Social research in a sociotechnical world: how can social researchers respond to our biggest challenge?

SRA Conference presentation

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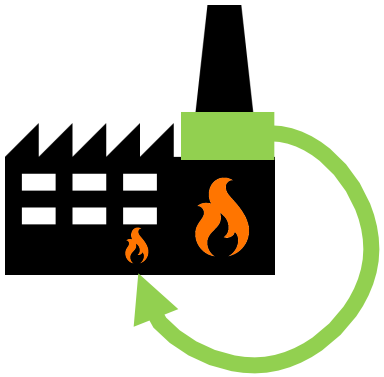
Non-technical barriers to heat recovery technology: initial understanding



PREVIOUS 'TECHNICAL' STUDY TO INVESTIDATE:

Variables

- The heat (amount, temperature, quality)
- Places to reuse heat

COMMISSIONED 'SOCIAL' STUDY TO INVESTIGATE:

Variables

- Individuals (attitudes, knowledge)
- Corporate (culture, interaction/ setup)

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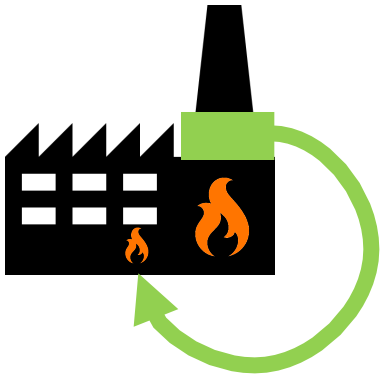
Non-technical barriers to heat recovery technology: wider range of variables found



TECHNICAL

Variables

- The heat (amount, temperature, quality)
- Places to reuse heat

- Interaction and competing priorities with processes, production, space
- Different types of technology
- Other energy efficiency measures
- Other energy issues

SOCIAL

Variables

- Individuals (attitudes, knowledge)
- Corporate (culture, interaction/ setup)

- Market priorities
- Financial data - forecasting
- Wider structures
- Other parties – suppliers/ consultants

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Why did this cause problems?

1. What and how we are measuring? How should social researchers capture and investigate technical data when it arises?

2. How do we analyse this data? – Who is more right, the engineer or social researcher?

3. What are the conclusions? – Why do we tend towards answers based on the research question?

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From practice to theory…

- **Reflect** on the implications of findings for social research practice in this area
- Lessons are particularly pertinent for **policy-relevant/applied research**
- Issue demands a **rethink** of fundamentals of social science research
- **Symptoms and diagnosis**: Conceptualisation of main issue
- **Treatment and prognosis**: integrated socio-technical research

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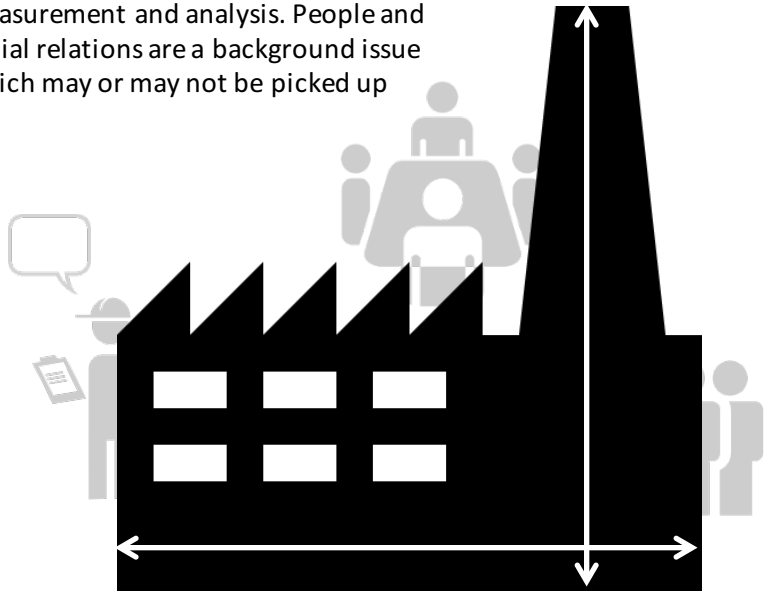
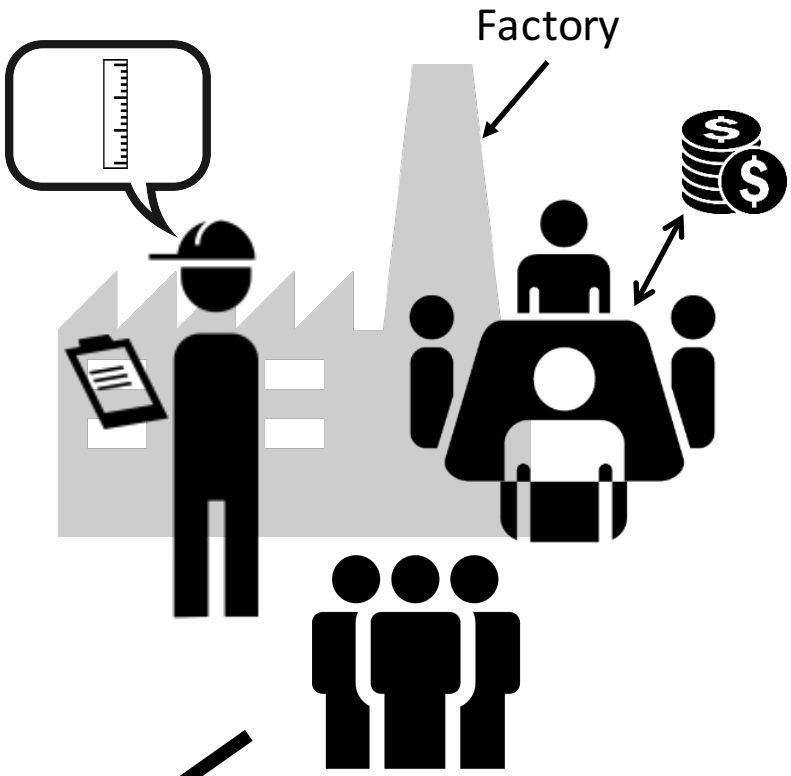
Technical-led

Technical-led research foregrounds the physical spaces and materials for measurement and analysis. People and social relations are a background issue which may or may not be picked up



Social-led



Social-led studies tend to foreground the people and social relations and only think of the physical as a concept. Data are them largely decontextualised, especially in the context of understanding energy.

Attempts to bring together studies which look at one or the other tend to result either in no additional value in explanation or competing explanations which do not fit.

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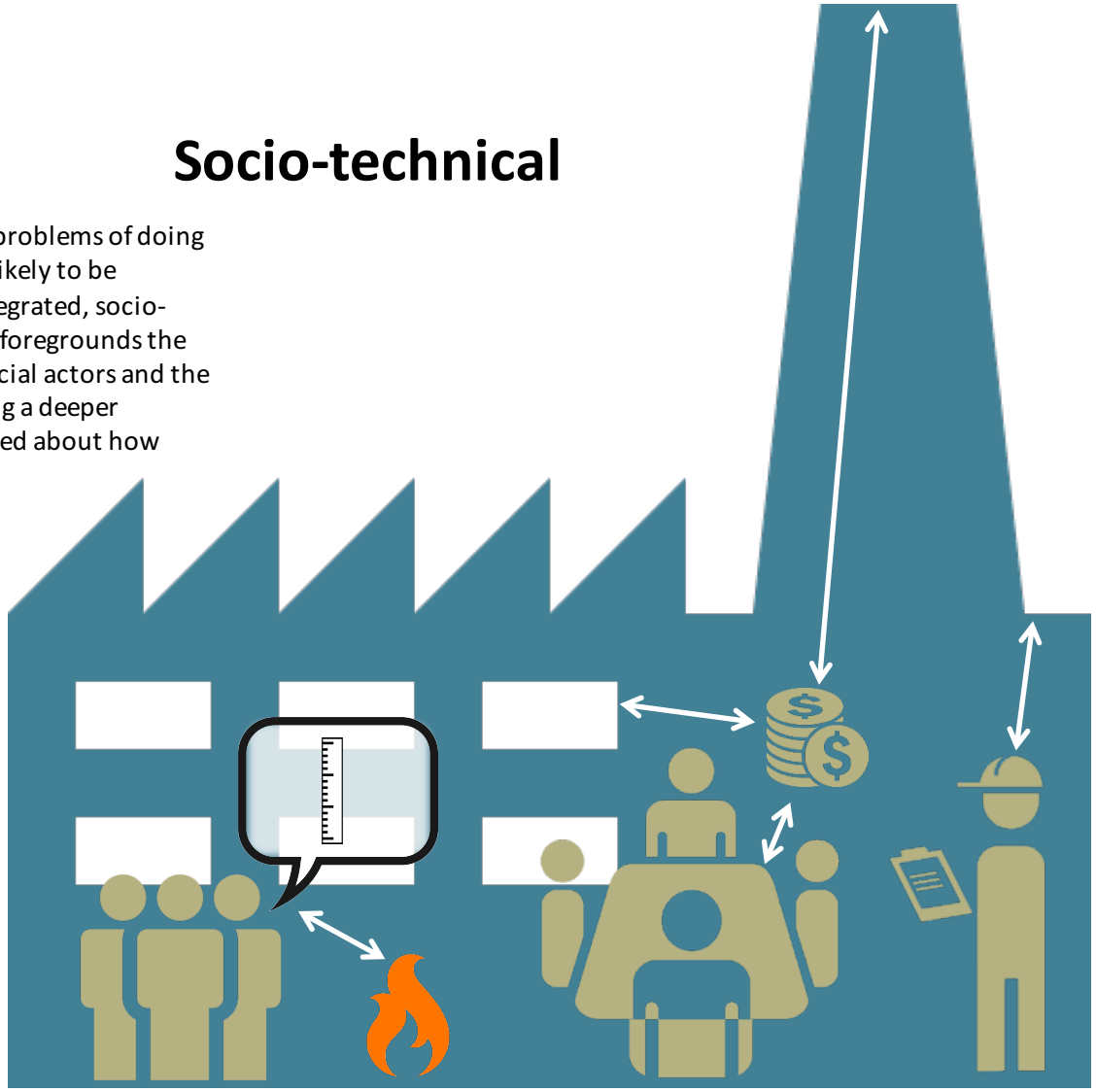
Socio-technical

In principle many of the problems of doing research in this way are likely to be resolved by taking an integrated, socio-technical approach. This foregrounds the relations between the social actors and the physical context, enabling a deeper understanding to be gained about how energy is used.



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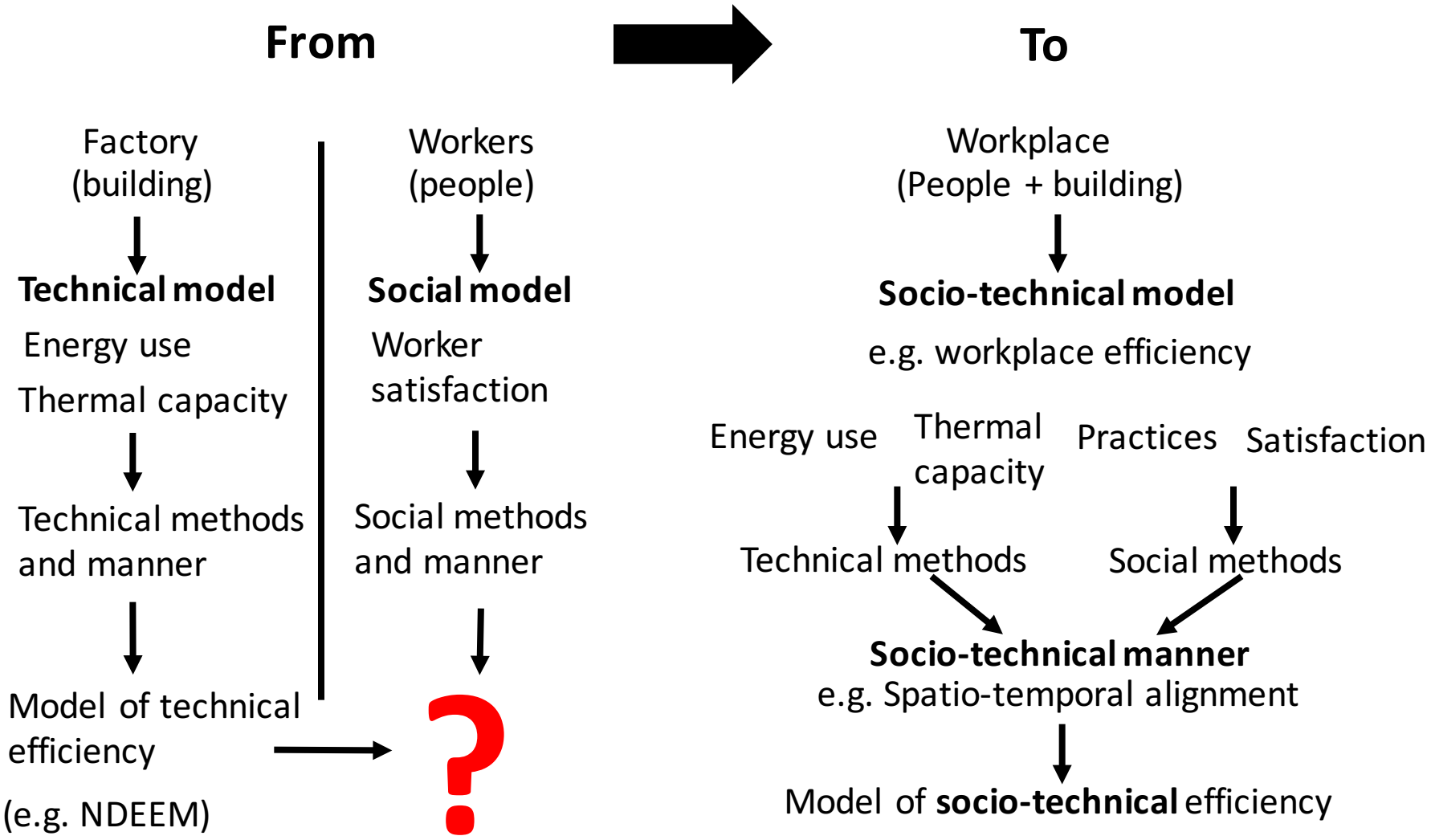
…and theory to practice: integrated socio-technical research



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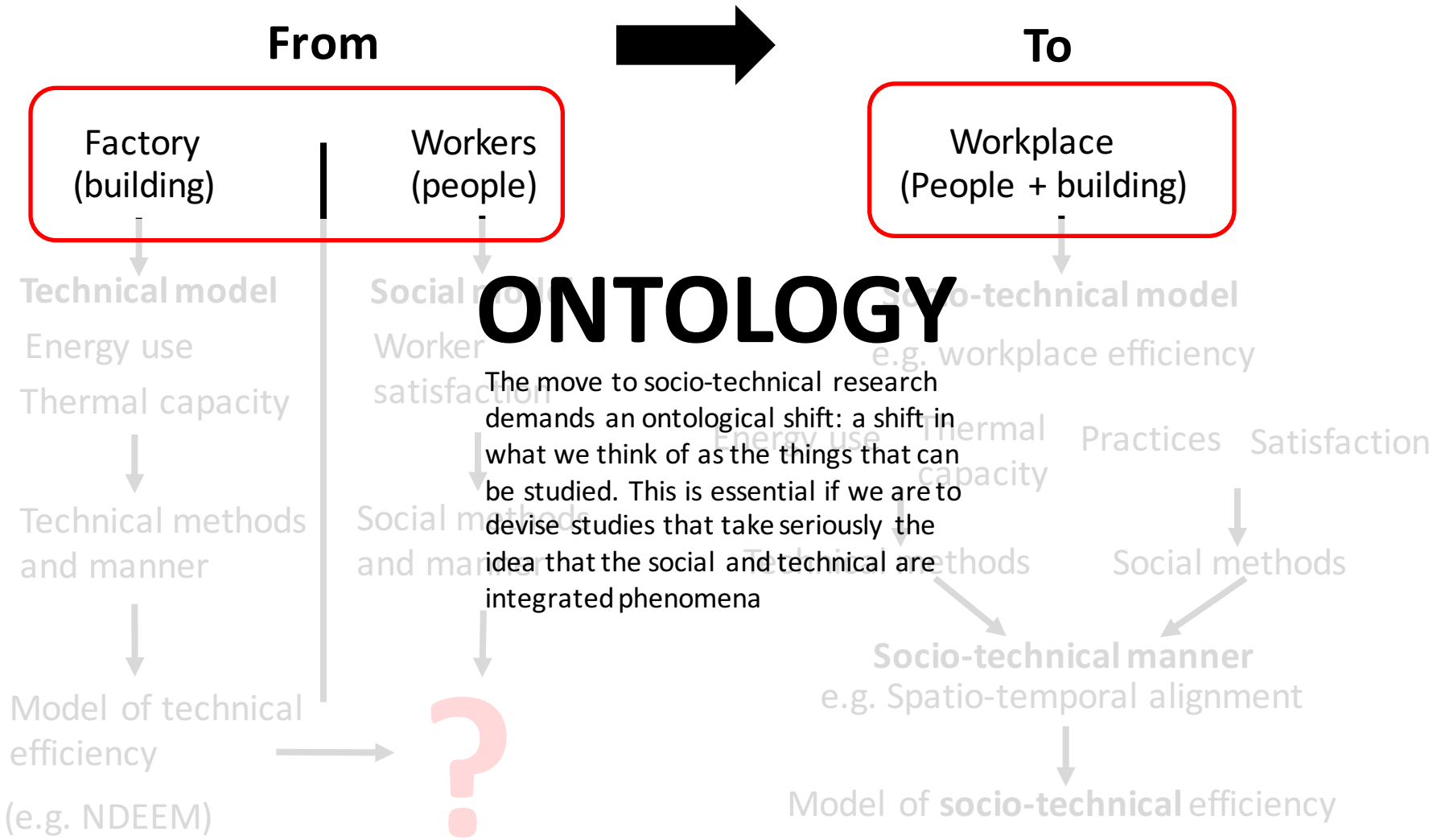

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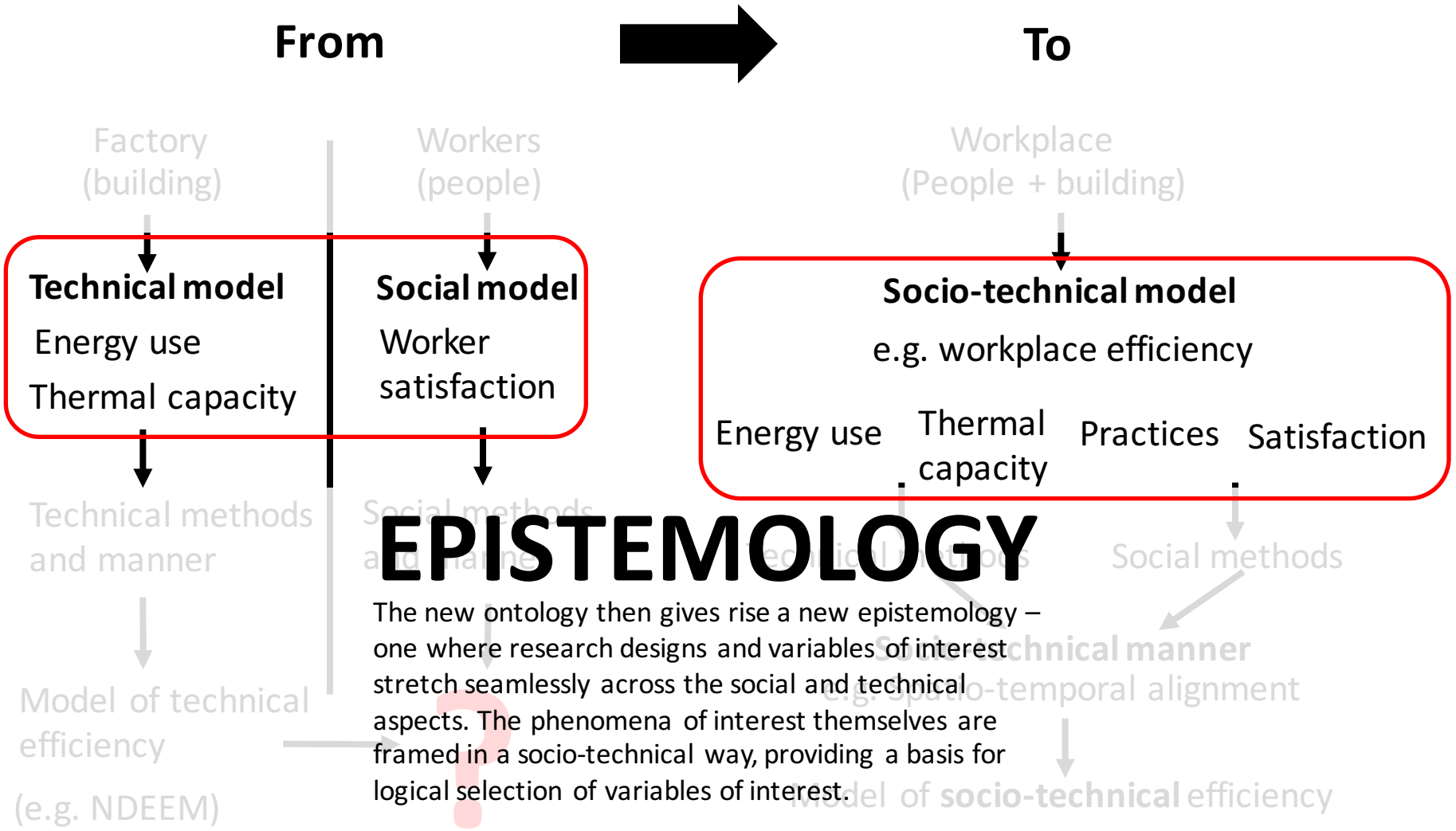
…and theory to practice: integrated socio-technical research



EPISTEMOLOGY

The new ontology then gives rise a new epistemology – one where research designs and variables of interest stretch seamlessly across the social and technical aspects. The phenomena of interest themselves are framed in a socio-technical way, providing a basis for logical selection of variables of interest.

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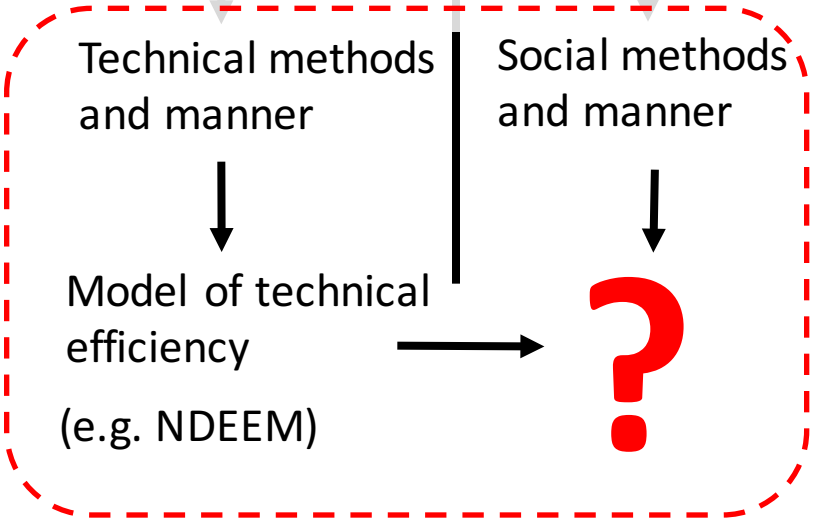
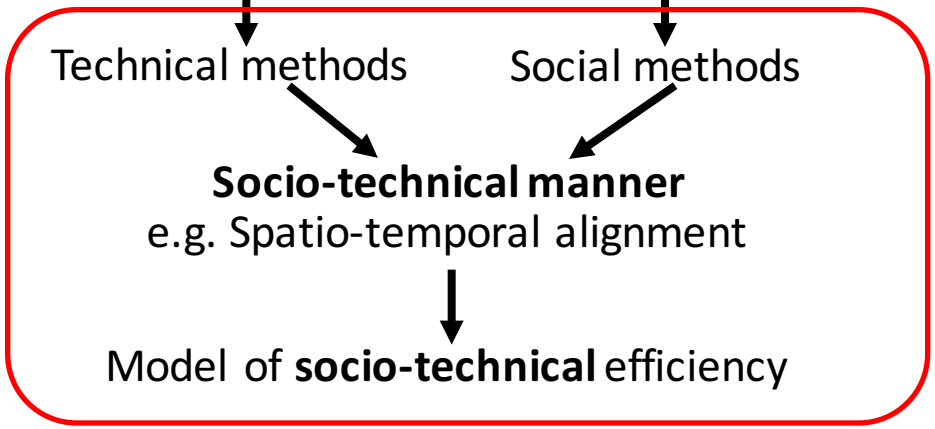
…and theory to practice: integrated socio-technical research

From → **To**

The integrated epistemology then provides a framework for how data can be collected to estimate the importance and impact of these variables in understanding the phenomena of interest. Importantly, however, the practical deployment of what might be standard methods is co-ordinated via a 'socio-technical manner'. This might involve aligning the social and technical modes of data collection. Further work is needed to determine if 'socio-technical methods' exist. At the moment, the assumption is that standard social and technical methods can be used but in special concert.

METHODOLOGY





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Thanks for listening

- Comments, views, questions welcome!
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Challenges are more than methodological and operational

	Energy intensive industry	Research design questions
Epistemological What does the world look like?	• A complex system of social, financial and physical interaction (at least 3D dynamic data dimensions)	• What are our philosophical starting points about what can and should be changed? • Why are we wanting to do research? (is the research question led by a hypothesis about one dimension more than the others?)
Ontological What type of things exist in this world?	• 'Companies' and sub-companies, which are composed of social individuals (attitudinal, behavioural) • Physical input/output systems – production • Financial interactions, forecasting	• How can we model this data? Is there parity of clarity across data dimensions? • What can we deduce about about relative importance? (e.g. should research focus on most energy intensive – why?) • Sample frame – can individuals represent their organisations? (i.e. how can we make data units the same – as companies) • Are there ways to segment the population? (e.g. sector) Are these assumptions about similarity valid? • What can be determined a priori?
Methodological How can we go about understanding a part of this?	• Range of interest in research and reasons for this – lobbying, being busy • Range of availability, ease and methods to collect for data on the three dimensions	• What data is needed when? Do we always need data on all three data dimensions? • What prior knowledge should be carried into research (difference between inductive and deductive approaches)? • Differences between achievable accuracy of different types of data (precise quant measurement vs fuzzy qual) • How available and accurate is the data? – bias, commercial confidentiality • Trade off between depth and convenience – range of response biases • How flexible do we need our methodology – in case our assumptions are wrong?
Operational	• A research subject that is more used to technical measurement than social • Researchers that are more used to social rather than technical measurement	• How can we actually access the right person to provide the viewpoint? • How easy to achieve suitable response rates – avoiding de facto sample • Who can do socio-technical research – how should they be trained?
Analytical How can we interpret and readjust our world view?	• Very different approaches to analysis across the three dimensions	• How do we synthesise different types of data? What takes priority? • How can this be modelled and interpreted easily to determine importance?