ASVATTHA: International Journal of Culture, Philosophy & Theology
No: 12, 28th June 2006

Motherhood – Biotechnological Research and its Religio-Ethical Implications

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When science was born in the 16th century, its intention was to study the nature, understand its dynamics and manipulate it for human benefit. Its methodology of observation, experiment, hypothesis formation, verification/falsification, law statement, technological adaptation has paid high dividends and because of it humanity is enjoying unimaginable comforts. Today, science has turned its search light into human life itself discovering the language of life (DNA) and manipulating it. Science in its manifestation as Biotechnology discovered tailoring genes, creating clones by fusing ovum and cell from any part of the body at any age, developing organs from these clones, transplanting embryos, treating genetically and creating off springs to cure the diseases of their blood brothers. In the beginning of the twentieth century, science has given great hope in alleviating the miseries of humanity. But the science in the beginning of twenty-first century threatens humanity with its newly developed technologies especially biotechnology. This frontier science has great potential as well can lead us to great peril. It is worth probing this powerful instrument of science and its potentialities and promises.

Biotechnology engineers and manipulates life. Life in its initial stage is the fusion of the ovum and the sperm to from a single cell. Ovum is the symbol life and motherhood. In Biotechnology ovum forms the basis of all manipulation. In cloning, in surrogate motherhood, stem cell research, everywhere the ovum is manipulated genetically. Even without the sperm, new life can be created by fusing the ovum with the nucleus of another cell. Therefore motherhood is at stake and hence I have given the title "Motherhood-Biotechnology and its implications" for this presentation. Women become the basis of this new technology to a certain extent; their eggs are manipulated for good

or bad. The epoch making ethical, religious and social dimensions of this technology is unravelled in this presentation.

In the first place I present the glimpses of miracles created by Biotechnology and then describe the manipulation of surrogate motherhood, stem cell research and cloning. The ethical, Christian and the Religious implications are dealt in detail basing on Bible and the Document Humanae Vitae as the Seminar is organised by the Christian Chair of the University of Madras.

Glimpses from the Benefits of Bio-technology*[1]

"We have glimpsed at a silver lining over the horizon," said Song Chang-Hoon, a member of the research team and a professor at Chosun University's medical school in the southwestern city of Kwangju. "We were all surprised at the fast improvements in the patient." Under TV lights and flashing cameras, Hwang stood up from her wheelchair and shuffled forward and back a few paces with the help of the frame at the press conference. "This is already a miracle for me," she said. "I never dreamed of getting to my feet again." Medical research has shown stem cells can develop into replacement cells for damaged organs or body parts. Unlocking that potential could see cures for diseases that are at present incurable, or even see the body generate new organs to replace damaged or failing ones.

This is the breath taking story of a South Korean woman paralyzed for 20 years and is walking again after scientists say they repaired her damaged spine using stem cells derived from umbilical cord blood. Hwang Mi-Soon, 37, had been bedridden since damaging her back in an accident two decades ago. Her eyes glistened with tears as she walked again with the help of a walking frame at a press conference where South Korea researchers went public for the first time with the results of their stem-cell therapy. They said it was the world's first published case in which a patient with spinal cord injuries had been successfully treated with stem cells from umbilical cord blood. Though they cautioned that more research was needed and verification from international experts was required, the South Korean researchers said Hwang's case could signal a leap forward in the treatment of spinal cord injuries. We have to read these revolutionary steps of Hwang

in the background of Christopher Reeves, the superman who met with a polo accident and paralysed and died recently. Stem cell research kindles the hope for such millions of people.

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This is the first time in history "saviour siblings" – children conceived for to be saviours of their elder ones - created to treat children. Couples conceived a child to have a natural tissue match for a sick sibling. This method can also lead to terminations where the foetus is not a tissue match for the sibling. "It's a big step, because it gives people another option," says Mohammed Taranissi, at the Assisted Reproduction and Gynaecology Centre, London, UK, one of the team. "Before that the only option was to look in the siblings and immediate family to see if you had a match or alternatively to just keep trying [to have a baby which matches]." The chance in that technique was only five percent and now in this new technique there is 98 % success. The aim in these cases was to provide stem cells for transplantation to children who are suffering from leukaemia and a rare condition called Diamond-Blackfan anaemia (DBA) a serious non-heritable conditions.

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Bad news, says your doctor; "Your liver is failing". So he extracts stem cells from your bone marrow and injects them into a sheep foetus while it is still in the womb. When the sheep is born, much of the animal's liver will consist of your own cells - ready to be harvested and given back to you.

This dream therapy is still years off, if it happens at all, but the first steps have already been taken by a team led by Esmail Zanjani at the University of Nevada, Reno. "Esmail has some pretty startling results," says Alan Flake of the Children's Hospital of Philadelphia. Zanjani's team hopes the animal-human chimeras they are creating will one day yield new cells genetically identical to a patient's own for repairing damaged organs, and perhaps larger pieces for transplantation. It might even be possible to transfer whole organs, since in some cases having at least a partly human organ would be better than a

purely animal xenotransplant. Immune rejection of the animal portion would still be a problem, but it is not insurmountable, says Flake. "I don't think that in 10 to 15 years that's out of the question." If perfected, the technique could overcome some of the big stumbling blocks facing researchers who want to make tissues and organs for implants. It might yield significant quantities of just about any kind of cell or tissue, for instance, with no need to fiddle about with different culture conditions or growth factors. Instead, the host animal's own developmental program guides the injected human stem cells into their final roles. "We take advantage of the growing nature of the fetus," Zanjani says. It would also allow doctors to obtain immune-compatible cells without having to create human embryos by therapeutic cloning. Human cells could be separated from the animal ones simply by modifying existing cell-sorting machines. Providing the method really does produce normal human cells, they would not be rejected. And any stray animal cells would be killed off by the recipient's immune system.

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Surrogate Motherhood

Surrogate motherhood is not something new! There is an interesting scenario described in one of the oldest scriptures of humanity, namely Bible. The case is that of Sarah, the barren wife of Abraham. Sarah could not have children till her old age. She was sure of her barrenness and accepted her own incapacity. She decided to transcend this inability by giving her handmaid, Hagar, to her husband Abraham to produce them a child. (Genesis 16: 1-4) Surrogate mothers are hence sought after and at present biotechnology have come of age to give them not a new solution to the old problem of not being able to reproduce an offspring. According to statistics, ten to fifteen percent of married couples are unable to have children.

In most cases, surrogate motherhood is undertaken because the man who desires to be a biological father is married to a woman who is infertile. They may have considered adoption, but often are discouraged by the shortage of healthy infants or by

regulations (such as age or income) that may reduce or eliminate their chances of adopting. Surrogate motherhood allows them access to the child within days of its birth, and creates a biological connection between the father and the child. Sometimes single men have also sought surrogates because they cannot find or do not want a marital partner, but do desire biological parenthood and the chance to raise their own child. Also impotent men would like to have a child from his wife's ovum fertilized with the sperm of a donor. Another element that may vary in the surrogate arrangement is the relationship between the surrogate and the childless couple. The surrogate may be a friend or relative who volunteers to conceive and bear a child out of personal concern for the couple's situation. Other surrogates, though, are women who respond to advertisements, agreeing to be matched with couples previously unknown to them. They may be motivated by compassion, curiosity, or the desire to experience pregnancy and childbirth without responsibility for the child. Sometimes in the latter situation the surrogate and the couple become friends during the pregnancy; other times they remain anonymous. Whether previously acquainted or not, the relationship between the surrogate, the child, and the couple may take one of several shapes after the child's birth and surrender. The surrogate may remain in close touch with the couple and her child, and the child may or may not be informed that the surrogate is his biological mother. Or all ties may be severed at birth and, again, the child may be informed that a surrogate mother gave him.

Types and Nature of Surrogacy

A surrogate mother is a woman who carries the embryo of an infertile couple. This is the gestational surrogacy type of surrogacy. The surrogate is only the genetic mother and not the biological mother. The other type of surrogacy is traditional surrogacy; letting not only the womb but also the ovum. The traditional type of surrogacy involves the surrogate mother being artificially inseminated with the sperm of the intended father or from a sperm donor when the sperm count is low. In this case, by donating the ovum, the surrogate mother becomes the biological and genetic mother of the resulting child. In the case of gestational surrogacy, the ovum of the biological mother is fertilized with the sperm of her husband and implanted either in the uterus or in the

fallopian tube of the surrogate mother. In this process, the surrogate mother simply rears the biological child by giving it all the necessary nutrients for the development. In the traditional process, the activities involved are the following:- the harvesting of the ova, collecting the sperm, fertilizing them in the laboratory, keeping the embryos in a cultured medium and implanting them in the womb of the surrogate mother.

Harvesting the ova

The traditional surrogacy involves a two-fold preparation. The uterus of the embryo recipient (surrogate) is treated with hormonal replacement while the ovum donor is stimulated with fertility drugs in order to harvest ova and then fertilize them in the embryology laboratory with the designated sperm. The fertilized embryos are then transferred to the uterus of the surrogate for implantation. Though this process can thus easily and simply be described, it incorporates many sub-processes involving a lot of emotional stress.

First of all the ovum donor will have to be treated with hormones such as gonadotropins (Folistim, Gonal F, Humegon, Pergonal, and Repronex) to stimulate the development of enough follicles to optimize the number of mature eggs available for egg retrieval. In preparation for this treatment, the donor will be asked to use birth control pills (BCP) for eight or more days. Thereupon, she will receive GnRHa (e.g., Lupron) injections in combination with the BCP for about five days, after which the BCP will be discontinued. With the subsequent onset of menstruation approximately seven to 10 days later, the donor is given a blood test and baseline ultrasound examination to exclude the presence of ovarian cysts and to confirm that her ovaries are ready to be stimulated with gonadotropins. The donor's first day of gonadotropin injections is referred to as cycle day (CD) 2. On CD-9, intensive daily monitoring by means of blood hormone measurements and ultrasound examinations will begin. Usually, for harvesting the ova, one to four additional days of gonadotropin treatment will be required. Once monitoring confirms that the donor's ovarian follicles have developed optimally, she will receive an injection of the ovulatory trigger, HCG. The egg retrieval (ER) is performed 34-36 hours after the HCG injection.

Synchronizing the Cycles

For successful surrogacy, it is absolutely necessary that both women's cycles be synchronized as closely as possible so that the endometrial lining of the embryo recipient's uterus can be optimally prepared for implantation of the transferred embryos. This is achieved by administering the BCP with Lupron in the same manner as with the donor. By lengthening or shortening the duration of BCP treatment it is relatively easy to synchronize the cycles of the donor and embryo recipient.

Building Uterine Lining

The surrogate receives estrogen treatment in the form of biweekly injections of estradiol valerate. The surrogate's blood is tested one day prior to each scheduled injection to measure Estradiol concentrations in order to determine the subsequent dosage. The surrogate also undergoes ultrasound examinations to evaluate the development of her endometrial lining.

Egg Retrieval (ER), Fertilization and Embryo Transfer (ET)

The ovum donor undergoes transvaginal ultrasound-guided ER. The eggs are then fertilized with designated sperm and embryo/blastocyst growth is monitored daily. Meanwhile, the surrogate begins daily injections of Progesterone in preparation for the embryo transfer. Embryo transfer usually takes place three days following ER; blastocyst transfer is conducted five to six days after ER. After the embryo transfer, vaginal progesterone cream/suppositories are added to the hormonal regime to optimize endometrial development. When pregnancy occurs, the surrogate continues the hormonal treatment for an additional 6 to 8 weeks while all medications can be discontinued and the pregnancy resume normally. Thus the gestational surrogacy is a tedious process involving the surrogate and the ova donor injecting both of them with many hormones and synchronizing their menstrual cycles for optimum result induces many ethical and religious implications.

In many instances of egg retrieval, more eggs are harvested from the young donor than are required for a single attempt at achieving a pregnancy. This means there are

often several supernumary embryos left over for storage (cryopreservation/freezing), to be used with a future attempt at pregnancy. The cryo-preservation of a large number of embryos induces many ethical and religious questions. If the surrogate is married, the consent of her husband is required for the process and they have also been advised to keep abstinence for a successful surrogacy. These situations and the attitude of the surrogate bring forth ethical and religious challenges. The ethical dilemma is brought out clearly by Pope John Paul II in 1996 by stating that "there seems to be no morally licit solution regarding the human destiny of the thousands of 'frozen' embryos which are and remain the subjects of essential rights and should therefore be protected by law as human persons." Almost in the same tune Chris Smith the Republican representative in the American Congress from New Jersey alarmed that "We need to look at these cryogenic tanks as frozen orphanages rather than some kind of material that scientists can manipulate for whatever reason they would like to."

Cryo-preservation of Sperm

In the gestational surrogacy, a cryopreserved sperm is used. This process involves gathering the sperm and placing it in liquid nitrogen and storing in an insemination facility. The sperm can remain cryopreserved for over 16 years. Cryopreservation process includes, collecting the sperm (masturbation), chemical removal of water which prevents the formation of ice crystals, a cryopreservant buffer is added for support and protection (glycerol) of the sperm and actual freezing the sperm in liquid nitrogen in plastic straws, glass ampules, or cryovials. These vials are stored in sperm banks or Infertility Clinics and can be transported worldwide. Again, on moral principles certain religious groups object the process of sperm gathering.

Ethical and Religious Questions

As we have described in detail the lengthy bio-technological process of surrogate motherhood, stem cell research, therapeutic cloning, it is worth to ponder over the serious ethical issues that emerge from this process! These issues can be boiled down to a few ethical and religious questions. Most of these issues are spinning around motherhood and woman. The donor of the egg is a woman, the recipient of the embryo is a woman and it

is gestated in the womb of a woman, the hazardous chemical treatment for the preparation of ova harvesting and embryonic transplantation is undergone by the women . . etc.

Is it ethical to harvest more ova?

What are the pros and cons of using unused embryos for medical research?

Is there anything wrong with disposal of unused embryos …leaving them in the bank to degenerate?

Is there anything wrong with a surrogate giving her unused embryos to someone else?

Who should make a decision to unthaw frozen embryos?

What if the surrogate decides to maintain her privacy?

What if the surrogate and the spouse violate the abstention clause?

What if the surrogate decides to keep the baby?

What if the surrogate with genetic ties demands to visit her child?

Do women participate in surrogacy to save their marriage?

Is it wrong for a surrogate to abort?

Is handing over a child after delivery for a fee "baby-selling"?

What is the mental attitude of the surrogate – altruistic or monetary benefit?

If monetary benefits lead to the surrogacy would it not affect the personality of the child?

If the child born is mentally and physically challenged who would take care of the child?

If the biological parents denies the care of such a child who would take care of it?

These questions show the depth of ethical and religious implications of the surrogate motherhood. It can be argued that the surrogate is empathetically driven by an altruistic motive to share what they have, and relieve some of the social stigma of not being able to produce a child than economical. In addition to the above questions, the psychological stresses associated with being a surrogate mother are: artificial insemination (over several months), pain, unpleasant side effects, depression, sleep disturbance, guilt conscience, difficulty in remaining unattached, etc.

Biblical Perspective

Although the Bible cannot be said to have anticipated the current revolution in ways of dealing with infertility and thus may not speak directly to surrogate motherhood, it contains substantial guidance about the relative importance of parenthood and the appropriate framework in which procreation ought to be undertaken. It also shows remarkable sensitivity to the great unhappiness that involuntary childlessness may represent. Procreation has an honoured place in the Bible. Human beings are created male and female in Genesis, with the potential to "be fruitful and multiply (Gen. 2:28)." Both man and woman are needed for procreation. Together through their sexual communion they bring forth new life. This model is once again reiterated in monogamous marriage, where committed partners are the wellspring of the next generation. In the Old Testament there are instances of polygamy, a traditional family form that was accepted within the Hebrew community, and from such an arrangement came children. But it is notable that procreation was not endorsed apart from a publicly acknowledged, permanent relationship between those who would create a child. When looking at the role Christianity plays or has played in surrogate motherhood, we tend to look at the story of Abraham and Sarah again. The moral and ethical issue surrounding the scenario was Sarah arranging for Abraham and Hagar to have them a child. It was the practice of her native country where there was no hope in bearing children for the spouse to give her maid to provide an heir for the family. This was one of the legal practices in Mesopotamia. Precisely the wife determined the rights of the offspring. However, domestically there was a lot of tension, heartache, and hatred between the women. The situation of the Egyptian maid could very well be mirrored today. Being a surrogate gave

Hagar an elitist feeling and she became pompous and proud. Hagar would not consent to the plan to turn her child over to the mistress. Her question was, why should her child be passed off as the wife's son? She had second thoughts and this still happens today. In this scenario the spouse became jealous, the surrogate became proud and refused to give up the identity of the child and consequently the spouse had both her and her child ousted. This will be the same attitude felt by the partner of the traditional surrogate. If the ovum or the sperm is from a donor, the un-participating partner may feel that he or she is an outsider and has no role to play in the whole process which will lead to the ultimate rejection of the child causing heart burn and violence in the family. It is a common belief that the use of bio-technology is a personal decision between a couple and God. Christians agree that a stable and supportive family benefits the child. This will definitely limit the assisted reproductive technology to married couples only where both partners are able to produce eggs or sperm, and carry a pregnancy. The overwhelming message of the biblical witness is that procreation is best undertaken with the precondition of a marital commitment. The donor in a surrogacy will definitely divide the couple and drive the infertile to anguish and the feel of an outsider. The mental frame up of the surrogate also counts the health and the development of the child. Instead of altruism if economic gain is the motivating factor of the surrogate, it is going to affect the psychological growth and spiritual orientation of the child. Another issue is when, if ever, will the recipient parent tell the child about the manner of his or her conception? Technology is expensive and certainly in the manner in which the couple will use their finances, both of them should be in agreement. Christians believe that God has given them the responsibility of being stewards. Therefore, how and for what money is spent is very important. Man's knowledge is a gift and a blessing when used in the proper manner.

Thus there are acceptable reasons and forms of Christian service that may limit or refrain from biotechnological assistance in procreation (1 Cor. 7:32,33) 4. Procreation is God's plan (Gen. 1:28), children are blessing from God, (Ps. 127:3, 113:9) and all developmental stages of life should be respected (Gen. 1:5, Ps. 139:13-16) Jesus' ideal of the reign of God must have a priority in the Christian perspective (Matthew 10: 34-38; Matthew 12: 45-50). Jesus did not seek to eliminate families or propose any alternative structures for the begetting and rearing of children. His prohibition of divorce and

presence at the wedding at Cana has been seen as endorsing monogamous marriage and the resulting family unit. Therefore medical technologies that aid infertility that does not venture from biblical principles are acceptable in good conscience. This supports the principle that God is the moral Arbiter of the world who differentiates with absolute exactness, the moral from the immoral, and is also a loving and compassionate God. The decision to use bio-technology is thus not only a personal matter but also an ethical and religious matter. As long as they are kept in this perspective, such technologies can serve God's purposes.

What conclusions can be drawn from this sketch of biblical material? Two lessons emerge. The first is the great esteem in which the family is to be held: parents are to be honored; the birth of children to be celebrated as a gift from God; the capacity to procreate through loving intercourse is to be cherished; and grief acknowledged when natural procreation is not possible. But the second lesson, equally significant, is that the family is not the only or even the most important dimension of human life-covenant faith with God is. If family concerns jeopardize the relationship with God through Christ, then the family may have become a substitute for God. Jesus opposed all forms of idolatry, whether of law, economic status, or family; nothing must take God's rightful place.

The Catholic Perspective

The Official Catholic view on surrogate motherhood is derived from *Humanae Vitae*, the 1968 encyclical letter by Pope Paul VI on artificial birth control.[2] According to Humane Vitae, the two equal purposes of sex in marriage, are the unitive and the procreative dimensions, and that both must be present in each act of sex in the context of marriage. That is to say, marital sex should be both physically and emotionally unifying the couple and it is equally important to the transmission of new life. In short, if human beings truly are created in God's image and likeness, then human love should imitate divine love. The love giving (unitive) and the life giving (procreative) dimensions of human love is participation in the gratuitous creative love of God and hence there is an inseparable connection between the unitive and procreative process. According to

Humane Vitae, this inseparable unity that is written as a law of nature in to the creation by the creator is broken by any artificial means of reproductive technology. Looking from this perspective, surrogate motherhood denies the necessary unity in the act of reproductive assistance. Plainly, it is babies without sexual communion and this attitude is reiterated by the Church's 1987 statement by the Vatican Congregation for the Doctrine of the Faith entitled "Instruction on Respect for Human Life in Its Origin and on the Dignity of Procreation". (the Latin title is *Donum Vitae*)[3]. In this letter on assisted reproductive processes, the Church spoke of homologous forms of sperm and egg that come from the married couple; and the heterologous forms of assisted reproduction in which some third party is brought into the process of conception, gestation, and birth. Most homologous forms of assisted reproduction separate procreation from sexual communion of the man and woman as well all the heterologous forms (such as surrogacy) do. As a result, neither is acceptable from within official Catholic teaching. However, this orthodox and strict conclusion has been received with severe criticism from many infertile Catholic couples, who do not see that *Donum Vitae* goes far enough, even while it calls infertility "a difficult trial" and expresses sympathy towards "the suffering of spouses who cannot have children." Though the "Physical sterility" in fact according to the document is an invitation for spouses to render important services to the life of the human person, for example, adoption, various forms of education work, and the assistance to other families and to poor or handicapped children" sounds noble but frequently rings hollow.

The Catholic teaching understands marriage as both divinely instituted but also the most humanly compelling context for sexual expression. Love does not count problems and reaches out into the future. True love is based on a life long commitment and its fullest expression of love between man and woman finds in the context of marriage. It is but a short step from here to the conclusion that marriage is the most ethically appropriate place in which to have and raise children: if (from above) one of the purposes of a marital sexual relationship is procreation, and procreation produces something that's permanent (a child), then the child is most appropriately received in a context which is itself permanent (marriage). Therefore the children are called the supreme gift of marriage. Hence, no one can have a "right" to have a child, just as no one can have a "right" to a

gift. Things we have rights to are by this very fact no longer truly gifts. Gifts are simply things to which we don't have rights. Reproductive technologies which seek to 'take' a child apart from sexual intercourse do not treat a child as what he or she truly is. Moreover, recognition of children as gifts underscores the most proper context for receiving that gift. According to the Church, a child is not only "the most gratuitous gift of marriage," but is also "a living testimony of the mutual giving of his parents." Sexual intercourse is the mutual giving of partner to partner. And the idea is that the most proper way to conceive a child, who is a gift from God, is from within a context which is itself a giving one. For this reason, the Church speaks of the child's right "to be the fruit of the specific act of the conjugal love of his parents."

Thus the very nature of a surrogacy arrangement is ruled out in the catholic context. This principle is applied not only to surrogacy arrangements in which the surrogate is the genetic mother of the child, but also to so-called "gestational surrogacy," in which the surrogate carries a child not genetically related to her. The mutual giving expressed by what the Church calls "the language of the bodies" morally requires that the child not only be conceived through sex between its biological father and mother, but also carried and gestated by its genetic mother. Thus, Donum Vitae speaks of "the right of the child to be conceived, carried in the womb, brought into the world and brought up by his own parents." The document views the surrogacy arrangement as exploiting the economically marginalized by the rich and the powerful. Also it equates surrogacy with prostitution where through the purchase of the reproductive organs women are reduced merely to a biological being. The document also distinguishes between adoption and surrogacy. In adoption there is no genetic link between the parents although changing of money may be involved in both cases. The difference between adoption and surrogacy is the lack of intentionality of the birth of the adopted child.

Surrogacy asks some fundamental questions, namely what does it mean to be a parent? How should we consider children? As a gift or as a commodity? Do every one have a right to have children by any means? Obviously, money frequently changes hands in an adoption just as in surrogacy. If the money is paying for a child, rather than for a service, then is the child's giftedness being violated; and is the child himself or herself

being reduced to a commodity, one good alongside other goods we buy and sell in our economy? And if the answer to this is 'yes,' then (at least) paid surrogacy violates the dignity of the personhood of our offspring, for only THINGS have prices--people are too valuable to be for sale. Even if the intention of the surrogate is altruism or love than economic motivation, the Church denies it by the principle that the end as well as the means to be good.

In surrogate motherhood, there are three types of mothers, the genetic mother (provides the egg and ½ of the genetic code 23 chromosomes), the gestational mother (she carries the foetus inside her body), and the social mother (contributor to the raising and care of the child). Each is important for the well-being and development of the child. Surrogacy is not a simple arrangement; it is extremely complex. The relationships can be stressful, overwhelming, and intense.

The inextricable bond between the gestational mother and the child is not well taken care in surrogacy. Because of her mental and emotional links with the child, if a surrogate mother decides to hold on to the child, will definitely implicate into a legal battle. After the birth of the child, the surrogate is not to foster a relationship with the child, so that the child will only know its nurturing parents and shall not be confused. The problem with this argument is that a mother naturally bonds to her child during pregnancy, and that giving him up is often hard to do. If a surrogate does fight back, as only a mother would, she is seen as evil and cannot tell the truth (see the Baby M case in Pence).

The social parents or the biological parents are placed in a difficult position to inform the child about his or her birth. The amount of technological knowledge as well as the confusing (even for an adult) idea of multiple parents far surpasses these two cases. Perhaps more difficult to explain to a child (and even unfair to hold against him or her) is the fact that his nurturing parents paid for the ability to raise him. Another problem to think about is the case of the parents who are unable to conceive because of their age, and so go about gaining a child through surrogacy. The child then must spend much of their

life dealing with his incapacity to cope with the aged parents or single parent through which his natural growth is stunted.

Commercialism and consumerism

In today's consumerist society, more and more items and services are being treated as commodities, and are being bought and sold. Children have also thus been demoted to the status of a commodity. Though biotechnology offers the technical assistance of having a designed baby with the characteristics and talents one looking for, it dehumanizes the entire reproductive process and lowers to the status of a consumerist mall where you can purchase any product if you have the means. A couple wishing to have a child (if the wife does not want to carry the child for nine months, or an infertile couple or single parents) can walk into a fertility clinic, chose a surrogate mother, buy the child she produces from her (and pay the clinic/agency for overseeing the deal), and leave with a contract stipulating that the child is theirs legally. Here motherhood is lowered to the status of a factory productionline devoid of the sacrifice and love endowed with it.

The Surrogate Mindfulness

Surrogates have agreed to the arrangement for a number of reasons: curiosity; to assuage guilt over an abortion; because pregnancy and birth had been or were anticipated to be rewarding experiences; or, most commonly, out of compassion. By themselves, these are not appropriate reasons for undertaking procreation. There is no context of loving commitment to the child's father — a basic prerequisite — and unlike the husband in the infertile marriage, there is no intention on the part of the surrogate even to care for the child she deliberately conceives. The absence of these elements reduces human procreation to the mere biological production of babies, and so degrades one of the most wondrous of human capacities. Some women, in defending the decision to become surrogates, describe themselves as "providing the gift of life" — an action which appears commendable. But a Christian understanding of procreation does not view children as entities to be created in order to be bestowed on others, as though they were handmade sweaters or cookies. Participation in their creation entails a responsibility for their well-being and the surrogate has no intention of carrying out that responsibility beyond birth.

There are certainly other contexts in which one or both biological parents may surrender their role to others, but these are not normative situations. Moreover, the premeditated character of the surrogate's decision to forfeit a parental relationship makes her choice especially repugnant.

Embryo – A Person?

Who am I? It is one of life's basic perennial questions that has troubled philosophers through out the centuries from the very beginning of human thought. One aspect of the answer lies in working out what it is to be a person. This is not just of academic interest alone because the conclusion will affect the way we think about key issues relating to human life and biotechnology. The beginning of human life is the fusion of the ovum and the sperm –fertilization- that gives an embryo and the consideration of whether it is a human person or not has become a hot ethical issue. Out of the fertilized embryos that fail to implant, (natural abortion) are estimated to be between 25% and 75%, making it difficult to believe that all these are lost people. In addition to that there are scientists who point out that fertilisation is a process that occurs over at least 24 hours, so there is no defining 'moment of fertilisation' to look back on. Implantation is the process where the embryo buries into the lining of the mother's womb, and the embryo releases human chorionic gonadotrophin, which wards off a period and prevents itself being washed away. Thus without a successful implantation, which starts at about 5 to 6 days after fertilisation and is completed by about 14 days, its survival chances are nil. From the implantation onwards the relationship between the mother and child begins in a radical way. The embryo cannot live without the nutrients from the mother. Some are of the view that after implantation only life begins and from that time onwards only an embryo can be considered as a human person. Some others are of the view that in order to be a human person the embryo needs a nervous system. They argue that we accept that brain death is the time when a person's life ends, so there can be no person until the brain, or at very least some nerves, have started to function. Up to 14 days the embryo has been a simple ball of cells. However, from this point a group of cells distinguishes itself within the ball and forms the primitive streak, the cell mass that will eventually become the full-grown baby. It was for this reason that the Warnock

commission (USA) set 14 days as the point beyond which no-one is allowed to perform experiments on human embryos. At around 17 days after the fertilization the neural tube begins to form in the embryo. If you see the nervous system as the key to be being human, then this is the point of definition. However, the first nerves are a very long way from forming the complex network that we accept as being a functioning brain.

After seven weeks of development all organs are basically in place and the embryo looks distinctly a human being. It is now called a foetus. Early thinkers such as Aristotle (383-322 BC) and the Catholic theologian and philosopher Thomas Aquinas (1225- 1274) decided that this physical maturity signalled the time when the embryo became 'ensouled'; became a person. According to Islamic scriptures the embryo is sacred from day-one and deserving of protection, but after about 6 weeks from fertilisation God breathes in the person's soul. There are other thinkers and scientists who argue that self-awareness (or consciousness), feeling pain or emotion, are the criteria for deciding whether an embryo to be a human person. So at an early stage embryo cannot suffer. In the early stages of life the embryo do not have the above clear human characteristics in its embellished forms and hence some thinkers say embryo is not at all a person and positively argue that therapeutic cloning and stem cell research can be done on them.

Thus basing on the definition of life, there are different views on the definition on the essence of being a human person. The scientists differentiate between “pre-embryos” or “pre-implantation embryos” and embryos implanted in the womb while others like St. Thomas hold a gradualist view. According to many scientists and bio-technologists the pre-implantation embryos could definitely be manipulated. Thus the embryo’s life is divided in its inception as early and late embryos! There are two views on the nature of human person. At one end of the spectrum of views on the status of the embryo is the view that, from conception, the embryo is fully a person with all the rights any person has—most notably the right to life. The magisterial teaching is definitive on this point with the common perception and the public posture of Catholic teaching on the status of the embryo accords with this extreme view. As I have already denoted in the Instruction *Donum Vitae,* issued by the Vatican’s Congregation for the Doctrine of the Faith in 1987, exhorts that “The human being is to be respected and treated **as a person from the**

moment of conception;[4] and therefore from the same moment his rights as a person must be recognized, among which in the first place is the inviolable right of every innocent being to life." So the Catholic teaching states unambiguously that an embryo is a human person and it should be given the due respect and dignity as a human person.

On the other hand, legal scholars like John Robertson and reductionist scientists takes an extreme procreative liberty and claims that the early embryo is little more than cellular material, and can be manipulated to any extent.

Here the basic question that arises is whether an embryo is a human person. From the religious perspective I have sown that it is revered from the inception as a person. However there are differences of opinion from the scientific perspective depending on which definition of person one is holding on to. Scientists are prone to take a lenient view because of the prospects of research while the religious thinkers generally hold on to the view that from inception onwards embryo is a human person and it is sacred. The general feeling of the spiritual consciousness of India is also the same.

Another important corollary that emerges from the discussion is that whether the reproductive capacity can be used for non-reproductive ends? The embryonic life is not sacred and insignificant and it is just like any other human cell. The scientists can work out alternative for the embryonic stem cells because as Msgr. Dennis Schnurr, pointed out on behalf of the American bishops that the promising work being done on adult stem cells eliminates the need for embryonic stem cell research. "The existence of such startling new alternatives [as adult stem research], which may be much more amenable to clinical use and do not require any destruction of human life," he wrote, "poses a significant new issue for ethics and public policy".[5] If the adult stem cells can be converted into stem cells, then a majority of ethical problems related to stem cell research can be avoided. Biotechnology at present is capable of transforming any human cell into ovum or sperm.

Thus in all the biotechnological researches related with human embryo, namely, surrogacy, therapeutic cloning or cloning, the question is whether the embryo is to be considered as a mere cell or a potential human being?. Many researchers claim that

embryo is a mere group of cells and can be engineered for research while all the ethicists and religious leaders claim that embryo is human life itself and it has to be given respect. Human person is constituted by a human body and any living human body can constitute a person. Person as the locus of value, it applies from the very moment of the distinct existence of the human body. Though, the personal qualities of self awareness, intelligence etc are not so visibly expressed, embryo has the full potential of the manifestation of the human being. So by destroying an embryo is killing a life, freezing an embryo is treating the potential human without dignity, and harvesting stem cells from an embryo is killing a person and taking his or her vital organs. So the Biotechnological research with human embryo cautions us to deal it with dignity and respect.

Conclusion

As we have discussed the methodology and the ethical and religious implications of therapeutic cloning, stem cell research and surrogate mother hood, it should be emphasized that in all these researches with life, human dignity is to be upheld and respect to life is to be maintained. All religions expect that the ends as well as the means are to be good. India is an emerging giant in the field of Biotechnology and the timeless spiritual dimension of India is to be upheld by the Biotechnology researchers of India. India has thus the unique position to blend technology with a spiritual and ethical orientation. Indian spirituality considers all forms of life as sacred and worshipful and Biotechnology today discovered that all life in this earth as inextricably intertwined and it is a biological continuum. I would like to conclude by the following excerpts from the speech of George W. Bush that was telecast to the whole of United States. It reflects the anguish and the ray of hope offered by Bio-technology. His reflections are not much different from the reflections of any ordinary person though he is the President of United States, where most of the Biotechnology development research is taking place. It expresses his moral dilemma over whether to allow therapeutic stem cell-cloning research or to block it. He thinks that more discussions are to be conducted by the experts basing on this frontier research and the fundamental human morality that guided humanity so far. So perhaps for us also it is necessary to have a wider discussion forum

on Biotechnology and its Ethical implications incorporating scientists, religious leaders, medical practitioners and people's representatives as law makers.

The Moral Dilemma of the President of United States [6]

"As I thought through this issue, I kept returning to two fundamental questions: First, are these frozen embryos human life, and therefore, something precious to be protected? And second, if they're going to be destroyed anyway, shouldn't they be used for a greater good, for research that has the potential to save and improve other lives?

I've asked those questions and others of scientists, scholars, bioethicists, religious leaders, doctors, researchers, members of Congress, my Cabinet, and my friends. I have read heartfelt letters from many Americans. I have given this issue a great deal of thought, prayer and considerable reflection. And I have found widespread disagreement.

On the first issue, are these embryos human life -- well, one researcher told me he believes this five-day-old cluster of cells is not an embryo, not yet an individual, but a pre-embryo. He argued that it has the potential for life, but it is not a life because it cannot develop on its own.

An ethicist dismissed that as a callous attempt at rationalization. Make no mistake, he told me, that cluster of cells is the same way you and I, and all the rest of us, started our lives. One goes with a heavy heart if we use these, he said, because we are dealing with the seeds of the next generation.

And to the other crucial question, if these are going to be destroyed anyway, why not use them for good purpose -- I also found different answers. Many argue these embryos are byproducts of a process that helps create life, and we should allow couples to donate them to science so they can be used for good purpose instead of wasting their potential. Others will argue there's no such thing as excess life, and the fact that a living being is going to die does not justify experimenting on it or exploiting it as a natural resource.

At its core, this issue forces us to confront fundamental questions about the beginnings of life and the ends of science. It lies at a difficult moral intersection, juxtaposing the need to protect life in all its phases with the prospect of saving and improving life in all its stages.

As the discoveries of modern science create tremendous hope, they also lay vast ethical mine fields. As the genius of science extends the horizons of what we can do, we increasingly confront complex questions about what we should do. We have arrived at that brave new world that seemed so distant in 1932, when Aldous Huxley wrote about human beings created in test tubes in what he called a "hatchery."

In recent weeks, we learned that scientists have created human embryos in test tubes solely to experiment on them. This is deeply troubling, and a warning sign that should prompt all of us to think through these issues very carefully.

Embryonic stem cell research is at the leading edge of a series of moral hazards. The initial stem cell researcher was at first reluctant to begin his research, fearing it might be used for human cloning. Scientists have already cloned a sheep. Researchers are telling us the next step could be to clone human beings to create individual designer stem cells, essentially to grow another you, to be available in case you need another heart or lung or liver.

I strongly oppose human cloning, as do most Americans. We recoil at the idea of growing human beings for spare body parts, or creating life for our convenience. And while we must devote enormous energy to conquering disease, it is equally important that we pay attention to the moral concerns raised by the new frontier of human embryo stem cell research. ***Even the most noble ends do not justify any means***.

My position on these issues is shaped by deeply held beliefs. I'm a strong supporter of science and technology, and believe they have the potential for incredible good -- to improve lives, to save life, to conquer disease. Research offers hope that millions of our loved ones may be cured of a disease and rid of their suffering. I have friends whose children suffer from juvenile diabetes. Nancy Reagan has written me about President

Reagan's struggle with Alzheimer's. My own family has confronted the tragedy of childhood leukemia. And, like all Americans, I have great hope for cures.

I also believe human life is a sacred gift from our Creator. I worry about a culture that devalues life, and believe as your President I have an important obligation to foster and encourage respect for life in America and throughout the world. And while we're all hopeful about the potential of this research, no one can be certain that the science will live up to the hope it has generated.

Eight years ago, scientists believed foetal tissue research offered great hope for cures and treatments -- yet, the progress to date has not lived up to its initial expectations. Embryonic stem cell research offers both great promise and great peril. So I have decided we must proceed with great care.

As a result of private research, more than 60 genetically diverse stem cell lines already exist. They were created from embryos that have already been destroyed, and they have the ability to regenerate themselves indefinitely, creating ongoing opportunities for research. I have concluded that we should allow federal funds to be used for research on these existing stem cell lines, where the life and death decision has already been made.

Leading scientists tell me research on these 60 lines has great promise that could lead to breakthrough therapies and cures. This allows us to explore the promise and potential of stem cell research without crossing a fundamental moral line, by providing taxpayer funding that would sanction or encourage further destruction of human embryos that have at least the potential for life.

I also believe that great scientific progress can be made through aggressive federal funding of research on umbilical cord placenta, adult and animal stem cells which do not involve the same moral dilemma. This year, your government will spend $250 million on this important research.

I will also name a President's council to monitor stem cell research, to recommend appropriate guidelines and regulations, and to consider all of the medical and ethical ramifications of biomedical innovation. This council will consist of leading scientists,

doctors, ethicists, lawyers, theologians and others, and will be chaired by Dr. Leon Kass, a leading biomedical ethicist from the University of Chicago.

This council will keep us apprised of new developments and give our nation a forum to continue to discuss and evaluate these important issues. As we go forward, I hope we will always be guided by both intellect and heart, by both our capabilities and our conscience.

* * * *

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[1] These instances of medical miracles related to the Biotechnological discoveries were gathered from the internet.

[2] http://www.cs.cmu.edu/people/spok/catholic/humanae-vitae.html
[3] http://listserv.american.edu/catholic/church/vatican/giftlife.doc
[4] Emphasis added by the author.
[5] www.nccbuscc.org/prolife/issues/bioethic/comments.htm
[6] Office of the Press Secretary, President of United States of America, August 9, 2001. Emphasis given by the author. I placed this quotation is not because that I have great respects towards George w. Bush. In his speech to the American nation, as the most powerful person of the most powerful country, he is lead by religious views, detects and expresses the complex problems of biotechnology in a very comprehensive way and suggests that there must be discussions among a wide range of people and there should be a new culture of life in tackling the biotechnological issues. This suggestion of having discussion forums can be applied in our own localities so that people may be conscientized and can discover answers for problems relating to them and biotechnological issues. When I presented this paper there was a question that challenged the whole approach of the paper as highlighting only the negative results of biotechnology. I was extremely happy to see that the audience (my young budding scientist sisters) who were comprised of young women who took up the issue and responded skilfully from their own perspective and from the knowledge they acquired from their own biotechnological classes and the ethical consciousness they derived from the Indian culture. So diffusion of knowledge and discussion of biotechnological problems must become even part of the academic curriculum than mere manipulators of technology.