This is not your "father's" biosecurity

Experiments in novel security governance at the edge of innovation

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photo: iGEM Foundation and Justin Knight

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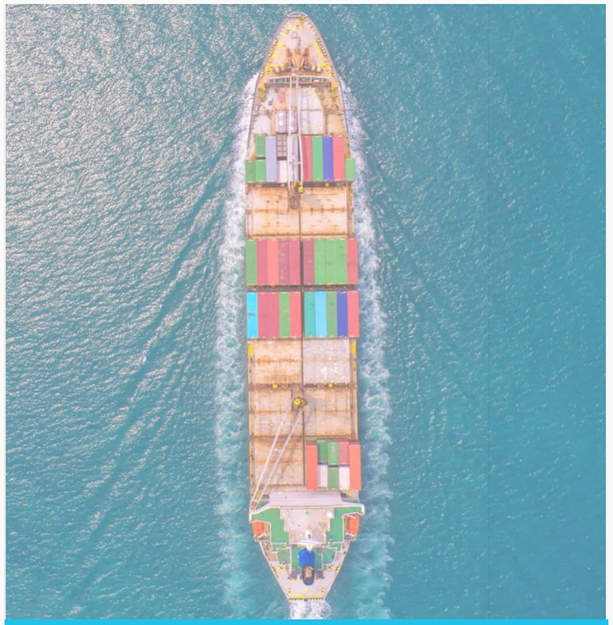
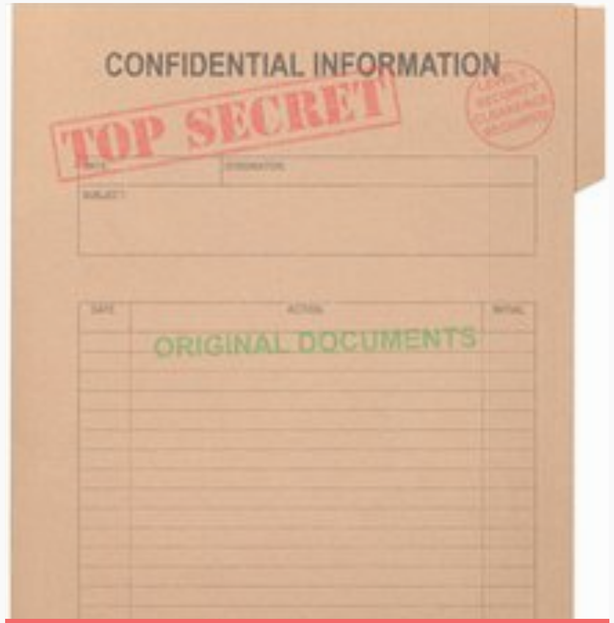
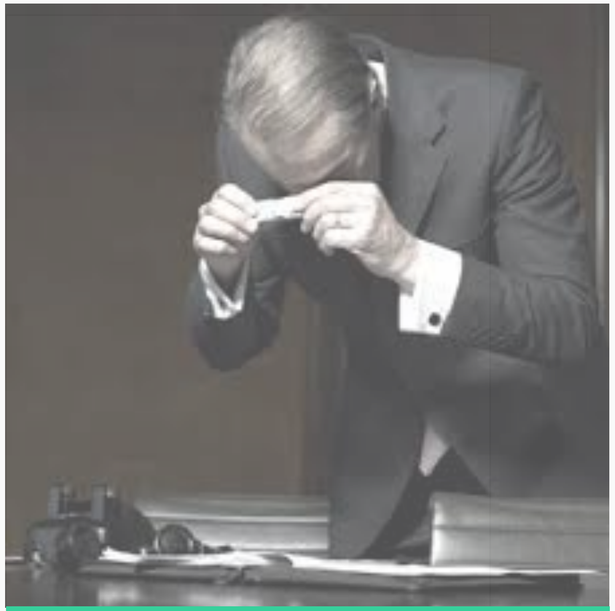
TRADITIONAL SECURITY GOVERNANCE OF SCIENCE AND TECHNOLOGY



EXPORT AND VISA CONTROLS



SECRECY CLASSIFICATION



INTELLIGENCE

EXPANDING SECURITY GOVERNANCE TO COVER SCIENTIFIC KNOWLEDGE (IN US)

1946

ATOMIC ENERGY ACT

Knowledge related to nuclear weapons is "born secret"

1970s

BUCY REPORT & ARMS CONTROL ACT

Export controls can and should control the flow of knowledge like they control tangible things

EXPANDING SECURITY GOVERNANCE TO COVER SCIENTIFIC KNOWLEDGE (IN US)

2010s

DUAL-USE RESEARCH OF CONCERN

Biological sciences get increased oversight

Today

?

Moving from pre-awareness of security concerns to pre-established networks to identify and address concerns as they arise

ASSUMPTIONS TRADITIONAL GOVERNANCE MAKES ABOUT S&T, THE STATE, AND SECURITY

SCIENCE AND TECH

Excludable goods

Clearly defined

Known security concern

STATE

Clear borders

Primary innovator

Can control trade

SECURITY

State-based

High walls

New = Most dangerous

WHAT IF WE MAKE THE OPPOSITE ASSUMPTIONS?

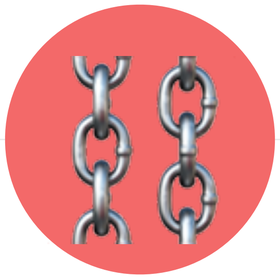
SCIENCE AND TECH

Widely distributed

Relationally defined

Unknown security concern

STATE

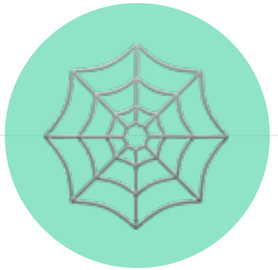


Porous borders

Not primary innovator

Trade outside control

SECURITY



Population and ecosystem-based

Threats come from any area, including nature

Current experiments in governing security at the edge of (bio)innovation

FBI Weapons of Mass Destruction Directorate, Biological Countermeasures Unit

Actively reaches out to labs/industry to build a community of trust and awareness

Widely considered as helpful (on the non-classified side of the fence)

Unclear institutional legacy if key members leave

CURRENT EXPERIMENTS IN GOVERNING SECURITY AT THE EDGE OF (BIO)INNOVATION

International Genetically Engineered Machines Competition

Testing out security screening of synthetic biology at the international level

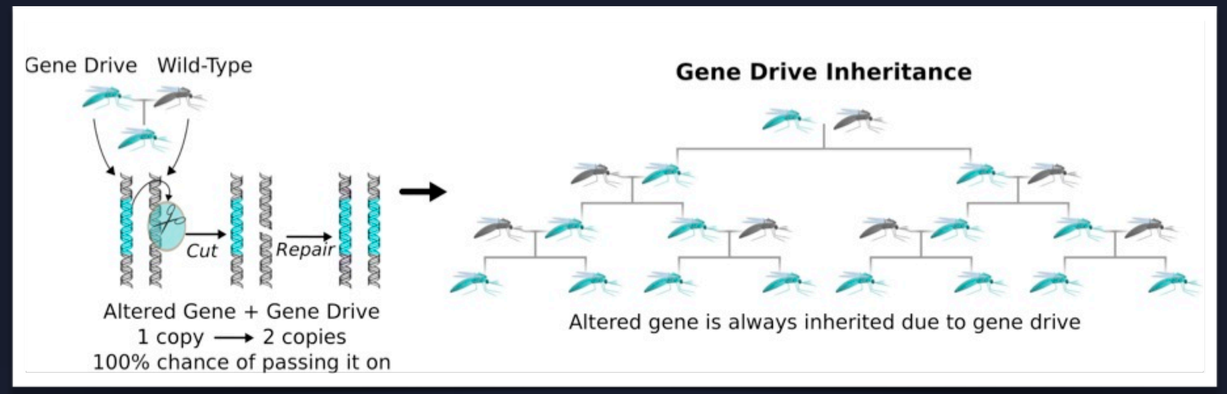
Moving beyond just list-based processes

Must contend with 40+ national and 300+ institutional biosafety/security oversight policies (or lack thereof)

Highly adaptable each year, with learning feedback loops in place

Gene drives

CURRENT EXPERIMENTS IN GOVERNING SECURITY AT THE EDGE OF (BIO)INNOVATION



Moving to new modes of doing science within society

Security is very much one small part of much bigger shift in scientific accountability

Trying to figure out how to make decisions on whether research should move forward is societal as much as technical

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