

“how the inclusion of an ethicist on a research team might affect change in scientific research”

“whether this model has generated productive collaboration among scholars”

Invited testimony of Erik Fisher. The Presidential Commission for the Study of Bioethical Issues. 11 February 2014. Washington, D.C.

Socio-Technical Integration Research (STIR)

- Coordinated series of 20 (+10) studies to assess the possibility and utility of socio-technical integration
 - *The process by which researchers account for the societal aspects of their work as an integral part of this work*
- 12 week structured interactions between embedded humanists and their laboratory hosts
- NSF has identified STIR as “a model for future integration of ethicists and social scientists into nanotechnology R&D laboratories.”

(FY2014 Budget Req. to Congress; Guston, 2013)



Framework for Midstream Modulation

De facto modulation

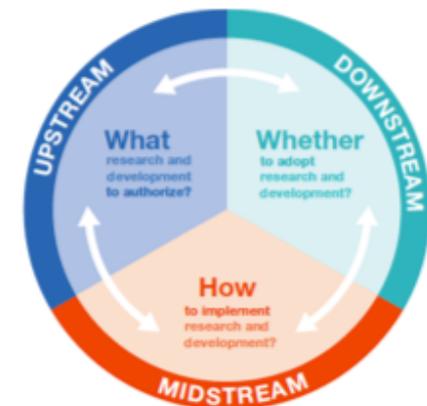
Scientific research is conditioned by socio-ethical dimensions

Reflexive modulation

Scientific researchers recognize *de facto* modulation as such

Deliberate modulation

Reflexive modulation becomes a productive resource for scientific research



(Fisher et al., 2006)

The Beginning of Inquiry

t_1 “We don’t make decisions”

t_2 “I guess this really is a decision”

Mechanical Engineering Case



- Environmental, health and safety concerns surface
- Alterations made to experimental set-up, materials and procedure
- Dead project is revived
- **Residual effects:** 18 months after study's end, a successful dissertation; protocol still being used

Biotechnology Case

- Researchers recognize tensions in their philosophical views on the role of science in society
- **Residual effects:** one week after study's end, lab group debates and collectively alters their safety practices



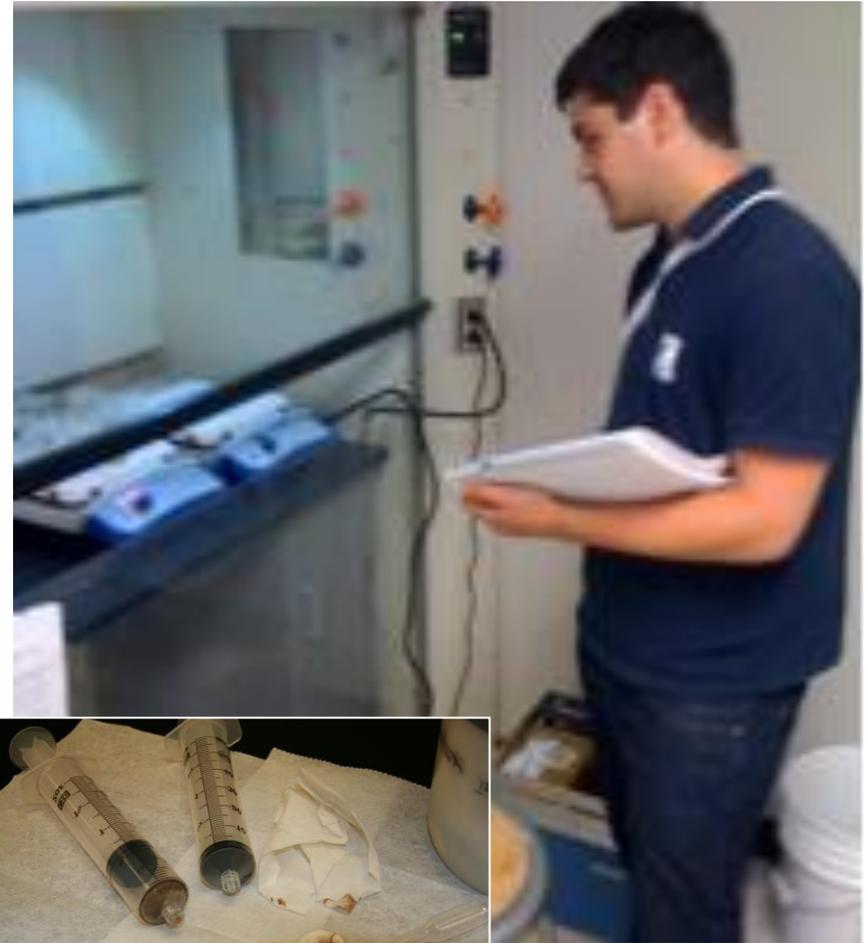
Genetics Case



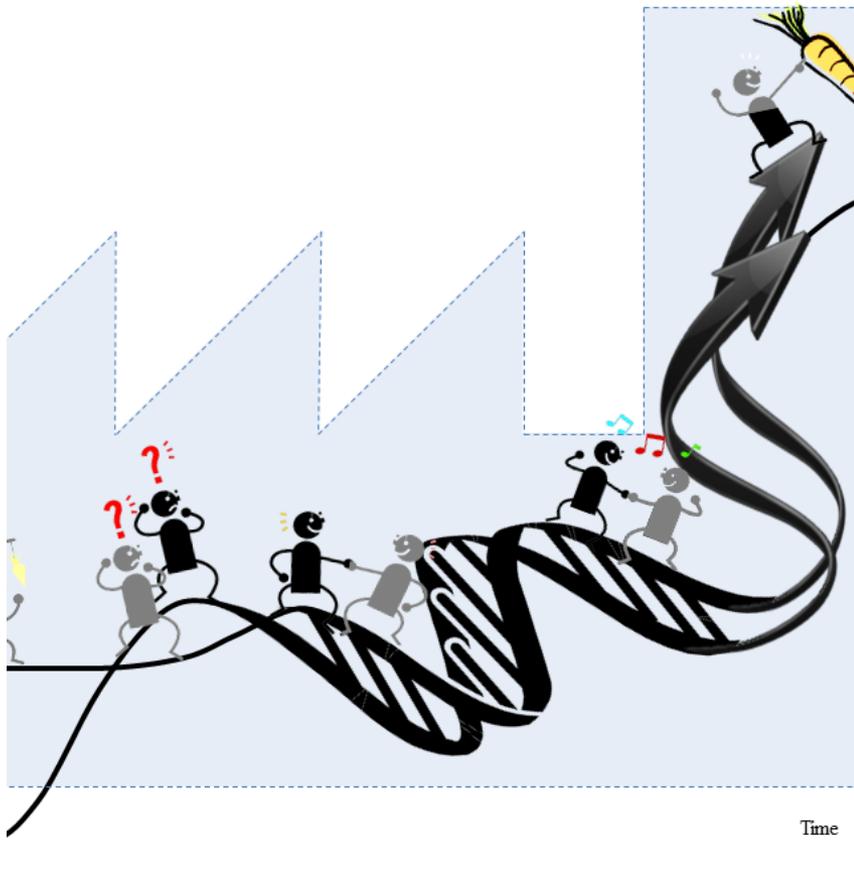
- Political scientist becomes adept at experimentation
- Helps researcher in another lab improve results
- Lab initiates patient engagement outreach
- **Residual effects:** Invitations to co-author papers and co-lead workshops on the ethics of genetic research

Environmental Engineering Case

- Nano-waste dilemma
- “What do I care what the public thinks?”
- Lab meeting cannot resolve the issue
- **Residual effects:**
Collaborators author an op-ed calling for public policy guidance



Industrial Biotechnology Case



- Pre-test
 - 1 of 5 participants state that integration is “part of the job”
- Post-test
 - 5 of 5 participants state that integration is “part of the job”

Preliminary Survey Results

	Reflexive Modulation (Learning)	Deliberate Modulation (Behavior)
Protocol	18/18	17/18
No Protocol	2/2	0/2

Results of 20/30 expected individual studies.

KEY:

Protocol: STIR protocol was consistently used in an in-depth and collaborative manner (18 studies).

No Protocol: Protocol was not used, or was used to elicit information but not to feed it back to the field (2 studies).

Public Policy Value

- Ethical **capacity**
 - Virtue ethics and “prudent vigilance”
 - Tacit (vs. formal) education
 - Responsible and effective communication
- Material **adjustments**
 - Social shaping of emerging technology
 - Scientific productivity
- Can **flag** issues
 - For more extensive analysis by ethical experts, policy makers, or the public



Conditions for Effective Integration

- **Embedded in the science**
 - Regular, situated, focused on actual decisions
- **Evolve over time**
 - Allow initial misalignments to surface and transform
 - Temporary status of humanist encourages learning
 - Avoid instituting permanent micro-scale silos
- **Voluntary**
- **Framed as inquiry**
 - Collaboration vs. compliance
 - Capacities vs. expertise
 - Avoid trap of promising benefits

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For full bibliographic citations, contact efisher1@asu.edu.

