

*The Morality of Embryonic Stem Cell
Research—Arguments That Work and
Arguments That Don't*

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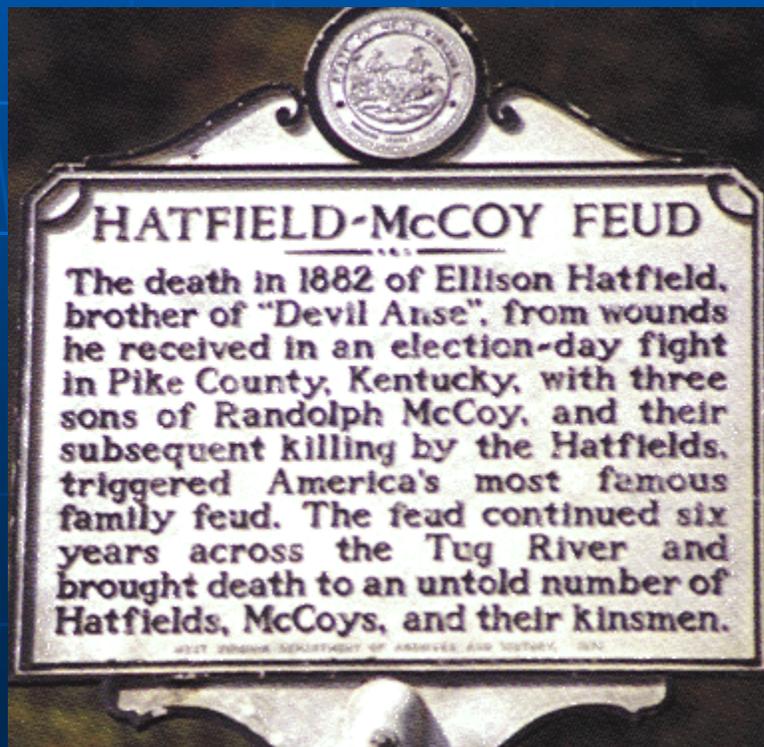
The Pursuit of Consensus

- Contrast
 - Narratives of competing views
 - Rigorous analysis of arguments
 - R. M. Hare
- Glimpse of basis for consensus motivates study
 - Requires sympathetic interpretation, careful scrutiny
 - Including scrutiny of arguments for one's own view
 - 'Openness to criticism is the homage that candor pays to truth'—Bernard Williams

1. Imminent death as justification for killing

Claim: surplus embryos will die anyway

Refutation: (a) imminent death is not alone a justification for killing; (b) imminent death would not justify use of embryos created in research



2. Nonindividuation Argument Against Zygotic Personhood

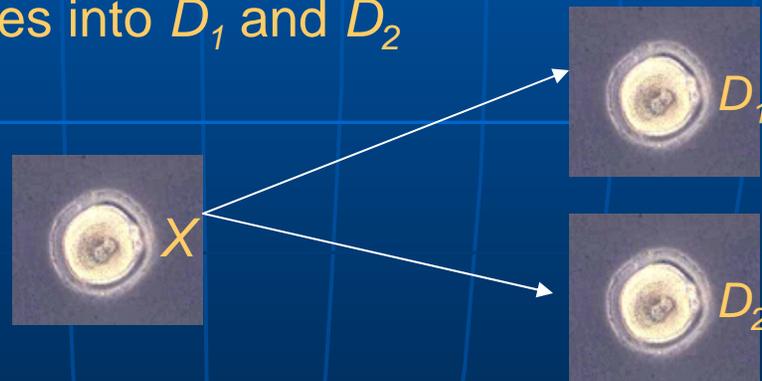
[1] An embryo able to split into monozygotic twins cannot have attained individuality. 'No entity without identity'—W. V. Quine

[2] In twinning, an embryo vanishes leaving no earthly remains

Refutations:

[R1] Counterexample of mitosis

X divides into D_1 and D_2



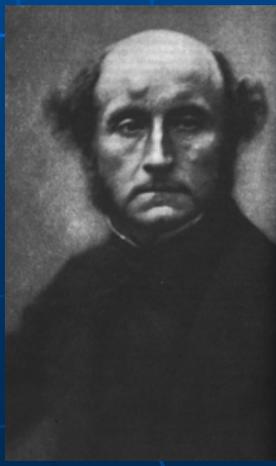
[R2] Dying is not the only way that a being may cease to exist.

Dividing is another.

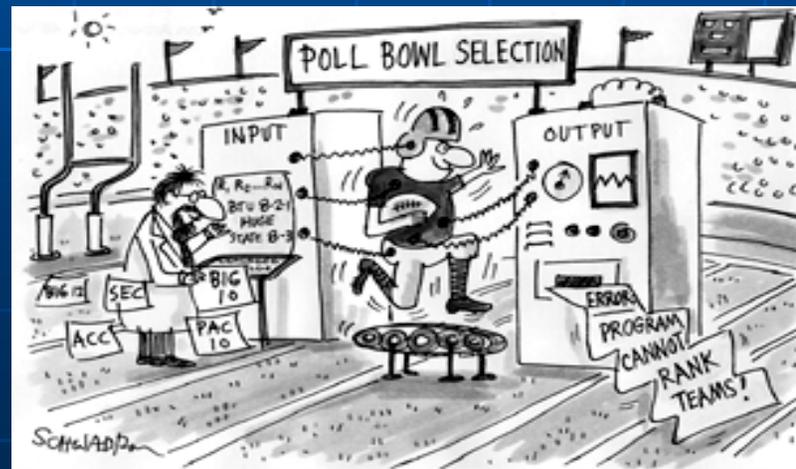
3. Utilitarian Defense of Embryo Use

Command: Maximize aggregate preference satisfaction of all affected beings

Refutation: Computational Waterloo: huge index set; absence of common unit of measure leaves incommensurability



J.S. Mill



Guenin L.M. "A Football House of Cards," *Michigan Today* 30:No 3. Fall 1998

4. Proposed Restriction on Admissible Arguments

Claim: Public policy should rest on 'fact-based' reasoning alone

Reply: Euphemism for excluding moral and religious views. That science should be employed without obstruction by a moral view is itself a moral view

Germ of truth: [1] We all reject factual error

[2] We should invoke only premises

that others cannot reasonably reject
(Rawls, Scanlon)

5. Noncomplicity Attempts

- Schemes purportedly avoiding complicity in embryo sacrifice
 - Intermediation between embryo sacrifice and use of embryonic derivatives
 - Fertility clinician immunosurgery
 - Government surprise
- Illusory firewall
 - Downstream investigators and funding sources complicit in induced embryo sacrifice

6. Renaming Cloning, Clones

Proposed semantic substitutions: 'nuclear transfer' for 'cloning,'
'product of nuclear transplantation' for 'clone' and 'embryo'

Reply: No moral mileage gained by verbal legerdemain;

'nuclear transfer' gives no hint of oocyte activation

Suspicion of smuggling in a controversial practice by
not mentioning it.

Akin to football coach substituting ineligible player
by swapping jerseys

Any developing human organism is an object of moral
concern

Adducing moral arguments superior to changing names

A. Argument from Nonenablement

No moral or religious view asserts duty of intrauterine embryo transfer

Nor duty to arrange or allow for adoption of extracorporeal embryo

Permissible exercise of discretion to decline intrauterine transfer

Yields unenabled *epidosembryo*

Bounded developmental potential

No possible person corresponds to epidosembryo

Nothing to be gained—for any being—by holding that epidosembryo is a person for purposes of the duty not to kill

Comparative Embryonic Developmental Potential

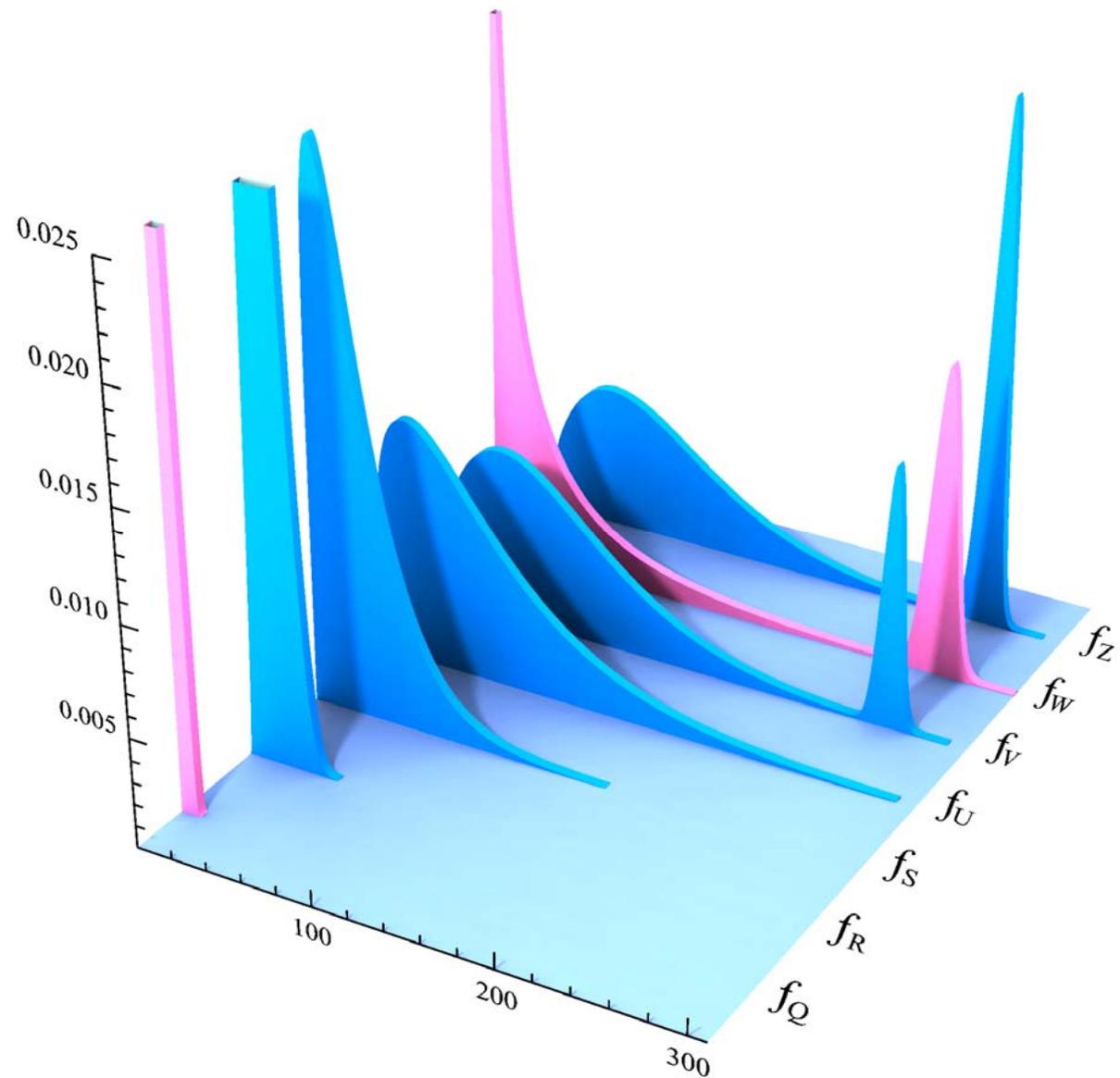
Probability density functions (PDFs) of probability distributions as projections of embryonic developmental potential in various kinds of situations

x-axis: most advanced stage attained by a conceptus, stages indexed by time on scale of days from 0 to 315

Foreground: PDF for tissue culture dish

Second plot from rear: PDF for the womb [probability distribution modeled by mixture of Weibull and normal distributions, normal distribution having mean of 265 days]

Blue plots: PDFs for imagined artificial uteruses



Moral Significance of Bounded Developmental Potential

- In the tissue culture dish, embryo will not acquire any morally significant attribute that it does not already have
- *It is not that death is imminent, but rather that potential is bounded*
- Ectogenesis
 - In what devices, and for how long, may embryos be nurtured as experimental subjects?

Responses to Zygotic Personhood

Kant's formula of humanity: 'Always treat humanity never simply as a means, but always at the same time as an end'

'Humanity' is rational nature, hence injunction inapplicable to nonrational beings. Respect for rational nature



Kant

Zygotic personhood

Roman Catholic Church argument from genomic uniqueness

Radical genetic reductionism

Contradicts doctrine of *corpore et anima unus*

Conflicts with social teachings:

'In the outpouring of Christian generosity

and charity every form of assistance should be developed'

--*Declarato de Procurato Abortu* (1974)

B. Defense of Nonreprocloning

Argument from nonenablement does not rely on procreative intent

Hence justifies nonprocreative cloning

Teleological objection to nonprocreative cloning

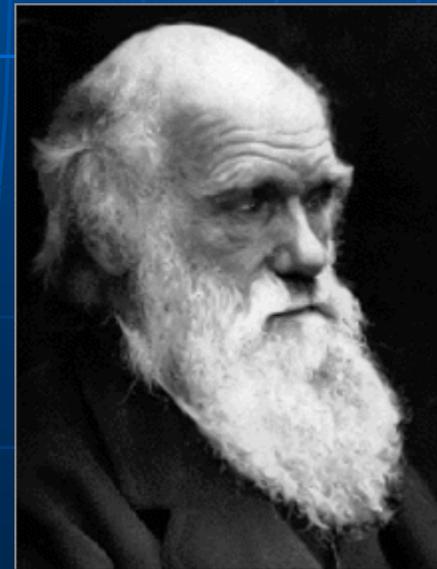
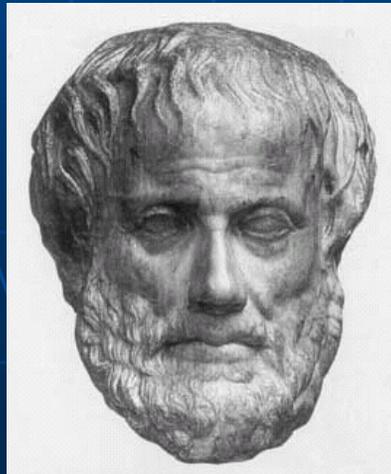
Rests on Aristotelian view

Since Darwin, that no longer exerts a grip on our thought

Remarkable adaptability of tissues and cells

If we could have a conversation with God

Aristotle



Darwin

Reprocloning

Nonsafety objections

Risk of identity crisis

Narcissism of self-cloners

Deprivation of an open future

Effect on gene pool, nuclear family

All these are speculations. We have known happy monozygotic twins

Incidence of reprocloning likely low

As and when cloning is safe, why is it not private?



Reprocloning

Concern for safety a consensus objection

Probable incidence of reprocloning, when safe, seems low

Natural conception almost always preferred

Imagined cloning scenarios and incentives

Carriers, those affected by recessive diseases

Couples imagining designer babies

Infertile couples

Homosexual couples

IVF, followed by PGD, almost always preferable

Some day, germ line intervention, perhaps
even using artificial chromosomes

C. Induced Pluripotent Stem Cells

alternatives

- Discovery that dedifferentiation could be induced was achieved not by eschewing embryo use, but by means of it
- Transcription factors observed in ESC were found to trigger reprogramming of nuclei to pluripotent state

Induced Pluripotent Stem Cells

alternatives

- Will cells that are pluripotent in consequence of dedifferentiation behave in same way as cells whose plasticity has never been less than pluripotent?
- Do hESC and IPC differ as to ease with which investigators can direct differentiation?
- Progress may be achievable by further observations of reprogramming

Induced Pluripotent Stem Cells

alternatives

- Reprogramming observable in clones and in products of fusion of hESC and other cells. Observing how transcription factors contribute to maintaining pluripotency in hESC
- hESC remain the gold standard of pluripotency to which all other cell types are experimentally compared
- When not known which cell types will yield the more safe and effective therapies, makes sense to investigate all simultaneously.

D. Shaping Norms

Argument from nonenablement justifies embryo use only in service of humanitarian ends

Not, e.g., experiments testing cosmetics or industrial chemicals

Appropriate restrictions on embryo use

Only epidosembryos may be subjects

Only for humanitarian ends

No ectogenesis at risk of sentience or of human anatomical form

Oocyte supply

Paternalistic argument for curtailing exploitation

Libertarian argument for respecting liberty

Allow a market, regulate it

Shaping Norms

Patents on embryos

An embryo formed by cloning may be 'new,' 'useful,'
'nonobvious,' and not a 'product of nature'

But a patent would allow claim that conception and
births is a patent infringement

--a perverse result

Hence this rule:

'No claim of infringement shall lie against a parent or
child as such'

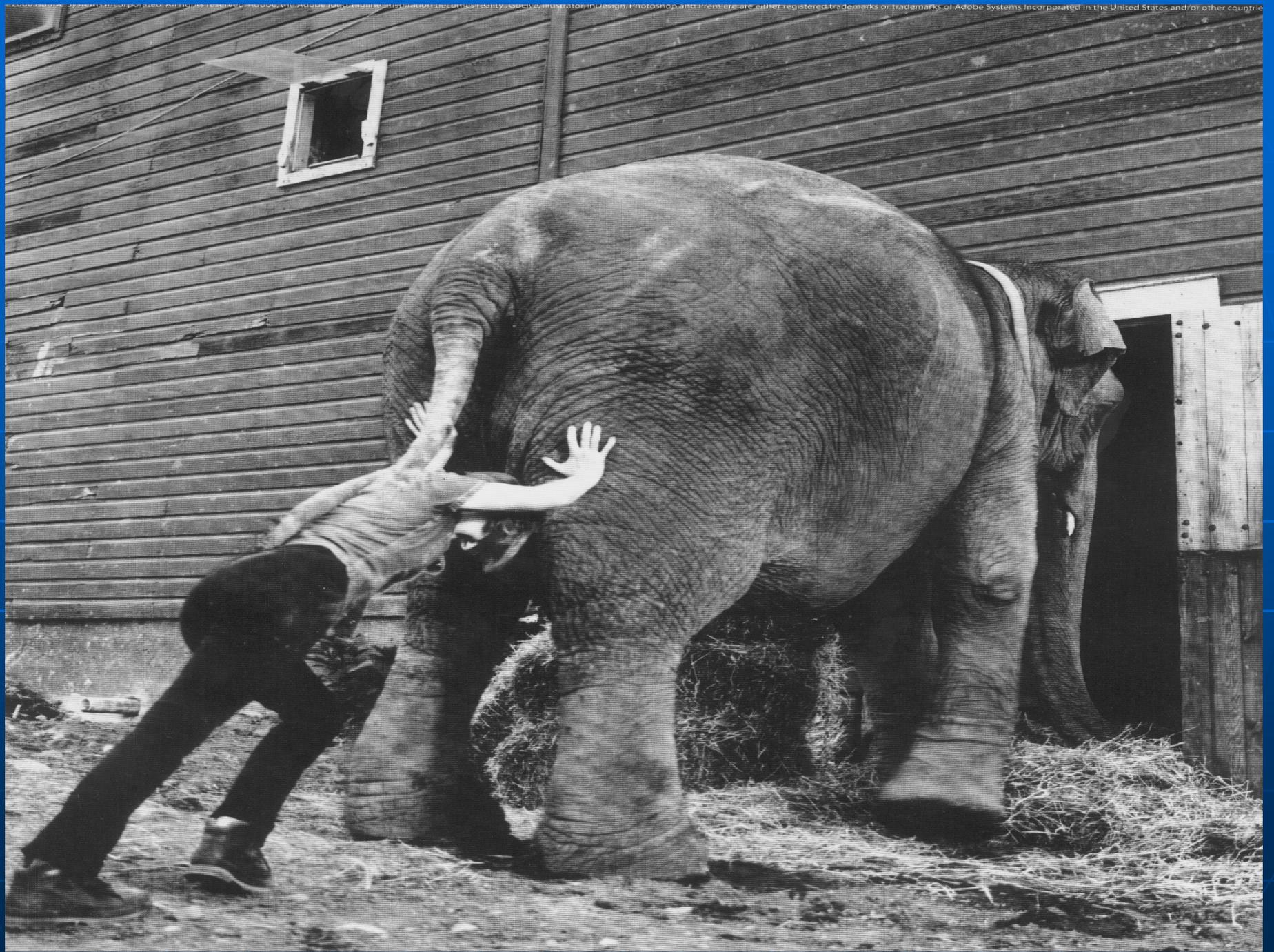
Shaping Norms

- Risks of abuse
 - Misleading to say that there are none
- But uncaring to neglect the humanitarian work of which we are capable within the constraints that we have the power to impose
 - Given the duty of mutual aid, when there is a reasonable basis for the belief that we can relieve suffering in actual lives at no cost in potential lives, we have a collective duty to act

E. Public Policy

- Thus far have been considering moral justifications for conduct
 - These are asserted within a political context
- Distinctions drawn
 - Between hESC lines derived by federally-funded investigators, and hESC used but not derived by federally-funded investigators
 - Between use of surplus embryos and use of clones

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Achieving Congruence Between Morality and Policy

- To foster consensus, define eligible research by reference to morally permissible research
- Thereby the publicly-supported and the morally permissible coincide

‘Morality Enlarged’ —Edmund Burke

- *Public Policy on Embryo Use.* Scientists may conduct, and the government shall support, biomedical research using human embryos that, before or after formation, have been donated to medicine under donor instructions forbidding intrauterine transfer.
- The above rule wears its justification on its sleeve.

Bibliography

- Guenin, Louis M. *The Morality of Embryo Use*. Cambridge University Press (2008)
- _____. 'The Nonindividuation Argument Against Zygotic Personhood.' *Philosophy* 81: 463–503 (2006)
- _____. 'Morals and Primordials.' *Science* 292: 1659–1660 (2001)
- _____. 'The Set of Embryo Subjects.' *Nature Biotechnology* 21: 482–483 (2003)