Open research methods?

Associate Prof. Leo Lahti (@antagomir)

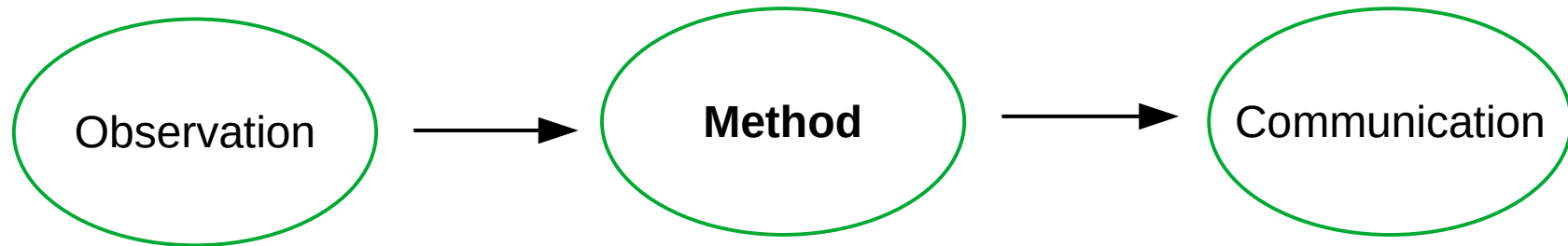   Department of Computing, University of Turku, Finland

    Chair of national policy WG on Open Access to Research Methods

- Reflections
- Daily practice
- Next steps

A family of alchemists at work, an engraving by Philip Galle, after a painting by Pieter Bruegel the Elder, published by Hieronymus Cock, *c*.1558.

Research process & life cycle

"*I have begun to think that no one ought to publish biometric results, without lodging a well arranged and well bound manuscript copy of all his data, in some place whereit should be accessible, under reasonable restrictions, to those who desire to verify his work.*"
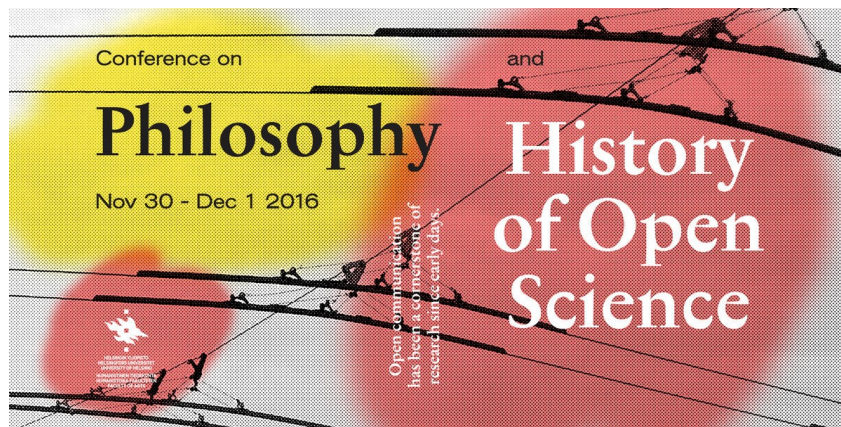
Francis Galton (1901), *Biometrika* 1:1, pp. 7-10.

What marks out modern science is not the conduct of experiments (alchemists conducted plenty of experiments), but **the formation of a** *critical community capable of assessing discoveries and replicating results*.

The Invention of Science: A New History of the Scientific Revolution, by David Wootton

Alchemy & algorithms: perspectives on the philosophy and history of open science

▼ Leo Lahti, Filipe da Silva, Markus Petteri Laine, Viivi Lähteenoja, Mikko Tolonen

Conference on

Philosophy and History of Open Science

Nov 30 - Dec 1 2016

Open communication has been a cornerstone of research since early days.

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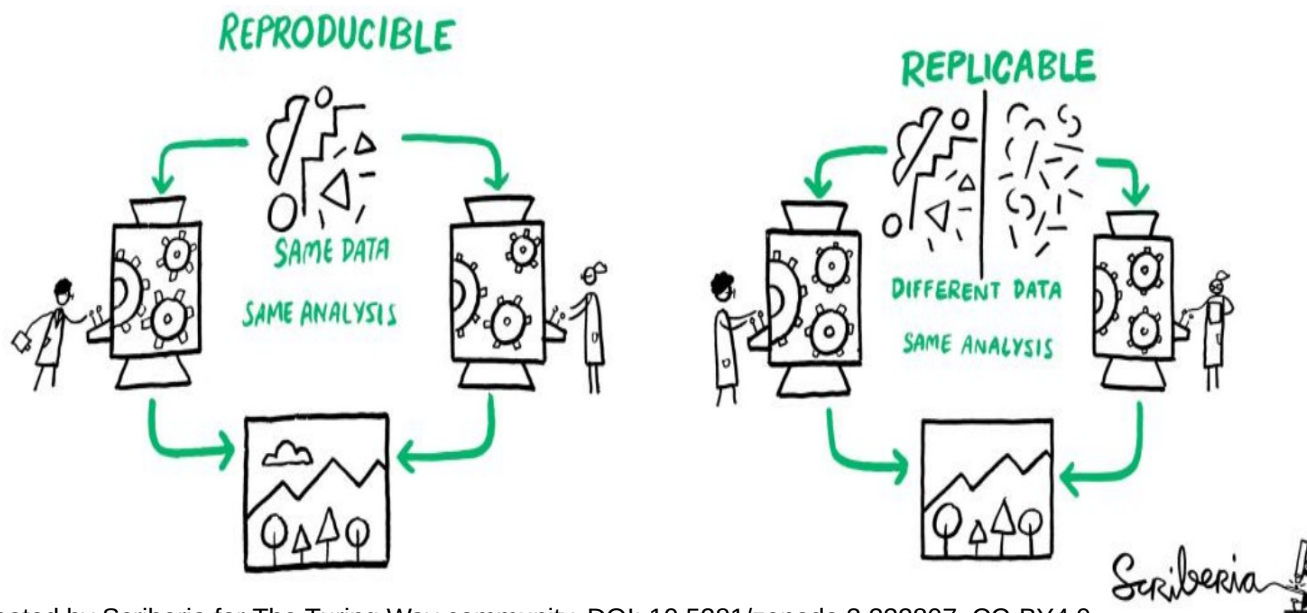
What are (or should be) the key goals in opening up research methods?

Quality of research

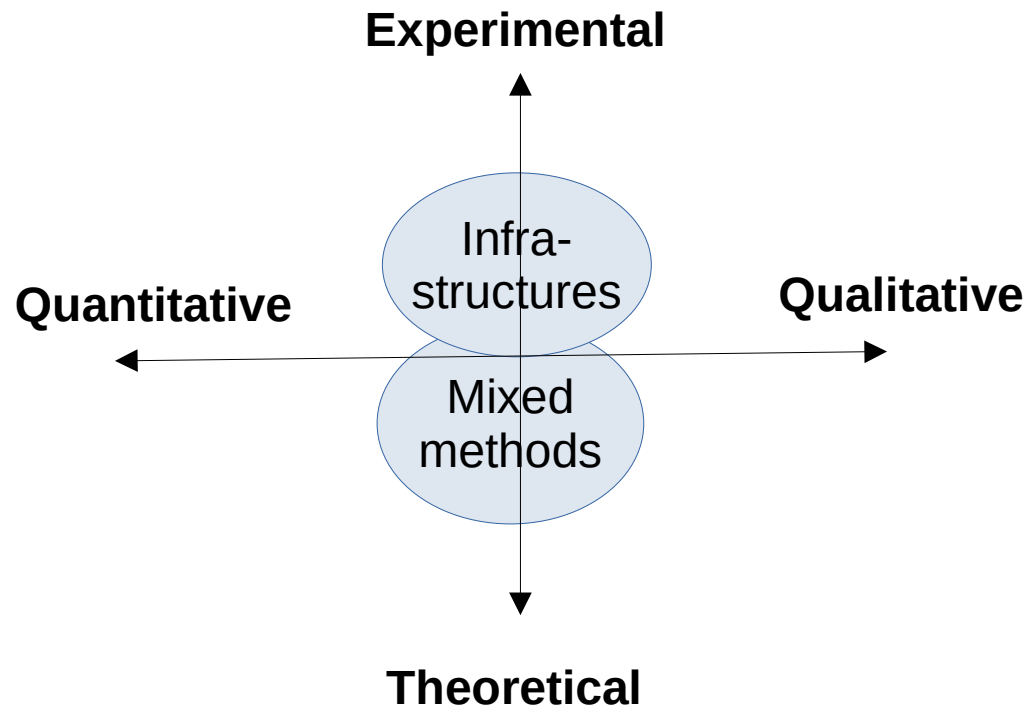- transparency
- reproducibility
- trustworthiness

Impact of research

- reuse
- findability, accessibility
- interoperability
- collaboration

What do we mean by *research method*?

*"Organized and documented approach, for managing
research resources and carrying out research
in order to obtain research results."* (Finnish science vocabulary)

Experimental

Quantitative   Infra-structures   **Qualitative**

Mixed methods

Theoretical

Description, protocol

Reasoning, argumentation

Qualitative model

Quantitative model

Quantitative test

Research diary or notebook

Questionnaire

Algorithm, script, workflow

Software

Role of infrastructures (virtual, physical)?

What do we mean by *open* research method?

Degree, maturity & type of openness

- Draft sketch → reproducible workflow → FAIR method
- Transparent → Reproducible → Reusable → Interoperable

Culture of openness

- Research method as a *process*?
- Standard in different fields?

Regulation of openness

- Opening up the workflow vs. its individual components?
- Role of IPR

Daily practice: opportunities & challenges

Culture of sharing

- responsible opening, management and use

- standards & best practices

Domain-specific standards & challenges

- differences between fields

- slowness in cultural change

Maturity & life cycle

- opening, maintenance, archival?

Resources and support:

- access and support / *sustainable* infrastructures and services

- rights, conditions & norms

Next steps & questions

1) is Open Science ready to become the norm in research?

2) how do we ensure an equitable transition to Open Science?

- Discipline-specific policies & guidelines?

- National policy work & international dialogue

- Merit & careers

- Evaluation & monitoring?