RESEARCH INFRASTRUCTURES : AN HISTORICAL VIEW
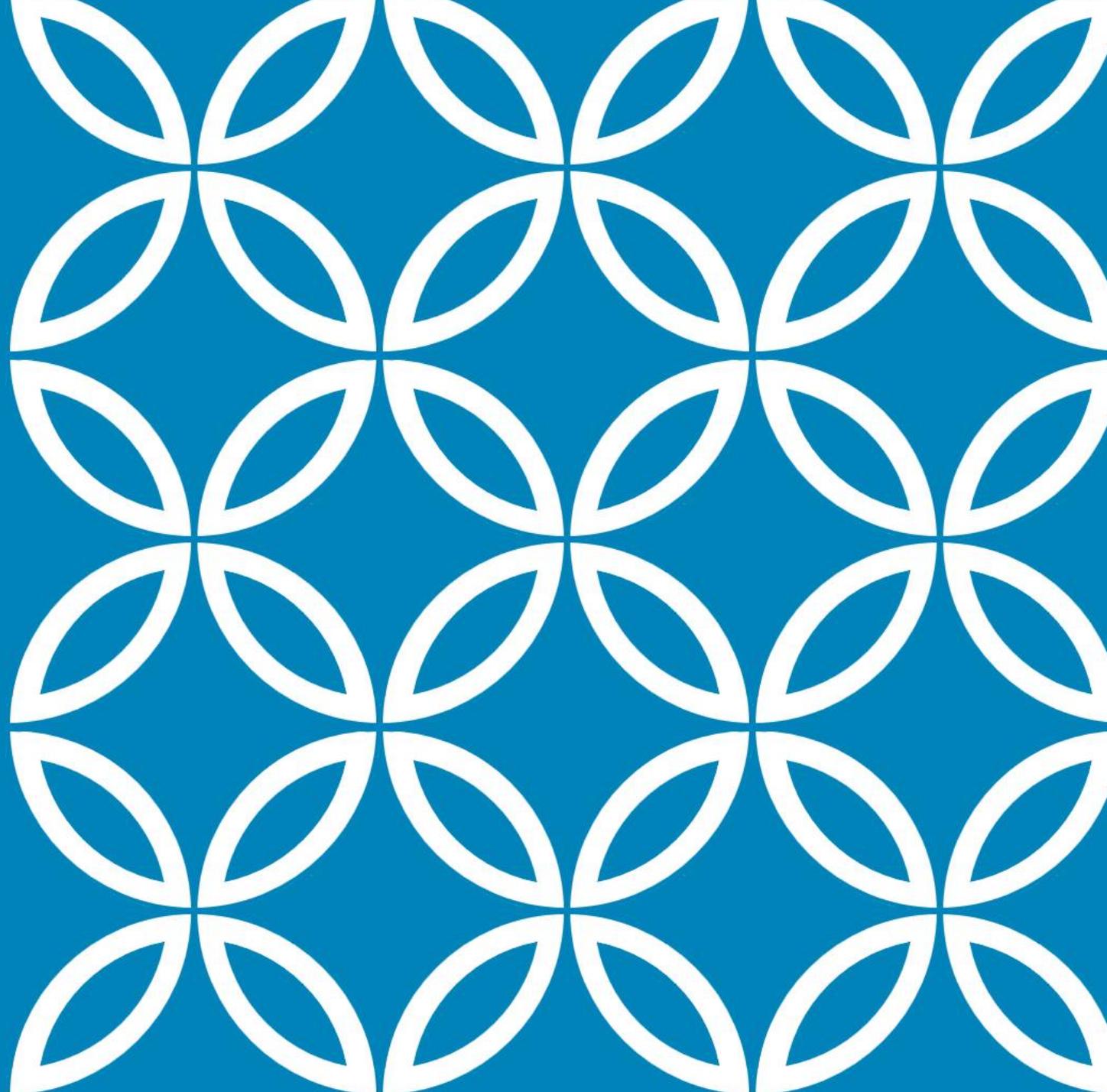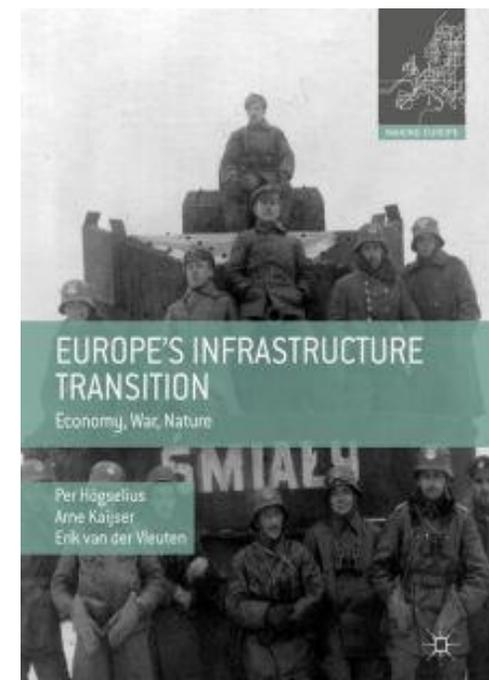
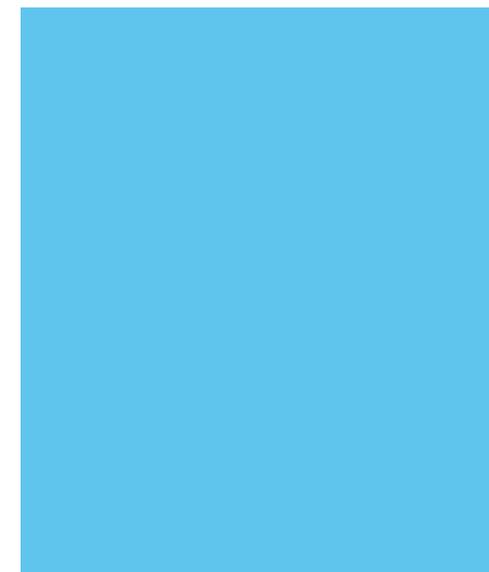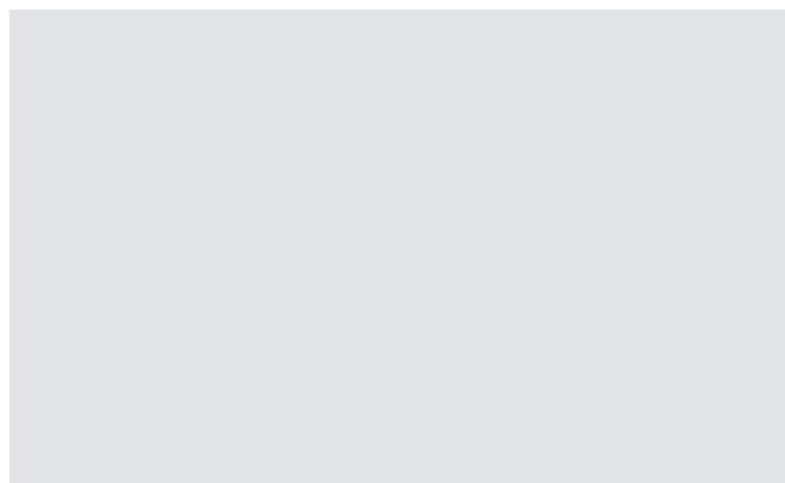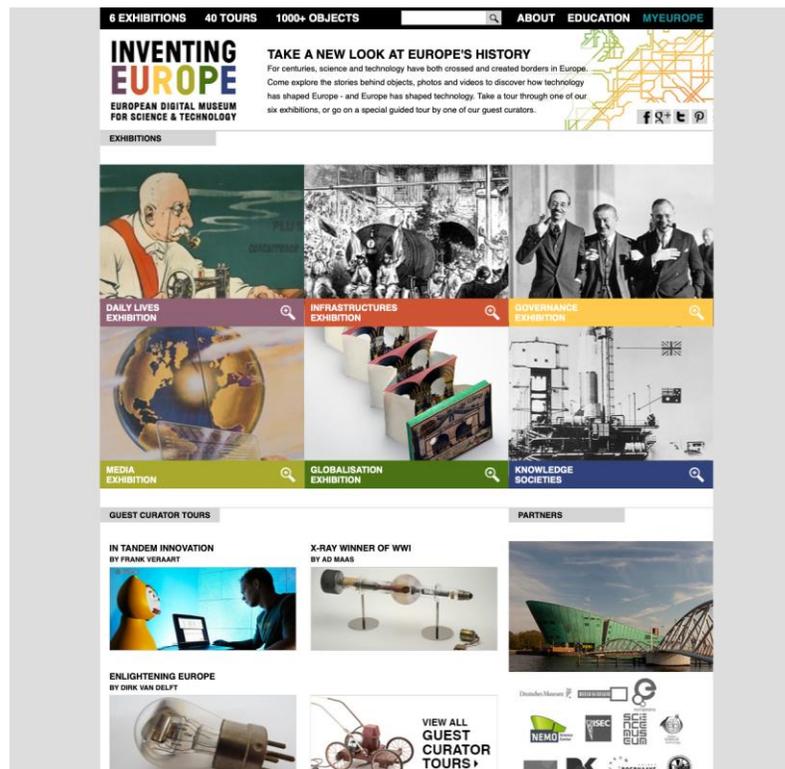ESFRI 20th Anniversary Conference

INTRODUCTION

Johan Schot

Philosophy of integration through infrastructures

EUROPE'S INFRASTRUCTURE
TRANSITION
Economy, War, Nature

Per Högselius
Arne Kaijser
Erik van der Vleuten

INTRODUCTION

Why infrastructures?

For infrastructure studies, the infrastructure provides a privileged site of observation for describing and understanding scientific work, its organization and its concrete tasks.

To recognize the crucial role of material resources in the production of scientific facts ('scientific materialities')

However, this new interest in infrastructures is not reduced to a new materialism that would characterize our time, oriented by competitiveness.

At the opposite, the life (and the future) of infrastructures is extremely rich and telling. They materialize a **relational** dimension and make **scientific ecologies** visible.

INTRODUCTION

The notion of infrastructure came back to the scientific vocabulary of engineers as well as in the philosophical lexicon with Marx in the 19th century.

In English, the word did not enter the *Oxford English dictionary* until 1927 but is particularly present in the lexical field of economics, organization and planning

Triple interests and challenges

Infrastructures associated with convention (norms, standards), coordination and scientific cooperation

Infrastructure challenges conventional hagiographies of individual achievement, especially when that achievement is valued to the extent that it ***escaped*** its circumstances and context.

the notion of infrastructure is often considered impure or improper, as it is at the interface of the world of research and the world of *policy makers*.

INTRODUCTION

The "paradox of infrastructures" between invisibility and grandeur, silence and risk.

- Susan Leigh Star and Anselm Strauss, 'Layers of silence, arenas of voice: the ecology of visible and invisible work', *Computer Supported Cooperative Work*, 1999, no. 8, pp. 9-30.
- Cymene Howe et al, 'Paradoxical Infrastructures: Ruins, Retrofit, and Risk', *Science, Technology, and Human Values*, 1-19, 2015, pp. 1-19.
- Kathryn Furlong, 'Small technologies, big change: Rethinking infrastructure through STS and geography', *Progress in Human Geography*, 35 (4), 2010, pp. 460-482
- Jean-Louis Tornatore, "Beau comme un haut fourneau", *L'Homme*, 2004, vol. 170, p. 79-116.

Shifting and multiple definitions of research infrastructures in a longue durée perspective

THE INFRASTRUCTURES OF EARLY MODERN SCIENCES

Ann Blair, *Too Much To Know. Manging Scholarly Information before the Modern Age* (Yale University Press, 2010)

William Clark and al. (ed.), *Little tools of Knowledge: Historical Essays onAcademic and Bureaucratic practices* (Cambridge University Press, 2001)

François Waquet, *L'ordre matériel du savoir. Comment les savants travaillent, XVIe-XXIe siècles*, Paris, CNRS Editions, 2015.

Jacob Orrje, 'The logistics of The Republic of Letters: mercantile undercurrents of early modern scholarly knowledge circulation', British Journal for the History of Science, 2020, 53, no. 3, pp. 351-369

THE AGES OF SCIENTIFIC INFRASTRUCTURES

From cathedrals of science to Big science: supersizing European sciences

Michel Chevalier, philosophy of industry

"By machinery [man] tunes each drop of water into a reservoir of steam, that is, into a magazine of power, and thus he changes the globe…Is there anything which gives a nobler idea of the power of man than the steam engine in the form in which it is applied to produce motion on railroads? It is more than a machine, it is almost a living being…. It moves, it runs, it breathes… it wants only a system of circulation to have life" (p.135).

CATHEDRALS OF SCIENCES

Natural History Museum, London

Berkeley Valley Life sciences Building (1930)

ERNEST LAWRENCE AND HIS COLLEAGUES AT THE RAD LAB BUILT EVER-BIGGER CYCLOTRONS IN THE 1940S.

Modern Physics

THE AGES OF SCIENTIFIC INFRASTRUCTURES

Digitising and dematerialising scientific infrastructures: promises and concerns

Francesca Musiani, "The invisible that shapes. Infrastructure studies and internet governance", *Tracés. Journal of the Humanities*, 35, 2018

INFRASTRUCTURING SCIENCES

Equiping sciences, managing standardization

Simon Schaffer, *La fabrique des sciences modernes* (Le Seuil, 2014).

INFRASTRUCTURING SCIENCES

Equiping sciences, managing standardization

Memory sciences: collecting and archiving

- Geoffrey Bowker, *Memory practices in the sciences* (MIT Press, 2005)
- Lorraine Daston (ed.), *Science in the Archives. Pasts, Presents, Futures* (Chicago University Press, 2017)

INFRASTRUCTURING SCIENCES
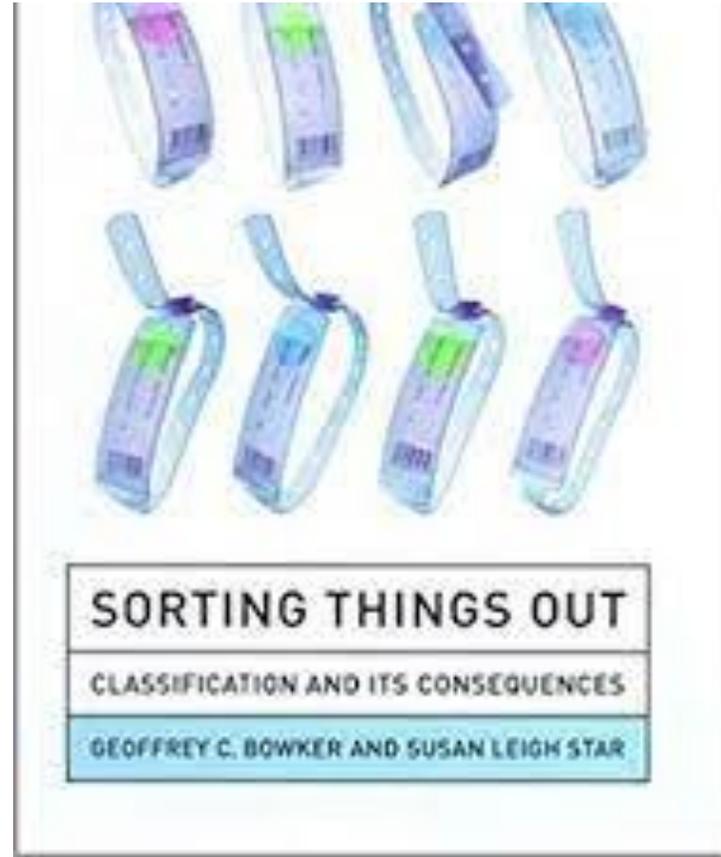
Equiping sciences, managing standardization

Memory sciences: collecting and archiving

Informing and coordinating

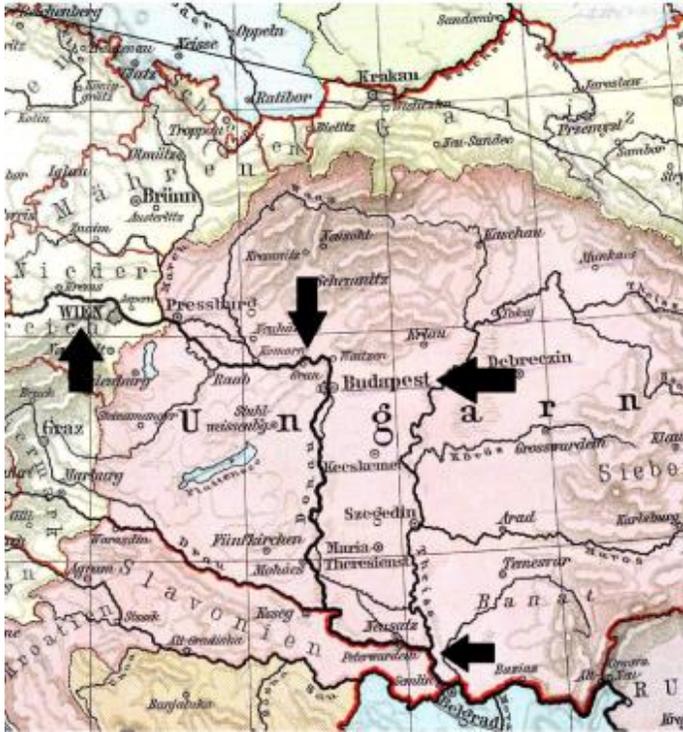**Geoffrey Bowker in his book *Memory practices in the sciences* (MIT Press, 2005)**

INFRASTRUCTURING SCIENCES

SORTING THINGS OUT

CLASSIFICATION AND ITS CONSEQUENCES

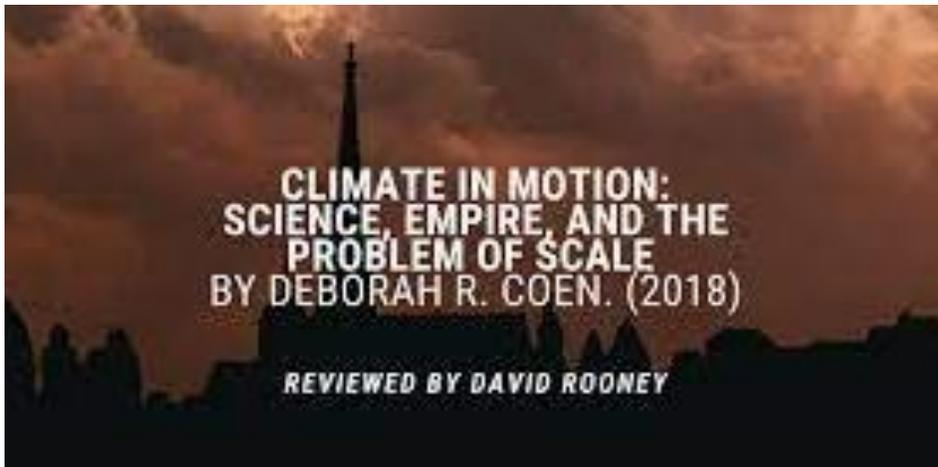### GEOFFREY C. BOWKER AND SUSAN LEIGH STAR

Susan Leigh Star has reconceptualized the notion of infrastructure to show that it encompasses both physical and material realities such as a building and concepts that aim to organize and prioritize the flow of information, as well as to establish shared objects and standards.
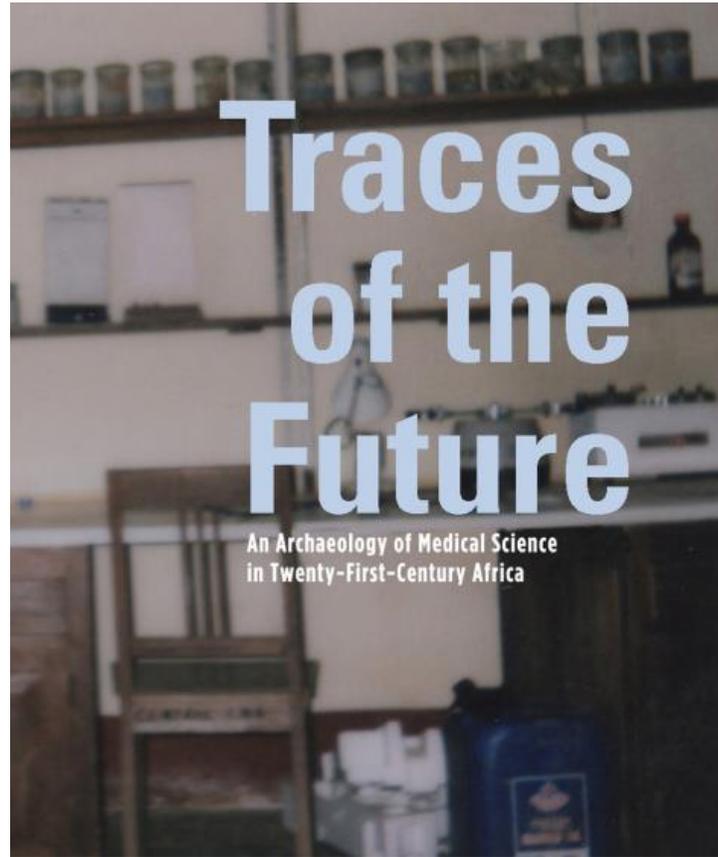
Susan Leigh Star, 'L'ethnographie des infrastructures', *Tracés. Revue de Sciences humaines* [En ligne], 35 | 2018.

INFRASTRUCTURING SCIENCES

EUROPEANIZING INFRASTRUCTURES

Europeanizations through scientific infrastructures

CLIMATE IN MOTION:
SCIENCE, EMPIRE, AND THE
PROBLEM OF SCALE
BY DEBORAH R. COEN. (2018)

REVIEWED BY DAVID ROONEY

Traces
of the
Future

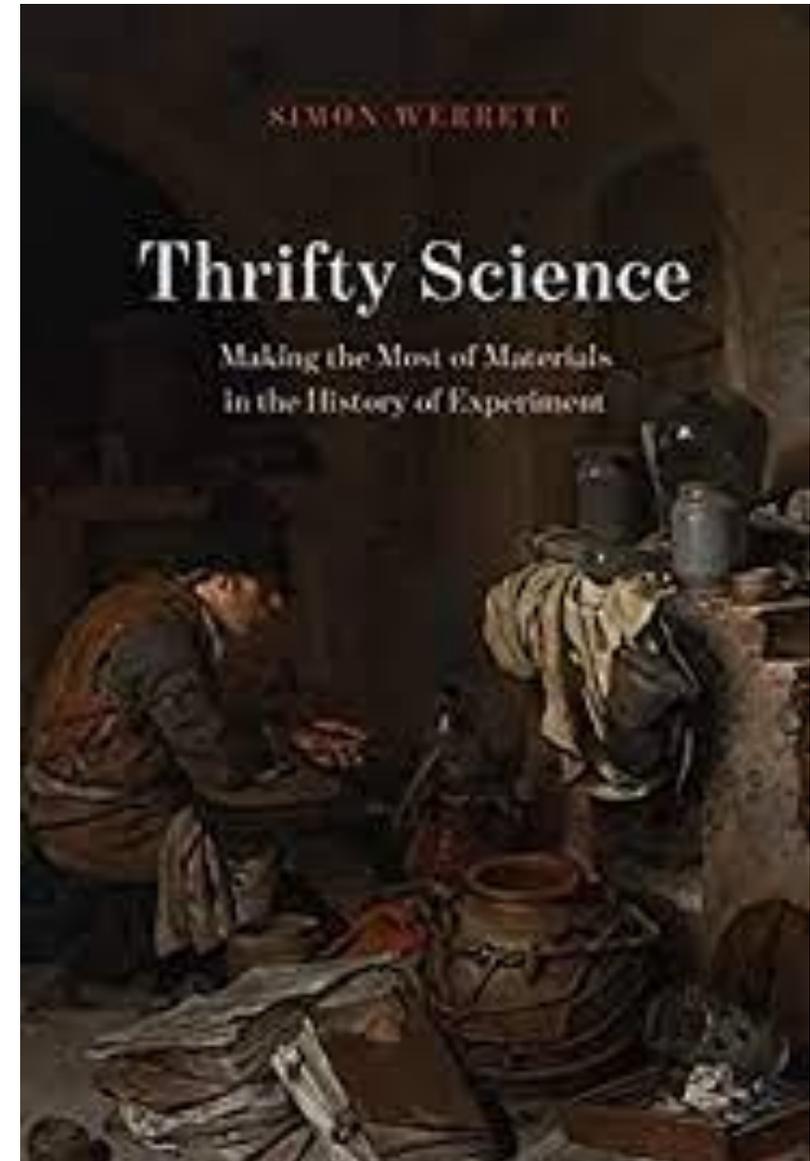An Archaeology of Medical Science
in Twenty-First-Century Africa

Empires of sciences : The scientific infrastructures from glitter to ruins

EUROPEANIZING INFRASTRUCTURES

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Vulnerability and sustainability: towards an ecology of scientific infrastructures ?

THANK YOU