Bioethics
Lecture 2
Reproduction
Andrew Fiala, Ph.D.

Course Plan

• March 27: Introduction and The End of Life: Euthanasia/Assisted Suicide
  • What makes life worth living? What is a good death?
• April 3: The Beginning of Life: Abortion and Reproductive Technologies
  • When does life begin? Who controls reproduction—and for what purpose?
• April 10: Improving Life: Genetic Frontiers: Preimplantation Genetic Selection, CRISPR and gene editing, eugenics
  • Should we improve mother nature?

***Spring Break***

• April 24: Social Issues: justice, distributions, etc.
  • Whose Life Matters? Who benefits? Who is harmed?
Ethical Theories

- Libertarian
  - Is it freely consented to without harming others?
- Natural Law
  - Does it fulfill natural purposes or functions?
- Utilitarian
  - Does it maximize the greatest happiness for the greatest number?
- Kantian Deontology
  - Can we universalize it? Does it respect persons?

Basic Values

- Nonmaleficence
- Beneficence
- Utility
- Distributive Justice
- Autonomy
- Precautionary Principle

Ethical Issues at the Beginning of Life

- Abortion
- Infant Euthanasia
- Artificial Reproduction
- Value of Sperm/Eggs
- Gestational Surrogacy
- Preimplantation Genetic Screening and sex selection

Ethical Questions

- Who benefits?
- Who is harmed?
- Is autonomy respected?
- Are there natural purposes or functions involved?
- Are the vulnerable protected?
Considerations and Concerns

- Personhood
- Women’s rights/autonomy and feminism...
- Value of Reproduction and Pregnancy
- Legal issues: Roe v. Wade; access and regulation; “undue burden” standard
  - Roe standard: permitted during first trimester, limited during third trimester, and regulated during second trimester
  - With Casey (1992), viability becomes crucial standard
  - So: Late-Term (“Partial-Birth”) abortion banned
- Reasons for abortion: rape, incest, fetal impairment, women’s health, sex-selection, etc.
- Contraception and Plan B (Emergency Contraception) and Medicated Abortion

Ontological Status of Fetus

- What sort of a being is the fetus?
- When does it attain this ontological status?
- Does potentiality matter?
- Is a fetus a unique individual?
- Or is it a dependent part of the mother?
Abortion Issues

• Empirical vs. Moral
  • Does a fetus feel pain?
  • Does fetal pain have moral significance?
• Moral vs. Legal
  • Should abortion be legal/illegal?
  • Should a woman have a legal abortion?
• Women’s Rights vs. Fetal Rights
  • Is the mother the focal point of abortion—or the fetus?
  • What about others: fathers, grandparents, etc.?
• Related: Sexuality, Contraception, etc.

At what stage in pregnancy?

Fetal Growth From 8 to 40 Weeks
President Trump
State of the Union Speech, Feb. 5, 2019
https://www.whitehouse.gov/briefings-statements/remarks-president-trump-state-union-address-2/

• To defend the dignity of every person, I am asking Congress to pass legislation to prohibit the late-term abortion of children who can feel pain in the mother’s womb. Let us work together to build a culture that cherishes innocent life. And let us reaffirm a fundamental truth: All children — born and unborn — are made in the holy image of God.

Fetal Pain?
When? And does it matter?

• “Fetal perception of pain is unlikely before the third trimester.”
  • A Systematic Multidisciplinary Review of the Evidence
    • Susan J. Lee, JD; Henry J. Peter Ralston, MD; Eleanor A. Drey, MD, EdM; et al John Colin Partridge, MD, MPH; Mark A. Rosen, MD
  • Pain perception requires conscious recognition or awareness of a noxious stimulus. Neither withdrawal reflexes nor hormonal stress responses to invasive procedures prove the existence of fetal pain, because they can be elicited by nonpainful stimuli and occur without conscious cortical processing. Fetal awareness of noxious stimuli requires functional thalamocortical connections. Thalamocortical fibers begin appearing between 23 to 30 weeks’ gestational age, while electroencephalography suggests the capacity for functional pain perception in preterm neonates probably does not exist before 29 or 30 weeks.
Abortion discussion

• What is the moral significance of fetal pain?
• Should abortion be permitted? At what stage in pregnancy?
• What about the rights of the mother?

Legal and Empirical Issues

• Politicized issue of dating pregnancy
  • From “conception” (earlier) vs. after last menstrual cycle
• 64.5% of abortions performed in first nine weeks
• 26.9% of abortions performed in weeks 9-13
• 98.6% performed within 20 weeks
  • 1.4% are “late term”
• Viability: 26 week (1970’s)—now 24 weeks or 23...
  • Race, class, gender influence viability
• “Partial birth” abortion ban
  • BUT exception for health of the mother... or is this too open-ended?
  • 2007 Supreme Court upheld Partial Birth Abortion Ban of 2003
Virginia governor faces backlash over comments supporting late-term abortion bill
CNN, Jan. 31, 2019

• Virginia Democratic Gov. Ralph Northam is facing backlash after he voiced his support for a state measure that would significantly loosen restrictions on late-term abortions.

• "[Third trimester abortions are] done in cases where there may be severe deformities. There may be a fetus that's nonviable. So in this particular example, if a mother is in labor, I can tell you exactly what would happen," Northam, a pediatric neurosurgeon, told Washington radio station WTOP. "The infant would be delivered. The infant would be kept comfortable. The infant would be resuscitated if that's what the mother and the family desired. And then a discussion would ensue between the physicians and the mother."

• The bill -- which among other things would end a state rule that requires at least three physicians confirm "that a third trimester abortion is necessary to prevent the woman's death or impairment of her mental or physical health" and ends "the need to find that any such impairment to the woman's health would be substantial and irremediable" -- is currently tabled in Virginia's legislature.

• Northam said he supports the bill's measures, telling WTOP that "we want the government not to be involved in these types of decisions. We want the decision to be made by the mothers and their providers."

• Shortly after Northam's interview, several prominent Republican leaders sharply criticized the governor's comments, accusing him of being in favor of infanticide.

• "This is horrific," Republican National Committee chairwoman Ronna McDaniel wrote on Twitter, adding that Northam "is defending born-alive abortions."

Born-Alive Abortion Survivors Act

• The Born-Alive Abortion Survivors Protection Act failing to receive the 60 votes necessary to be brought up for a formal vote in the Senate, with 44 of 47 Democrats voting against it advancing. Sponsored by Sen.

• Ben Sasse (R-NE), the bill states that health care professionals must "exercise the same degree of professional skill, care, and diligence to preserve the life and health" of a child born alive after an abortion attempt as they "any other child born alive at the same gestational age," regardless of the wishes of the parents.

• Rolling Stone, March 1, 2019 (https://www.rollingstone.com/politics/politics-news/cpac-mike-pence-abortion-802060/)
The “infanticide” debate
And active euthanasia for disabled newborns

• “Born-alive” abortion is rare and exceptional case
• Death of infant usually would be “failure to resuscitate” or “passive euthanasia”
• Related Question: should there be active euthanasia for disabled newborns?

• The Case of Infant Sanne
  • Hallopeau-Siemens syndrome
  • The disease caused the infant’s skin to blister and peel, leaving painful scar tissue in its place.
  • The prognosis was for a life of suffering until the child would eventually die of skin cancer before reaching her teenage years.
  • The hospital refused to allow the infant to be actively euthanized
  • Sanne eventually died of pneumonia.
• Is it more humane to actively end the infant’s life?
Euthanasia for Newborns?

- 200,000 children born in the Netherlands every year
- 1000 die during the first year of life
- 600 of these infants die as result of a medical decision
- “there are infants with a hopeless prognosis who experience what parents and medical experts deem to be unbearable suffering.”

### Table 1. The Groningen Protocol for Euthanasia in Newborns.

<table>
<thead>
<tr>
<th>Requirements that must be fulfilled</th>
</tr>
</thead>
<tbody>
<tr>
<td>The diagnosis and prognosis must be certain</td>
</tr>
<tr>
<td>Hopeless and unbearable suffering must be present</td>
</tr>
<tr>
<td>The diagnosis, prognosis, and unbearable suffering must be confirmed by at least one independent doctor</td>
</tr>
<tr>
<td>Both parents must give informed consent</td>
</tr>
<tr>
<td>The procedure must be performed in accordance with accepted medical standards</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Information needed to support and clarify the decision about euthanasia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis and prognosis</td>
</tr>
<tr>
<td>Describe all relevant medical data and the results of diagnostic investigations used to establish the diagnosis</td>
</tr>
<tr>
<td>List all participants in the decision making process, all opinions expressed, and the final consensus</td>
</tr>
<tr>
<td>Describe how the diagnosis regarding long-term health was assessed</td>
</tr>
<tr>
<td>Describe how the prognosis regarding long-term health was assessed</td>
</tr>
<tr>
<td>Describe the degree of suffering and life expectancy were assessed</td>
</tr>
<tr>
<td>Describe the availability of alternative treatments, alternative means of alleviating suffering, or both</td>
</tr>
<tr>
<td>Describe treatments and the results of treatment preceding the decision about euthanasia</td>
</tr>
</tbody>
</table>

Abortion and Disability

Down Syndrome
- 67% of women with prenatal Down syndrome diagnosis have an abortion
  - Good Housekeeping, Feb. 2017

Zika caused microcephaly

Caring for a child with microcephaly could cost $10 million over a lifetime, according to the CDC

USA Today, August 8, 2016
Wrongful Life and Down syndrome
Santa Barbara, CA, July 26, 2018
https://www.noozhawk.com/article/santa_barbara_physician_prevails_wrongful_life_medical_malpractice_lawsuit

• A Superior Court jury has absolved a Santa Barbara physician of wrongdoing in a “wrongful life” medical-malpractice lawsuit filed against him on behalf of a boy born six years ago with Down Syndrome.

• After a six-day trial, the jury earlier this month found that Dr. Mohamed Ali Zaki and Women’s Total Care Medical Clinic were not negligent in their care of the boy’s mother, Maria Teresa Alvarez, according to court documents.

• Alvarez, who was 44 at the time she gave birth, had sought $5 million in damages for “medical, physical and nervous pain and suffering and loss of enjoyment of life” by her son, Aiden Alvarez, who was born in January 2012.

• In the lawsuit that was filed in June 2017, Alvarez claimed that Zaki failed to properly screen and diagnose a “defective fetus” and offer her “the option of abortion.” Alvarez also claimed Zaki did not offer her testing for fetal abnormalities or information regarding genetic testing,....

• “But for the negligence per se of defendants...Aiden Alvarez would not have been born at all,” Alvarez’s lawsuit states.

Discussion

• What about:
  • Abortion for physical/mental health of the mother
  • Abortion in case of rape or incest
  • Abortion to prevent a disability
  • Active euthanasia for newborns
Commodification of Sperm?
https://fairfaxcryobank.com/

Sperm Bank of CA
https://www.thespermbankofca.org/

Get paid for each ejaculate that meets the minimum sperm count. Donors earn $125 for each acceptable sperm sample. Most donate once a week; some donate more often. Most donors earn $400-$600 per month.
The parents of a 21-year-old West Point cadet fatally injured in a skiing accident raced the clock to get a judge’s permission to retrieve his sperm for “the possibility of preserving some piece of our child that might live on.” U.S. Military Academy Cadet Peter Zhu was declared brain dead Wednesday, four days after the California resident was involved in a skiing accident at West Point that fractured his spine and cut off oxygen to his brain.

“That afternoon, our entire world collapsed around us,” Monica and Yongmin Zhu of Concord, California, said in a court petition. But they saw a brief window to fulfill at least part of Peter’s oft-stated desire to one day raise five children. The parents asked a state court judge Friday for permission to retrieve his sperm before his organs were removed for donation later that day at Westchester Medical Center. They argued the procedure needed to be done that day. “We are desperate to have a small piece of Peter that might live on and continue to spread the joy and happiness that Peter bought to all of our lives,” read the parent’s filing in state court in Westchester County.

The first documented post-mortem sperm removal was reported in 1980 and the first baby conceived using the procedure was born in 1999, according to medical journals. Usually, the request comes from a surviving spouse.

The parents told the court that Peter is the only male child of the Zhu family and that if they don’t obtain the genetic material, “it will be impossible to carry on our family’s lineage, and our family name will die.”

The judge later that day directed the medical center to retrieve the sperm and ordered it stored pending a court hearing March 21 regarding the next steps.
Parents of dead West Point cadet retrieve his sperm, AP News March 4, 2019
https://www.apnews.com/c1759a1b1fa04abb591fe169f9d7ce8

• Such requests by parents are rare, but not unheard of.
• In 2009, 21-year-old Nikolas Evans died after a blow during a bar fight in Austin, Texas. His mother, Missy Evans of Bedford, Texas, got permission from a probate judge to have her son’s sperm extracted by a urologist, with the intention of hiring a surrogate mother to bear her a grandchild.
• In 2018, the American Society for Reproductive Medicine issued ethical guidelines for fertility centers on posthumous collection of reproductive tissue. It said it's justifiable if authorized in writing by the deceased. Otherwise, it said, programs should only consider requests from the surviving spouse or partner.

The man who fathered 200 children
The Guardian Nov 24, 2018

• Louis was on a secret mission, motivated by a deep anxiety that had built as he drifted through early adulthood. Profound questions of mortality were keeping him awake at night. “I had started to think, ‘Who will remember me when I’m gone? Who will talk about me? Who will be my heir?’” he says. “I think our biggest fear in life is not to die, but to be forgotten.”
• So Louis made an audacious plan. If he wasn’t going to have children of his own in the normal way, maybe he could donate sperm in such quantity that – eventually – a child might try to find him. To pull it off, Louis would need to play a biological numbers game. “If I had 10 children this way, there would be a very slim chance of success,” he says. “But what if I had 100... or even more?”
The man who fathered 200 children
The Guardian Nov 24, 2018

• Regulation of Dutch sperm banks was lax in the early 80s, but Louis knew that donating at the level he needed would be discouraged. (Laws still vary. In Britain today, the same donor sperm may be used in no more than 10 families. In Holland, the limit is now 25. Any more, and the risk of accidental incest is thought too great.) To avoid raising suspicion, Louis used three sperm banks, the farthest one a short train ride away, logging his donations in a notebook he still keeps on a shelf.

• For 20 years, from 1982, Louis donated as often as three times a week, generally before work. He says the banks must have known he was visiting too often, but demand for reliable donors was high: Louis was an asset. The clinic, it would later transpire, had also exaggerated his credentials in the anonymous profile for prospective mothers. “It said I was university-educated, that I was a boss at a bank and that I had no interest in being contacted by future children,” he says. It also failed to mention his ethnicity; Louis describes his father as “black and white – we descend from African slaves and their owners”

• Louis has calculated his donations have resulted in 200 births, “give or take a dozen”. He doubts another estimate, which he says came from the foundation, that he may have as many as 1,000 children. Confidentiality and use of unlicensed donors means records are hard to keep, but a figure anywhere near this high would make Louis one of the world’s most prolific fathers.

• Louis has met more than 40 of the 57 children to whom he has now been matched.
Indiana fertility doctor used own sperm 50 times
CNN Sept 27, 2016

- After one woman discovered eight unknown siblings following a commercial DNA test, she investigated and learned that her biological father was her mother’s fertility doctor, according to court documents from Marion County, Indiana. Dr. Donald Cline had told his patients he was inseminating them with "fresh sperm" from a medical student or resident.
- Cline confessed he’d donated his sperm, not through a bank, about 50 times and "admitted to doing wrong by inseminating the women with his own semen, but felt that he was helping women because they really wanted a baby," the court documents say. He also said he felt pressured into doing what he’d done because he didn’t always have access to fresh sperm.

Biological children of fertility doctor and their mothers bond to fight
WTHR (Indianapolis), Nov. 21, 2016
https://www.wthr.com/article/tonight-at-11pm-families-open-up-about-fertility-doctor-controversy

- Liz White told Eyewitness News she trusted Cline with providing donor sperm to have her son, Matt.
- "I had entered the office with this incredible hope and this gratefulness for a donor," White said. "And betrayed is another good word."
- Betrayed is a word Deborah Pierce also used while talking about Dr. Cline. Despite a wonderful life growing up, her daughter, Jacoba Ballard, learned that someone else was her father. Jacoba added her DNA to the website "23 & Me". When she got the results, she says it exposed Cline's secret - which she shared with her mother.
- "I felt like a virtual rape victim," Liz White said. Feeling like victims, the mothers and their children want Dr. Cline held accountable. They also want to make sure no other fertility doctor can legally do the same thing.
- The children and mothers hope to convince Indiana lawmakers to create legislation to make it a crime for fertility doctors to use their own sperm.
Discussion

• Who owns sperm?
• Should parents or spouse have access to a dead man’s sperm?
• Should sperm be donatable or sold?
• Should women or couples be able to select their preferred sperm donor?
• How can society limit or control the risks of sperm donation?

”Brave New Families?”

• 50% of all American children will live with a single mother before they are eighteen and 8% of households with children are headed by a single father. 50% of births to American women under 30 occur outside of marriage, and 41% of all babies in the US are not born out of wedlock—a fourfold increase from 1970. Since 1996, the number of cohabitating couples has increased 170 percent.

• 25% of same-sex couples in the US are raising children, according to 2010 census.
  • (Munson and Lague 350-51)
How many “parents” can (should) a child have?

- Sperm donor
- Egg donor
- Gestational surrogate
- “Adopted” father/mother
- “Adopted” mother/father

**California SB 274: “Third Parent Law”**

Most children have two parents, but in rare cases, children have more than two people who are that child’s parent in every way. Separating a child from a parent has a devastating psychological and emotional impact on the child, and courts must have the power to protect children from this harm.

Where more than two people have claims to parentage, the court may, if it would otherwise be detrimental to the child, recognize that the child has more than two parents. [https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB274](https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB274)

---

Three-parent child
Harvard.edu, August 2018

- Replace damaged mitochondria in mother’s egg with healthy mitochondria from another woman’s donor egg
- Nuclear DNA from the mother and father, as well as mitochondrial DNA from the donor egg
Same-sex couple carries same 'miracle' baby in what may be fertility world first (Reciprocal In Vitro Fertilization)
USA Today, Oct. 29, 2018

• "She got to carry him for five days and was a big part of the fertilization, and then I carried him for nine months…”

Discussion

• What is your opinion about artificial reproductive technologies?
• What should a family look like?
**Donum Vitae** (the gift of life), 1987


- Human Procreation must take place within marriage
- Every human being is always to be accepted as a gift and blessing of God. However, from the moral point of view a truly responsible procreation vis-à-vis the unborn child must be the fruit of marriage... the sign of the mutual self-giving of the spouses, of their love and of their fidelity.
- 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** (the gift of life), 1987

- IVF is wrong
  - Destruction of spare embryos = abortion
  - Donor sperm is NOT husband’s sperm
  - Fertilization of unmarried or widowed women is wrong
- Surrogate motherhood is wrong
  - Surrogate motherhood represents an objective failure to meet the obligations of maternal love, of conjugal fidelity and of responsible motherhood; it 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.
Donum Vitae (the gift of life), 1987

- Procreation is an “act of giving”
  - Vs. reproduction as an act of “control and domination”
- No right to have children

- Artificial insemination as a substitute for the conjugal act is prohibited by reason of the voluntarily achieved dissociation of the two meanings of the conjugal act. Masturbation, through which the sperm is normally obtained, is another sign of this dissociation: even when it is done for the purpose of procreation, the act remains deprived of its unitive meaning.

Surrogacy

- Altruistic Motives: to help a family have children
  - A gift...
- Plus Compensation

- Risks to the surrogate: physical (pregnancy and childbirth) and emotional/psychological
- Risk to the adoptive parents: changes of heart
- Other risks: stillborn children, birth defects, issues for siblings and other family members
Nebraska Grandmother gives birth to her granddaughter
KETV Omaha, March 29, 2019

OMAHA, Neb. — A Gretna woman serving as the gestational surrogate for her son and his husband gave birth to her granddaughter at 6:06 a.m. on Monday. When her son Matthew Eledge and his husband Elliot Dougherty looked to expand their family, Cecile Eledge didn’t hesitate to help. Dougherty’s sister served as the egg donor and Matthew Eledge donated the sperm.
Nebraska grandmother acts as surrogate for gay son
BBC, April 2, 2019

- Lea Yribe, Mr Dougherty's sister and Uma's egg donor
- Mr Dougherty
- Ms Eledge (surrogate)
- Mr Eledge (sperm donor)

Surrogate Mother Refuses Abortion

- Stephanie Levesque surrogate
- Pregnant with disabled fetus
- Parents want abortion
- She refused
Surrogacy and Abortion
KVUE Dallas, Dec. 20, 2018

- Levesque said she wants more regulation on the written contracts signed by surrogate mothers and the biological parents, which she says are often contradictory.
- “On one page it can say if x, y, or z happens then the surrogate will abort. But the very next page says it is the surrogate’s constitutional right to choose whether she wants to abort,” Stephanie explained.
- She’s also beginning to contact legislators, hoping they’ll consider rewriting abortion laws so they apply not only to the woman carrying the child, but also to the biological parents, too.
- “Before anyone can abort, you have to go to a sonogram and see the baby, hear the heartbeat. It is assumed that the person at the sonogram is the biological parent – there’s no language at all pertaining to surrogacy,” she said.

No More Outsourcing Surrogacy to India
India’s ban on commercial surrogacy passes lower house

- Allows “altruistic surrogacy” only for Indian married couple who cannot bear children.
- Surrogate mother and couple must be related
- Prohibits surrogacy for
  - Foreigners
  - Homosexuals and single parents
  - Couples that already have children

Surrogacy once generated $400 million/year in India
Discussion

• What do you think about Grandmother as surrogate?
• Are surrogates exploited? Can exploitation be regulated/prevented?
• What about abortion: who gets to decide—the “parents” or the surrogate?

Screening and selection

• Diagnosis
  • Knowledge and Preparation

• Screening
  • Pre-implantation genetic selection
  • Abortion

• Could include engineering (gene editing)
Sex Selection at the Fertility Clinic

• Gender Selection at San Diego Fertility Center

• A number of prospective parents inquire about the possibility of choosing the gender of their baby. Advances in reproductive technology have allowed San Diego Fertility Center to provide this exciting option to individuals and couples undergoing fertility treatment. We practice two methods to help prospective parents select the sex of their new baby – whether they choose to do so in order to help avoid gender-specific disorders or to better balance out their family.

• What is gender selection?

• Gender selection (also called sex selection) is a medical technique used by prospective parents who wish to choose the sex of their offspring. Gender selection is performed through sperm separation or genetic testing. The embryos with the desired sex are then implanted into the woman’s uterus.

• How does gender selection work?

• Preimplantation Genetic Screening (PGS) genetically tests the embryo for the presence of two X chromosomes (female) or one X and one Y chromosome (male). With PGS, the embryos are analyzed with almost 100% accuracy.

Sex Selection at the Fertility Clinic

• Why use gender selection?

• Sometimes couples use gender selection to help prevent serious genetic diseases and chromosomal disorders that are gender-specific. For example, sex-linked diseases like muscular dystrophy and hemophilia that are inherited via the mother will only affect male offspring. In addition, conditions like Fragile X or autism often present more severely in one gender than in the other.

• Other times, prospective parents turn to sex selection when they have a strong desire to complete or “balance” their family according to their own personal plans. There are also cases where a couple feels a psychological need to have a child of a certain gender, either because they feel better equipped to raise a child of that gender or because they lost a child previously.

• What is the cost of gender selection?

• SDFC has a standard flat-fee for testing a total of 8 embryos in a period of 9 months. The fee for this PGS or Gender Selection is $4250. A total of 8 embryos will be tested whether or not they come from the same IVF cycle as long as they are tested in a 9 month window. Additional embryos can be tested for $250 each.
Discussion

- Is Preimplantation Genetic Screening/Selection morally appropriate?
- For diseases?
- For sex?
- For other genetic tendencies?

Summary of our discussion

- Abortion
- Infant Euthanasia
- Artificial Reproduction
- Value of Sperm/Eggs
- Gestational Surrogacy
- Preimplantation Genetic Screening and sex selection

Ethical Questions

- Who benefits?
- Who is harmed?
- Is autonomy respected?
- Are there natural purposes or functions involved?
- Are the vulnerable protected?