Do-It-Yourself Ethics of Dual Use Science and Technology

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Traditional division of labour:

"Science takes the credit for penicillin, while Society takes the blame for the Bomb" (Jerry Ravetz (1975) '… et augebitur scientia' in Rom Harré (ed.) Problems of Scientific Revolution. University Press, London, p 45.)

New trend towards **Do-It-Yourself ethics**:

Scientists and all stakeholders should imagine and discuss ethical and societal aspects of new technologies and change course early
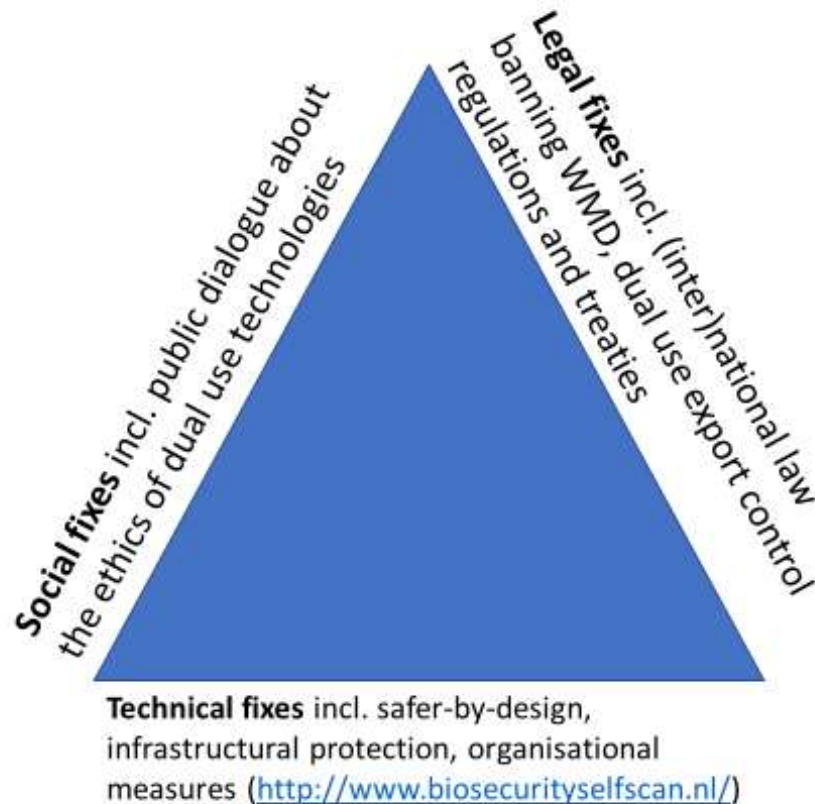
Responsible innovation

- Comply with current regulations
- Anticipate future consequences
- Role responsibilities for governments and stakeholders

Example: Responsible Research and Innovation (RRI) as horizontal priority in EU H2020

EthicSchool DIY Ethics Dual Use Technologies

3-D framework for Do-It-Yourself Ethics (Malsch, 2018)

Social fixes incl. public dialogue about the ethics of dual use technologies

Legal fixes incl. (inter)national law banning WMD, dual use export control regulations and treaties

Technical fixes incl. safer-by-design, infrastructural protection, organisational measures (http://www.biosecurityselfscan.nl/)

3-D framework for Do-It-Yourself Ethics

Legal fixes:

- National hard law

- International arms control treaties (UN SC res. 1540, NPT, CWC, BTWC, etc.)

- Overlap International Humanitarian Law (armed conflict) and International Human Rights (in general)

- Voluntary Self-regulation (academic, industrial and DIY-community codes of conduct, industry standards, etc.)

3-D framework for Do-It-Yourself Ethics

Technical fixes:

- Value-Sensitive Design, e.g. biosecurity by design, safer-by-design, cybersecurity, etc.

- Infrastructural and organizational measures

- Multi-Criteria Decision Analysis tools for managers optimizing trade-offs between different measures

3-D framework for Do-It-Yourself Ethics

Social fixes: dialogue:

- Inclusive (invite all stakeholders)

- Broad agenda (technical, legal, **political and ethical aspects)**

- Challenge moral convictions (value-differences)

- Develop vocabularies of comparison (to reach common understanding)

- Foster international subsidiary relations (decisions as close to persons concerned as needed)

Dual use issues:

What is dual use technology?

- Civil technology with military or criminal misuse potential

What is problematic about dual use sciences and technologies?

- Banning is impossible

- Laws are insufficient

- Needs additional voluntary self-governance of scientific and industrial community

Most emphasis is on deontological ethics (follow rules)

What about balancing freedom and security?

Case 1: legal and technical fixes for dual use drones:

Some drones technologies are subject to **export controls**:

- WCO Harmonised System Nomenclature includes drones for sale to consumers (2015)

- Wassenaar Agreement lists drones with autopilot or remote control out of sight of the human operator.

Some drones technologies are subject to **industrial self-regulation**:

- ISO established subcommittee unmanned aircraft systems (ISO/TC 20/SC 16) in 2014. Hot topics: standards for detect and avoid technologies, and for command and control systems

What is a fair balance between export regulations and self-regulation for drones technology?

Can Value-Sensitive Design help reduce dual-use risks of drones?

Case 2: Codes of conduct for screening trade in DNA sequences

- The National Science Advisory Board for Biosecurity recommended U.S. Governmental screening guidelines for orders of double-stranded DNA (dsDNA) etc (NSABB, 2006)

- First, two separate groups of companies developed codes of conduct (IASB, IGSC, 2009)

- Later, guidance was published by the US department of Health and Human Services (HHS, 2010)

- Impact and future sustainability assessed: current screening is affordable, but prices will drop for DNA sequencing, while screening costs remain the same (Carter & Friedman, 2015)

What is a fair balance of industrial and government responsibilities?

What role could dialogue play in harmonising the distinct codes?

Issues for discussion:

- To conclude: Responsible governance of dual use technologies calls for a case-specific combination of legal, technical and social (dialogue) fixes.

- **In your own professional practice, have you come across dual use dilemmas?**

- **What weighed heavier? Protecting security or granting academic or entrepreneurial freedom?**

- **Which other values were at stake?**

- **How can these values and dilemmas be better taken into consideration?**

DIY Ethics Emerging Technologies

Further reading:

Carter, S.R. & Friedman, R.M. (2015) DNA SYNTHESIS AND BIOSECURITY: Lessons Learned and Options for the Future. J. Craig Venter Institute. La Jolla, California

Consequentialism. Stanford Encyclopedia of Philosophy. https://plato.stanford.edu/entries/consequentialism/

Deontological Ethics. Stanford Encyclopedia of Philosophy. https://plato.stanford.edu/entries/ethics-deontological/

EC: General ethics guidance: http://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/ethics_en.htm

Dual use guidance: http://ec.europa.eu/research/participants/data/ref/h2020/other/hi/guide_research-dual-use_en.pdf

Misuse guidance: http://ec.europa.eu/research/participants/data/ref/h2020/other/hi/guide_research-misuse_en.pdf

HHS (2017) Framework for Guiding Funding Decisions about Proposed Research Involving Enhanced Potential Pandemic Pathogens. US Department for Health and Human Services. XXX

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Malsch, Ineke (2013). The Just War Theory and the Ethical Governance of Research. Science and Engineering Ethics. Vol 19 Iss. 2 https://link.springer.com/article/10.1007%2Fs11948-012-9357-8

Malsch, Ineke (2011) Ethics and Nanotechnology; responsible development of nanotechnology at global level in the 21st century, PhD thesis, Radboud University Nijmegen, http://repository.ubn.ru.nl/handle/2066/91234

Malsch, I. (2018) Future Technologies We Want. Wolf Legal Publishers.

Rodrigues, Rowena (2015) Principles and Approaches in Ethics Assessment. Dual-use in research. SATORI project, http://satoriproject.eu/media/1.g-Dual-use-in-research.pdf (a recent review of codes of conducts for dual use research. Includes a useful reference list for further study)

Virtue Ethics. Stanford Encyclopedia of Philosophy. https://plato.stanford.edu/entries/ethics-virtue/