguous definitions are used constantly throughout the bill and are not defined, such as:

“**children**” - The bill refers only to "children born." The child before birth is not included.

“**ethically acceptable/unacceptable**” - What is acceptable varies depending on the definition of "ethics."

“**ethics**” -There are many different forms of ethics. To which one does the bill adhere?

“**human organism**” -Is the bill to be understood to be using this term to mean a human being inclusive of the preborn human being from the first moment of its existence on?

“**sexual orientation**” – The movement to include anti-discrimination clauses with this term is just beginning to make progress in all types of legislation and in the courts. No-one knows how much confusion and reverse discrimination (on the grounds of religious “intolerance”) this undefinable term is going to cause in years to come.

“**human being**” -"Human" must include the human embryo, defined as beginning to exist at the beginning of penetration of the ovum by the sperm (sexual reproduction) or as the immediate product of a-sexual reproduction. The Canadian Criminal Code states that a human being does not come into existence until it has completely left the mother’s body. The term human being is used throughout the bill but nowhere is it defined. If the term is understood to be used according to the definition given in the Criminal Code, many of the prohibitions given below can be considered void.

“**person**” – This term is ambiguous and is the subject of a great deal of debate in academic and legal circles. It has been successfully argued for purposes of active euthanasia, that a human being is not a person if he does not breathe without the help of a respirator, or if she cannot feed herself. There is a stream of academically respected bioethics thought that posits the personhood of great apes and other higher animals, yet rejects the personhood of the mentally and physically disabled or of newborns. Personhood has historically been denied whole classes of human beings

on extremely fragile grounds, such as “race” in the case of European Jews, skin colour in the case of African slaves, and gender in the case of women in Canada. If the term “person” is not understood to be synonymous with a human being, that is, with a living member of the human species, it is a useless term in law.

## **Inaccurately Defined Terms**

### **“chimera”**

- (a) an embryo into which a cell of any non-human life form has been introduced; or*
- (b) an embryo that consists of cells of more than one embryo, foetus or human being*

The definition of “chimera” given in the standard text on human embryology is as follows,

Ronan O’Rahilly and Fabiola Muller, *Human Embryology & Teratology* (New York: Wiley-Liss, 2001)

*Chimera: a combination of two or more fused embryos showing different genotypes. Dizygotic (derived from two separate zygotes, also called “fraternal,”) twin embryos may fuse to form a single individual. It is also possible that two spermatozoa fertilize an oocyte and a polar body, and that fusion then results in a single embryo. (p. 30)*

- The definition used in the bill is a very restricted definition of “chimera,” and thus other kinds of human chimera research would not be covered by this bill. For example, the creation of a chimera by pronuclear transfer (see section under Human clone) would not be prohibited by the bill since pronuclei are not cells but groups of molecules.
- The definition used here of a “chimera” does not accurately or adequately distinguish a chimera from a hybrid. Hybrids are often used in transgenic research, usually involving DNA-recombinant gene techniques – which are used for eugenic purposes, especially if they involve primitive germ line cells, mature gametes, or early embryos.

### **“consent”**

*“...means fully informed and freely given consent that is given in accordance with the applicable law governing consent”.*

See note on clause 2 (d). If full information is not given, including adequately defined terms, informed consent is not possible. Further, an obvious issue here is whether children, teenagers, or the mentally/physically incompetent can really give legally valid informed consent if they are so compromised – i.e., they would not be truly “free.”

It should be noted also that no parent can give consent to have a living child used for destructive medical research. To suggest such a thing is a gross violation of the rights of the human being so used and is a crime against the natural bond between parents and their children.

## **“donor”**

*(a) in relation to human reproductive material, the individual from whose body it was obtained, whether for consideration or not; and*

*(b) in relation to an in vitro embryo, a donor as defined in the regulations.*

The definition of donor given in C-13 is the place where the essential insoluble conflict of the whole IVF debate becomes manifest. The Oxford Dictionary of Current English gives as the definition of “donor,” “one who gives or donates *something*” (emphasis added). There are only two orders of creation in the universe: persons and things. The bill, by including in the possible definition of “donor” one who gives or donates an embryo, is *de facto* defining an embryo as a *thing* that may be donated. If the embryo can be donated, it is a thing, not a person. A thing may be bought, sold, donated, dissected, experimented upon and destroyed at will. A person may not. If the embryo is person, none of those things may be done to it. Persons are protected in law for their own sakes, and not for the sake of protection of property. This is the essential conflict of the bill and the whole debate, is the human embryo a person?

In fact, what the bill does is actually to attempt to propose a kind of in-between state of existence, where the embryo is not exactly a person but yet has the potential to be one and thus is not quite considered a thing either. This non-state has created a profound confusion that has been at the heart of the whole debate in IVF. It can be seen very clearly in the use of language in debates in the House and in news articles. In the same sentence one may hear reference to the “parents of the child,” and the “donors of the genetic raw material for research” and they are all talking about exactly the same thing: the parents of an embryonic human being, a person.

This bill represents a meeting point of two philosophies where they clash and create an insoluble conflict. There can be no third category, no “non-person-non-thing”; either it is one or the other. But the need to safeguard the anti-logic of abortion has made the simple acknowledgement of plain reality impossible. The bill attempts to find a “balance” where only a decision between two opposing ideas is possible. The drafters and supporters of the bill know that to kill an innocent human being is a grave wrong; it is also inescapable that an embryo is a human being. For the sake of the abortion ideology, however, they must attempt to create a whole new universe where a thing and a person can be one and the same.

Even the government seems to be deeply conflicted over the moral status of embryos in C-13. Health Minister Anne McLellan, in an assessment of the Report Stage Motions, stated that one of the motions would “...prevent the transfer of ownership rights on donated gametes or *in vitro* embryos. *It is not considered appropriate to treat in vitro embryos as property that are subject to ownership.*” (emphasis added) This statement is inexplicable since, if the embryo were not to be subject to ownership, it would fall into that category of creation which is not a thing, i.e.: it would be a person. If this were so, the embryo would also not be subject to donation, freezing, destructive medical experiments, implantation, genetic “selection,” recombinant gene transfer, or any other procedure or activity, sanctioned under the bill. Such procedures are a violation of a person’s rights.

If the embryo is not subject to ownership, he or she is a person and must be protected from gross violations of human rights under internationally accepted agreements, including the Nuremberg Code (see note <sup>6</sup> below).

The “donors” of the gametes used to create an embryo are parents. No amount of political doublethink can change this simple biological fact. Legal confusion regarding the status of “donors” of gametes in IVF is entering the courts of every country that allows IVF.

The parents of a child cannot “donate” that child to medical research while the child lives. It is, therefore, a moral contradiction to say that the parents of a living embryo can donate that embryonic child for medical research while he or she lives.

### “embryo”

*“a human organism during the first 56 days of its development following fertilization or creation, excluding any time during which its development has been suspended and includes any cell derived from such an organism that is used for the purpose of creating a human being.”*

This term is grossly inaccurately defined.

- Fertilization or creation are processes. To say that an embryo exists “following” fertilization means that the embryo only exists at the end of the process and that the embryo at the early stages of the process is excluded from the definition. This contradicts the findings universally accepted by human embryologists.
- To say that a thing is not what it is if its “development has been suspended” is contrary to reason. The thing that has had its development suspended is still an embryo, there has been no change in its nature simply because it has been cryogenically frozen.
- A stem cell, a blastomere, derived from an embryo is a stem cell, not an embryo. A totipotent<sup>8</sup> stem cell derived from an embryo may be *artificially induced* to become an embryo, but until that time it is merely a cell, a part of the original embryo. To say that the cell derived from an embryo is already an embryo is the equivalent of saying that an arm or an ear is a human being.

### “foetus”

*“...means a human organism during the period of its development beginning on the fifty-seventh day following fertilization or creation, excluding any time during which its development has been suspended, and ending at birth.”*

To say that a foetus is not what it is if its “development has been suspended” is contrary to reason. See notes on “embryo” above.

## **“human clone”**

*“...means an embryo that, as a result of the manipulation of human reproductive material or an in vitro embryo, contains a diploid set of chromosomes obtained from a single - living or deceased - human being, foetus or embryo.”*

This is the most dangerously misdefined term in the bill. It is the most dangerous not necessarily because its inaccuracies are worse than any of the others, but because of the large number of commonly held assumptions about the nature of cloning among MP's and because of the extreme moral weight of the issue. The ambiguities in this definition has caused very well-meaning people, who want to see cloning banned in Canada, to assume that this would be accomplished with the bill's current wording. This is not so.

Many misunderstandings and inaccuracies have entered into the debate in Parliament and in the media over cloning. The term “cloning” is usually misdefined and the procedures properly understood to constitute cloning are often misnamed and therefore excluded from consideration in prohibiting legislation. The media have not helped with their insistence on simplifying the terms down to the point where they no longer reflect scientific facts.

That the members of the government and their advisors do not have a clear understanding of what procedures constitute cloning has been made abundantly clear during the debates. The only time the government provided any explanation or rationale for the bill was in a published document called “Bill C-13, the Assisted Human Reproduction Act Report Stage Motion by Motion Analysis.” These assessments of the Report Stage motions were filled with errors and inaccuracies. More details will be included in the commentary on those clauses of the bill dealing with prohibited activities below; here I will give only a few general comments regarding the problems of inaccurate definitions.

### **One Technique: SCNT**

All too often the term, “human clone” is understood to be synonymous with one particular technique and only that technique is included in a given piece of legislation. This problem can be found in many of the bills being promoted in the United States (including the Weldon and Brownback bills) that invariably include reference only to Somatic Cell Nuclear Transfer<sup>9</sup> (SCNT) as the defined method. The consequence of so-narrowly defining the term “cloning” would be that all other human cloning techniques would not be covered by the bill – and thus would be allowed.

Since research into numerous alternative cloning techniques is being advanced at a tremendous pace, a broad definition of a cloned human being would be more useful than any attempt to pin down cloning as any particular technique or set of activities.

### **The Same Genes?**

Another common misconception, is that a clone is a being with “identical” or “the same” genetic makeup as an original organism from which genetic material is transferred. Artificial cloning never creates an “exact genetic copy” of the donor. In every procedure, at least some genetic

material is retained by the original cell. In the case of SCNT, the mitochondrial DNA found in the cytoplasm of the enucleated oocyte is retained in the cells of the clone. (See endnote 9).

### **From a Single Source?**

The current wording of the definition, by specifying that material be obtained from a *single source*, specifically excludes at least three different techniques of creating or manipulating a human embryo which are considered cloning by human embryologists. These techniques employ genetic material from more than one source and would be excluded from the prohibition in clause 5. (see notes under section 4. “Prohibitions” below)

The government assessment of the Report Stage motions, mentioned above, shows these misconceptions to be at work in the crafting of this bill. In the assessment of motion 13 the government states that “a clone, by definition, is only derived from *a single organism*. If it were derived from more than one organism, it would not be a clone as it would not have the *same chromosomes as another organism*.” (emphasis added) Since no human embryologists were invited to give testimony at the Health Committee proceedings, these misconception regarding the definition of a clone was never cleared up.

### **Some Methods of Cloning**

Some methods of manipulating human reproductive material using more than one source include the following:

- Pronuclei Transfer
- Mitochondria Transfer
- DNA-Recombinant Germ Line Gene Transfer

Pronuclei Transfer: In the ordinary process of fertilization, the oocyte (“ovum”) is at first diploid that is, it contains 46 chromosomes, the normal number for a cell of a member of the human species. When the sperm penetrates an oocyte, the 46 female chromosomes are reduced to 23. In the process, the extra 23 female chromosomes are extruded or ejected from the organism in a “polar body.”<sup>10</sup> The embryo now contains 23 male and 23 female chromosomes (the correct number for an individual member of the human species).

At first the male and female chromosomes are each separate from each other and separately encased. Each is a molecular aggregate called a “pronucleus”; each contains 23 chromosomes. Each pronucleus can be manipulated, isolated and removed from the newly fertilized embryo – a technique refined for years for IVF research.

Pronuclear Transfer is a form of human a-sexual reproduction (cloning) in which male and/or female human pronuclei are transferred from one or more human embryos to an enucleated oocyte. After electrical or chemical stimulation, the pronuclei merge, producing a new human embryo with 46 (or more) chromosomes. The extra female chromosomes which were initially

ejected from the embryo during fertilization can also be “captured” and used as a female pronucleus in cloning as well.

This is a method that could be used to produce human/human chimeras (male and female pronuclei transferred from more than one human embryo), and human/animal chimeras (male and female pronuclei transferred from both human and animal embryos).

Mitochondria Transfer: Every human cell contains small organelles that are found in the cytoplasm of the cell (outside of the cell nucleus). One kind of these organelles is called a mitochondrion, which contain human genetic material (DNA) – or “mDNA” (for “mitochondrial DNA”).

Mitochondria are primarily concerned with energy production for the rest of the cell. Although the amount of mDNA is small compared to the nuclear DNA in the cell nucleus, small errors in mDNA can cause serious, even lethal, human diseases that are passed on by the mother’s oocyte during fertilization. One method of attempting to correct this genetic defect is to transfer healthy mitochondria from a donor oocyte into the diseased oocyte, or into a new human embryo reproduced with the diseased oocyte.

“Mitochondria Transfer” is an a-sexual form of manipulation of an embryo (cloning) in which the mitochondria (containing mitochondrial DNA) from a human donor female oocyte is transferred to another human female oocyte, or to a newly produced human embryo. This new human embryo would contain human genetic material (DNA) from more than one female and from one male, and the “foreign” mitochondrial DNA would continue to be replicated (cloned) with each new cell of the developing human being, including his/her own germ line (reproductive) cells.<sup>11</sup> Thus the initial “foreign” mitochondrial DNA could be cloned throughout successive generations.

DNA-Recombinant Germ Line Gene Transfer: The injection of “foreign” DNA or genes into cells or embryos – “gene transfer” – can be used for “enhancement” or for “corrective” purposes. This is a form of eugenics, the effort to “improve” the human race by eliminating unwanted characteristics, or as in the case of DNA Recombinant Germ Line Gene Transfer, by direct manipulation of the genetic make-up of successive generations of human beings.

It is accomplished by means of a “vector” or carrier of some sort, into which the “foreign” gene is first inserted and which then “recombines” with the vector’s own genetic material. This vector, now containing the “foreign” gene, is then transferred into a germ line cell (male or female) of a patient.

The germ line cells of that patient will incorporate the “foreign” gene into its own DNA. When that patient later takes part in sexual reproduction, the “foreign” gene will be transferred again by being incorporated into the new human embryo’s own germ line cells.

Alternatively, the “foreign” gene in the vector can be transferred into a newly fertilized human embryo and thus be incorporated into the new embryo’s germ line cells. In either case, as the human embryo’s cells divide during growth and development, the “foreign” gene will likewise be incorporated into every cell of the growing embryo, including the new embryo’s own germ

line cells. Therefore, when that human being matures and reproduces sexually, his/her descendants will also possess the “foreign” gene. Thus the “foreign” gene will be passed on throughout successive generations.

### **A Comprehensive Set of Definitions**

It is not enough to have a definition of "cloning"; It is also necessary to make sure that any term used in that definition is also accurately defined, and consistently used throughout the bill. Otherwise, one definition cancels out the other definitions, creating "loopholes" -- and the bill will ban nothing. Nor will the bill be enforceable due to "vagueness", etc.

Cloning, as we understand it now, will be only one technology used to duplicate, or to permanently genetically modify, new living human beings. The effort should be to acknowledge the true objective scientific facts concerning all of these activities, and only then try to sort them out in terms of which ones are ethically acceptable and which ones are not. This will require both extensive scientific knowledge of the state of the art of these "converging technologies", as well as very sophisticated definitions. “Dumbing-down” or making them simple to understand by lay people, including Members of Parliament, will not advance the cause of truth.

The definitions given below are subject to change given new information. They have been developed by Dr. Dianne Irving, PhD,<sup>12</sup> and were developed from internationally recognized human embryology text books.

Human being: any organism who begins to exist immediately by means of sexual or a-sexual reproduction and who possesses a genome specific for and consistent with an individual member of the human species.

Human genome: The total nuclear and cytoplasmic DNA genetic materials that constitute an organism as an individual member of the human species.

Cloning: the duplication, or near-duplication, of molecules, any part(s) of a cell, a single cell, cells, tissues, organs, or organisms using any cloning technique.

Cloning techniques: any technique used to duplicate, or to near-duplicate, molecules, part(s) of a cell, a single cell, cells, tissues, organs, or organisms.

Human cloning: (a) organism: the duplication, or near-duplication, of a whole human being using any cloning technique; or, the use of part(s) of human cellular or artificial materials for the purpose of duplicating a whole human being using any technique; (b) molecules: permanently altering the human genome in successive reproductive generations by means of the duplication, or near duplication, of human genetic materials using any a-sexual reproductive technique and/or any sexual reproductive technique.

Cloned human being: A human being who is a-sexually reproduced using any cloning technique

These definitions should also specifically cover some of the cloning techniques of which we are already aware and that are currently being used, e.g., human cloning by means of "twinning" (blastomere separation and blastocyst splitting), somatic cell nuclear transfer (SCNT), germ line cell nuclear transfer (GLCNT), pronuclei transfer, mitochondrial transfer, and germ line gene transfer. They attempt to anticipate the near future use of legislation to cover advances in

nanotechnology, (e.g., the artificial construction of parts of human cells, human cells, tissues, organs, and organisms starting with nano-molecules, etc.; this technology is in current development and the proposed legislation in New Zealand allows for the use of artificially constructed sperm and oocytes but does not specify the methods that may be used.) -- and in bioengineering and genetic engineering.

The definitions would also cover the formation of human/human chimeras, who would be human beings, but not so clearly cover the formation of human/animal chimeras since those are not human beings.

There is a chance, however, that given even these definitions, researchers could use "back-breeding" techniques to isolate and recover the "human" genetic materials from such chimeras and use them to a-sexually reproduce a new human being, *thus by-passing the prohibitions*.

Nor do these definitions cover parthenogenesis. Again the possibility exists that new techniques could be used to "de-differentiate" the "46" chromosomes in a diploid oocyte to clone a new human being and simply call it "parthenogenesis" instead of "cloning" thus bypassing the prohibitions. It is to be hoped that those two cloning techniques would also fall under the definitions if brought to debate.

#### ***“in vitro embryo”***

*“...means an embryo that exists outside the body of a human being.”*

The definition would not include IVF-produced or cloned human embryos implanted in the body of non-human surrogates (e.g., apes) or into artificial devices. It is not widely known that Louise Brown, the “first”<sup>13</sup> IVF baby, was transported in the uterus of a rabbit. Researchers in many countries are aggressively pursuing the development of artificial wombs. Any person implanted in one could be considered an *in vitro* embryo, under this definition, for up to nine months gestation or birth.

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### III. Prohibitions

#### **Clause 5. Prohibited Activities: “No Person Shall Knowingly...”**

**5(1)(a)** *create a human clone, or transplant a human clone into a human being;*

It is stated that the bill’s intention is to prohibit the creation or implantation of a human clone. Despite the appearance here of clear statement intention, however, the bill accomplishes the opposite by referring itself to its own definition of what constitutes a human clone. As has been shown above, this definition is seriously deficient.

With the adoption of the Report Stage motion 13 this clause will read:

**5(1)(a)** *No person shall knowingly (a) create a human clone by using any technique, or transplant a human clone into a human being or into any non-human life form or artificial device;*

The bill would prohibit the implantation of a clone into an artificial device. However, since the prohibition is not against performing a particular procedure but against creating a “human clone,” according to the faulty definition, it would be legal to create a clone produced by methods not specified in the definitions given in the bill. It would also be legal to implant that being into an artificial device.

**5(1)(b)** *create an in vitro embryo for any purpose other than creating a human being or improving or providing instruction in assisted reproduction procedures;*

On February 27, 2003, John Bryden Member for Ancaster-Dundas-Flamborough-Aldershot made the following intervention in the debate:

“...there is a universal feeling that embryos should not be created for the purpose of being killed in order to further research...embryos should on no account be created purely for research. Yet, despite the assurances of the Minister that this is not the intent of the bill, that there are safeguards in the bill that this would not happen, the House might note that there is a clause that would permit the creation of embryos for the purpose of research...”

That paragraph actually says that it would be permissible to create embryos for experimental purposes in order to provide instruction on assisted reproduction procedures. In other words, the bill clearly states, at least in this paragraph, that the law would permit the creation of *in vitro* embryos for the purpose of instruction and research. In other words, not for the purpose of human reproduction, not for the purpose of creating a human being.

I would suggest, at the very least, this particular paragraph flies in the face of the assurances that we have received from the minister.”

Minister McLellan, in a memo produced shortly before the vote on the Report Stage Motions, stated,

The Standing Committee recognized that work used to validate fertility techniques must be allowed under strict controls.

In order to ensure that the procedures of fertility clinics are safe, doctors, nurses and other health professionals have a responsibility to learn how to do them safely. They also have a responsibility to improve these procedures in ways that protect the health of women and any resulting children (e.g., improving egg freezing techniques). As the Standing Committee itself recognized, this will sometimes require the creation of embryos. This work will be permitted under section 5 (1)(b), subject to a licence and strict regulations.

In other words, human beings at the embryonic stage not only may be used for destructive medical experimentation, but may specifically be created for this purpose and any perceived intention on the part of the government to restrict or prohibit this practice was illusory and fallacious.

Dianne Watts for Real Women of Canada, in a submission to the House Standing Committee on Health November 19, 2002 said,

“The bill prohibits the generation of an *in vitro* human embryo for purposes “other than creating a human being or improving or providing instruction in assisted reproduction procedures”. The words “improving or providing instruction in assisted reproduction procedures” are so vague that they are open to interpretation to include any and every research possible on the human embryo. In short, this provision does not provide protection for human embryos and will permit their use for unrestricted research purposes.”

**5(1)(c)** *for the purpose of creating a human being, create an embryo from a cell or part of a cell taken from an embryo or foetus or transplant an embryo so created into a human being;*

This clause is a labyrinth of deceptive language and loopholes. The procedure described and ostensibly prohibited is that of creating an embryo “from a cell or part of a cell taken from an embryo or foetus. The procedure mentioned in this clause is a description of the cloning procedure known as pronuclear transfer. The first error then, is to exclude this procedure from the prohibition against cloning.

### **“For the Purpose of Creating a Human Being...”**

At first glance, it seems that this procedure is prohibited. However, it must be noted that the prohibition only applies if the intention is to create a “human being.” If the intention is to create a cloned embryo in order to harvest his or her stem cells, or for some other reason, the activity is not prohibited.

This language is deliberately deceptive and derives originally from that developed by the pro-abortion lobby. The use of euphemisms to describe the unborn child as “products of conception,” “the contents of the womb” etc. is a ploy familiar to both sides of the debate. It is now common practice among researchers and bioethicists to refer to embryos intended to be killed and harvested for their stem cells as “balls of totipotent stem cells,” or even more deceptively, as simply “stem cells.” On the other hand, if the intention of the procedure is to create an embryo to be implanted and brought to term, the language used is that of “the unborn child,” and “parents”. In both cases the being referred to is the same: an embryonic member of the species, *homo sapiens*. By the use of euphemisms, the embryonic human being is dehumanized in the minds of researchers and the public.

The term “balls of totipotent stem cells” was used to describe cloned and IVF human embryos at the blastocyst stage in expert testimony given in New Jersey by researchers lobbying for permission to create clones for research. To these researchers the terms “embryo”, “clone” and “cloning” have too many humanizing implications and are considered too “political.” If a researcher wants to create a cloned embryo for destructive medical experimentation, he does well to minimize the legislator’s mental association of the embryo with a child.

### **“Human Beings” in Canadian Law**

All of this, however, only scratches the surface of the problem of including the phrase “for the purpose of creating a human being” in most of these prohibitions.

The Canadian Criminal Code, CCC 223(1) states:

"A child becomes a human being within the meaning of this Act when it has completely proceeded, in a living state, from the body of its mother whether or not (a) it has breathed, (b) it has an independent circulation, or (c) the navel string is severed."

In other words, a child who has not yet been fully born is not considered a human being in this country and is not protected as such under any law.

In the government assessment of the Report Stage motions, the minister revealed that C-13 was employing the current Criminal Code definition as applied in case law. The assessment stated that:

"Replacing the term "human being" with "human reproduction" would add a legally undefined term to a statutory prohibition. Statutory prohibitions must be clear and precise, given that a breach brings serious consequences. The term "human being" is defined in case law, thus allowing for a precise interpretation."

## **Clone and Kill**

It now becomes clear that none of the prohibitions which include the caveat, "for the purpose of creating a human being," or "for the purpose of reproduction," are effective in prohibiting any of the procedures mentioned. Furthermore, they create a *requirement* that a child so created be killed before birth.

Under 5(1)(c), a researcher can create a cloned human embryo, implant it into a woman or an artificial device or into an animal host and bring the child so created to nine months gestation. Since this procedure must not be allowed to "create a human being," i.e.: to allow a human being to come to birth, *the child must be killed before being fully born.*

This clause allows the creation of living human beings for the sole purpose of being killed and having their organs harvested for research and the commercial market. It is a sanction for the creation of living human organ farms.

As noted above, clones can be created, by several techniques, from genetic material obtained from the nucleus or cytoplasm of more than one predecessor organism. Therefore, it is possible to create clones that would contain genetic material from two or more parents. It is also possible to create cloned embryos with genetic material from human and non-human parents. An embryo thus created is called a chimera. Mice have been created in the lab that have three and four parents using these types of techniques.

**5(1)(d)** *maintain an embryo outside the body of a female person after the fourteenth day of its development following fertilization or creation, excluding any time during which its development has been suspended;*

This allows the use, for experimentation, of a living embryonic human being up to fourteen days of development. During this time the embryo may be destroyed for its stem cells, implanted into an artificial womb, or used in any sort of research.

**5(1)(e)** *for the purpose of creating a human being, perform any procedure or provide, prescribe or administer any thing that would ensure or increase the probability that an embryo will be of a particular sex, or that would identify the sex of an in vitro embryo, except to prevent, diagnose or treat a sex-linked disorder or disease;*

The clause includes the phrase, “for the purpose of creating a human being,” and thus any activity which it claims to prohibit, is actually allowed if the purpose is to create a human embryo for any other reason than so-called “reproductive purposes.” Sex selection of embryos would be allowed if the embryo was intended to be used for experimentation or commercial gain and not intended to be brought to birth.

Furthermore, the exception in the clause, “except to prevent, diagnose or treat a sex-linked disorder or disease,” creates a sanction to carry out “search and destroy missions” against any embryo that may carry a sex-linked disease. It has been shown that the majority of these genetic selections are for eugenic purposes and result in the embryo’s destruction. This constitutes a case of lethal discrimination against those with sex-linked genetic disorders.

**5(1)(f)** *alter the genome of a cell of a human being or in vitro embryo such that the alteration is capable of being transmitted to descendants.”*

Once again the problem is with the use of the term “human being,” in conjunction with the term “*in vitro* embryo.” In this case it means that the prohibition is against altering the genome of a particular individual who has already been born or who is being maintained outside the body of a “female person,” but there is no prohibition against such alteration on a person who has not yet been born, or on a clone created by any method allowed by the bill (see notes on definition of “human clone” above). The *in vitro* embryo is included but that leaves open any alteration of an embryo once it has been implanted. Nor does this prohibition exclude the possibility of alteration of the germline cells extracted from aborted fetuses.

**5(1)(g)** *transplant a sperm, ovum, embryo or foetus of a non-human life form into a human being.”*

In using the term “human being” the clause does not preclude the implantation of non-human sperm, ova, embryos or fetuses into a member of the human species who does not fit the Criminal Code criterion of having been born. Since the bill does not acknowledge the existence of any of the methods of cloning other than SCNT, it is conceivable that a sperm, ovum, embryo

or foetus of a non-human life form could be implanted into a clone at any stage of the clone's life, whether he or she is currently residing in a human womb or out of one.

**5(1)(h)** *for the purpose of creating a human being, make use of any human reproductive material or an in vitro embryo that is or was transplanted into a non-human life form;*

This would be a useful clause if it did not limit itself to a prohibition only for the sake of bringing a human being to term and allowing him or her to live. It seems absurd to have to assert that it is an affront to human dignity to implant an embryo into an animal. To justify this action by saying that we are going to kill the person we are so abusing brings the absurdity to the level of insanity.

**5(1)(i)** *create a chimera, or transplant a chimera into either a human being or a non-human life form;*

The prohibition against creating a chimera depends upon the bill's definition of a chimera which has been shown to be deficient. If a researcher wants to create an organism using pronuclei from differing sources, he has created a chimera, but not according to this legislation's definitions. He is also free, because of the use of the term "human being," to implant that organism into a member of the human species who is either not born yet, or has been created by some cloning method not specified in the bill and never implanted. (If never implanted, it will never "emerge in a living state from the body of the mother..." and therefore never meet the Criminal Code criterion for a "human being".) We can begin to see here where the prohibitions and definitions start interconnecting and their deficiencies cause loopholes through which a scientist may pursue almost any course of research no matter how offensive.

**5(1)(j)** *create a hybrid for the purpose of reproduction, or transplant a hybrid into either a human being or a non-human life form.*

Here we have again the combined problem of a definition that is not accurate and the blanket exemption "for the purpose of reproduction." A hybrid is inadequately defined in the bill and the prohibition would not preclude the creation of a hybrid if the purpose is not to create a living, born person.

**6(1-5)** *No person shall pay consideration to a female person to be a surrogate mother, offer to pay such consideration or advertise that it will be paid.*

"Surrogacy," the implantation of an embryo into a woman who is a biological stranger to that embryo, violates the essential rights of every person and is deeply repugnant to the great majority of Canadians. This bill represents an irrevocable step away from the notion of the essential dignity, and therefore rights, of every human being. It treats the child as just another manufactured product and the woman as a gestating machine.

Surrogate motherhood offends the dignity and the right of the child to be conceived, carried in the womb, brought into the world and brought up by his own parents; it sets up, to the detriment of families, a division between the physical, psychological and moral elements which constitute those families.

## IV. Conclusion

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*In vitro* fertilization has come upon Canadian society quietly and has grown into a multimillion-dollar industry in a very short time. In that time there has been little public debate on the ethics of any of the procedures of artificial reproduction, and, until the introduction of C-13, no debate in Parliament. The many other ancillary procedures, such as cloning, developed by IVF research have also brought us to the point of a massive re-imagining of what it means to be human. IVF research has brought us cloning, genetic selection of children for desired traits, genetic manipulation of human beings through recombinant gene “therapy,” rent-a-womb surrogacy, the manufacture of children as a luxury commodity for the wealthy. It has given impetus to the so-called New Eugenics in the foreseen ability to control the future of the human species. By its intrusion into the sanctuary of marriage, IVF has contributed to the disintegration of the family as the foundation of society.

Bill C-13 encourages the growing perception that there is such a thing as a right to parenthood. If this idea is accepted, it necessitates the reduction of the child to the position of property. If a person has a right to be a parent, the withholding of any means, no matter how immoral, to become a parent, can be seen as an injustice. If there is a right to be a parent there must be a right to have a child upon whom to exercise the right to parenthood. If the child can be demanded as a right, then she is no longer a sovereign person with rights of her own; she is a thing upon whom another person’s rights are exercised.

By accepting IVF as a given in Canadian society, Bill C-13 gives the governmental stamp of approval to the reduction of the human person to a thing that may be demanded as a right, donated as research material, purchased, experimented upon, bought, sold or destroyed at will. It effectively abolishes the notion of personhood in Canadian law. It accepts as the law of the land the idea that a human being’s moral status can be granted or withheld at the whim of another. Once C-13 has established that there is no such thing as a person in the embryonic stage, what is to stop the progress of this logic to abolish personhood, and therefore protection under the law, of a human being at any other stage of development, from childhood through to old age?

Bill C-13 fails spectacularly, even in its stated intention of prohibiting human cloning. What is not often understood is that the same research that has perfected IVF has brought us the spectre of human cloning. The two are inseparable and wherever IVF is allowed, cloning is sure to follow. The bill’s evasiveness, ambiguity and scientific inaccuracy on the subject of cloning and the creation of embryos exclusively for experimentation, has opened the door to human cloning. What is worse, is that once the bill is passed the public perception of urgency to prohibit cloning will pass. The procedures used to create clones will quietly go on in research labs protected by the bill’s faulty definitions and unhindered by any further calls for prohibition.

In its attempts to regulate the IVF industry, it fails even to identify any of the grave ethical or medical problems associated with artificial methods of human procreation. It assumes a nation-wide acceptance of its increasing mechanization and commodification.

Political authority must be obligated to protect the institution of the family upon which society is based. Civil law cannot grant approval to techniques of artificial procreation which, for the benefit of third parties (doctors, biologists, economic or governmental powers), takes away what is a right inherent in the relationship between spouses.

Law does more than merely create rules. The law is a teacher and the philosophy that is assumed and taught by bill C-13 is one that represents a danger to the sovereign rights, and the very lives, of all persons at any stage of human development, from the embryo, to the child, to sick and disabled, to the vulnerable elderly.

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<sup>1</sup> In a recent multi-part series of articles, called "Love, Hope & Science," which ran in February 2003 in the Toronto Star on the experiences of couples undergoing IVF, one woman said that she had gone through years of dangerous and extremely expensive medical interventions because she wanted to have the "experience of childbirth." This attitude toward procreation and family life should sound a moral alarm bell. It presupposes that a child, a person possessing all the sovereign rights of personhood, can be manufactured for nothing more than to produce a particular experience.

<sup>2</sup>There is more and more data showing increased likelihood of genetic problems involved in most procedures of artificial reproduction.

Lifesite News

April 8, 1998- At a meeting of the American Society for Reproductive Medicine, experts in the field noted that one of the techniques used in the IVF procedure, called intracytoplasmic sperm injection (ICSI), is suspected of causing infertility, and increasing the chances of cystic fibrosis and cancer in children conceived by the method.

<http://www.lifesite.net/ldn/1998/apr/98040802.html>

Lifesite News

January 27, 2003- Children conceived by *in vitro* fertilization (IVF) are more likely to be afflicted with a rare form of eye cancer, according to new Dutch research from VU University Medical Centre in Amsterdam, published in The Lancet. The study found that incidence of retinoblastoma, which normally occurs in one child in 17,000, is between five and seven times higher among IVF children.

<http://www.lifesite.net/ldn/2003/jan/03012707.html>

The New Scientist

December 13, 2001- A popular IVF technique may increase the risk of babies being born with abnormalities such as ambiguous genitalia.

<http://www.newscientist.com/news/news.jsp?id=ns99991678>

Lifesite News

January 16, 2003- Scientists now say that not only clones, but IVF babies as well, are more likely to suffer from a rare gene disorder, Beckwith-Wiedemann syndrome, than babies conceived naturally.

<http://www.lifesite.net/ldn/2003/jan/03011605.html>

<sup>3</sup> intracytoplasmic sperm injection: a form of micromanipulation involving the injection of a single sperm directly into the cytoplasm of a mature oocyte using a glass needle (pipette).

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<sup>4</sup> Heterologous IVF: the technique used to obtain a human conception through the meeting *in vitro* of gametes taken from at least one donor other than the two spouses.

Homologous IVF: the technique used to obtain a human conception through the meeting of gametes of the spouses.

<sup>5</sup> For a full analysis of the ethical dangers of IVF and related procedures, see “Donum Vitae: Instruction on Respect for Human Life in its Origin and on the Dignity of Procreation, Replies to Certain Questions of the Day,” Sacred Congregation for the Doctrine of the Faith, 1987. Accessed at: <http://www.ncbuscc.org/prolife/tdocs/donumvitae.htm>

<sup>6</sup> The Nuremberg Code, developed following the revelation of Nazi atrocities, gave internationally recognized directives for medical or other research using living human beings as test subjects.

Clause 1:

The voluntary consent of the human subject is absolutely essential. This means that the person involved should have legal capacity to give consent; should be so situated as to be able to exercise free power of choice, without the intervention of any element of force, fraud, deceit, duress, over-reaching, or other ulterior form of constraint or coercion; and should have sufficient knowledge and comprehension of the elements of the subject matter involved as to enable him to make an understanding and enlightened decision. This latter element requires that before the acceptance of an affirmative decision by the experimental subject there should be made known to him the nature, duration, and purpose of the experiment; the method and means by which it is to be conducted; all inconveniences and hazards reasonable to be expected; and the effects upon his health or person which may possibly come from his participation in the experiment.

Clause 5:

No experiment should be conducted where there is an *a priori* reason to believe that death or disabling injury will occur; except, perhaps, in those experiments where the experimental physicians also serve as subjects.

Clause 6:

The degree of risk to be taken should never exceed that determined by the humanitarian importance of the problem to be solved by the experiment.

Clause 9:

During the course of the experiment the human subject should be at liberty to bring the experiment to an end if he has reached the physical or mental state where continuation of the experiment seems to him to be impossible.

Clause 10:

During the course of the experiment the scientist in charge must be prepared to terminate the experiment at any stage, if he has probable cause to believe, in the exercise of the good faith, superior skill and careful judgment required of him that a continuation of the experiment is likely to result in injury, disability, or death to the experimental subject.

Reprinted from Trials of War Criminals before the Nuremberg Military Tribunals under Control Council Law No. 10, Vol. 2, pp. 181-182.. Washington, D.C.: U.S. Government Printing Office, 1949.

<sup>7</sup> See endnote 5.

<sup>8</sup> totipotent stem cell:

“totipotent” means literally, “having all powers” and refers to the stem cells found in the embryo in the earlier stages of development. Totipotent stem cells can be manipulated to form any of the tissues of the body. They can also be made to begin dividing, thus forming another embryo. This last is called blastomere separation or “twinning” and is a form of cloning. It is for this plasticity that they are valued by researchers. However, such cells have been shown to be unusable for direct therapeutic applications because of problems with immune rejection and their tendency to go “wild” and form unwanted types of tissue, malignant tumours etc.

<sup>9</sup> Somatic Cell Nuclear Transfer: the technique of creating a clone that was used to create “Dolly” the cloned sheep. The nucleus of a living oocyte is removed and the nucleus of a somatic cell from another individual of the same or different species is inserted. This technique does not create an exact genetic copy of the donor of the

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somatic cell since there is DNA found in the enucleated oocyte. The resulting organism therefore, carries DNA from both the original oocyte and the donor of the nuclear DNA.

<sup>10</sup> The polar body can also be combined with pronuclei to create chimeric embryos. This is also a form of cloning.

<sup>11</sup> Germ line cells:

those cells formed at a very early embryonic stage that form the gametes, or sex cells of the individual. These diploid cells begin to form in the early embryo as early as 2 – 2 ½ weeks post-fertilization or cloning; after years of maturing, they form the haploid sex gametes (sperm and oocytes germline cells are not somatic cells. Genetic changes to these cells are passed down to the next generation when the individual reproduces. One of the many techniques of cloning being pursued by researchers is Germ Line Cell Nuclear Transfer as distinct from Somatic Cell Nuclear Transfer.

<sup>12</sup> Dr. Dianne Irving PhD a scientist and a philosopher, was in the first graduating class at The Kennedy Institute Of Ethics at Georgetown University. She analysed various state, national and international legislation regarding cloning, embryonic research and related topics under the various auspices of the University Faculty For Life, the Catholic Medical Association, and the International Federation of Catholic Medical Associations. She has presented to three Vatican sponsored conferences (Mexico City, Rome, and Brussels). Her 400-page doctoral dissertation at Georgetown (1991) was on these specific issues, and she has co-authored a book with human embryologist Dr. Ward C. Kischer, *The Human Development Hoax: Time To Tell The Truth* (1995, 1997), as well as being published in many peer review journals.

<sup>13</sup> Louise Brown was not, in fact, the first human being conceived in an artificial process, she was merely the first one to survive to birth. It is not known how many of her siblings were killed in this project. Nor is it known how many other embryonic human beings have been killed in the research developing these technologies.