

What is energy for?

Understanding consumption, efficiency and demand

Elizabeth Shove

Lancaster University, UK

Energy consumption and energy demand



People do not use energy for its own sake



Energy demand is an outcome of what people do at home, at work and in moving around.



There are many practices that call for energy: heating, cooling, lighting, cooking etc.



These are changing all the time.



Energy demand reduction depends on the practices which draw energy through society.

Energy is never used in the abstract

Consumption, including consumption of energy, occurs as part of accomplishing specific social practices

Electrifying a traditional kettle

Hughes: Networks of Power, 1983. **The need for electricity is made one practice at a time.**

Technology and demand



Energy use is almost always mediated by some kind of technology



Such technologies (air conditioning systems, freezers, lights, cookers) **are also** implicated in making and shaping what people do.

And remember..



Energy demand is an outcome of what people do at home, at work and in moving around.

Technologies make and do not simply meet demand

Specific combinations of fuels and technologies co-constitute the practices of which society is made, and the material arrangements amidst which they transpire



Lighting technologies and lighting demand constitute each other: spots to spaces



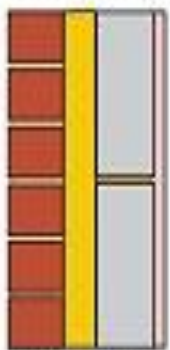
Energy demand in the singular makes no sense

Energy is part of accomplishing many social practices each of which have a history and a dynamic of its own.

The dynamics of comfort

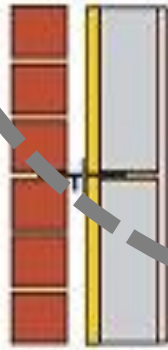


filled cavity



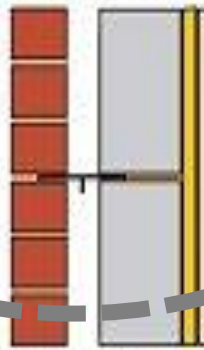
50mm cavity batts
100mm aerated block
13mm lightweight plaster

partial fill

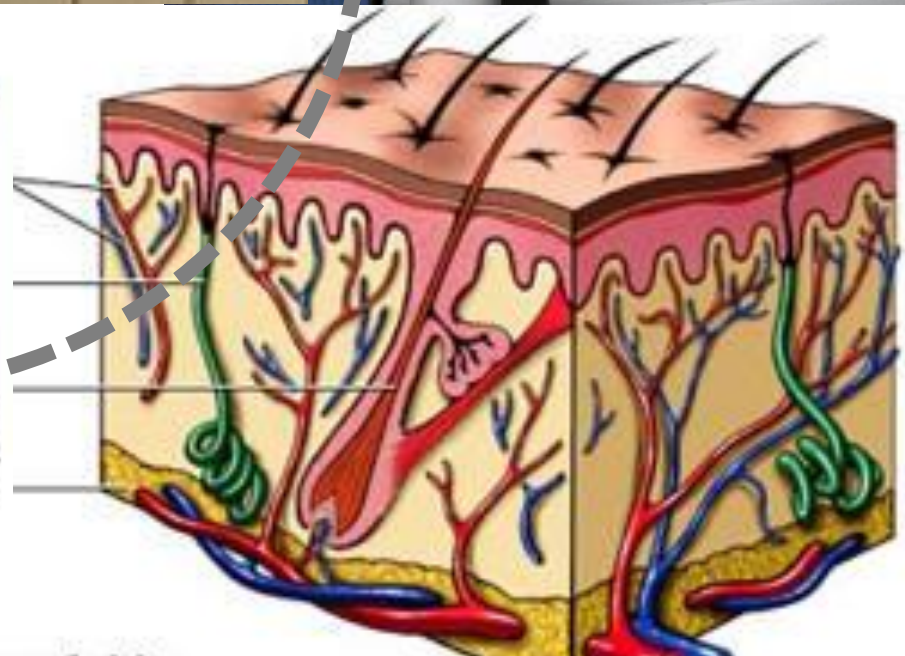


25mm cavity boards
100mm aerated block
13mm lightweight plaster

clear cavity



125mm aerated block
25mm thermal board



Configuring comfort

Picture of traditional scottish croft: open fire place, high backed seats close by

From person heating to space heating

This is not a behavioural trend.

It represents a new configuration of materials, meanings and skills. It represents a new, global, interpretation of comfort



Man in thick woollen jumper

Picture of ole fanger here

Average room temperature of 13° Celsius (55°F) in the UK in 1970.

Social conventions of comfort are changing all the time.

22 degrees C is a consequence of DESIGN and ENGINEERING. Behaviour, attitude and choice are outcomes not inputs.

Fanger's equation

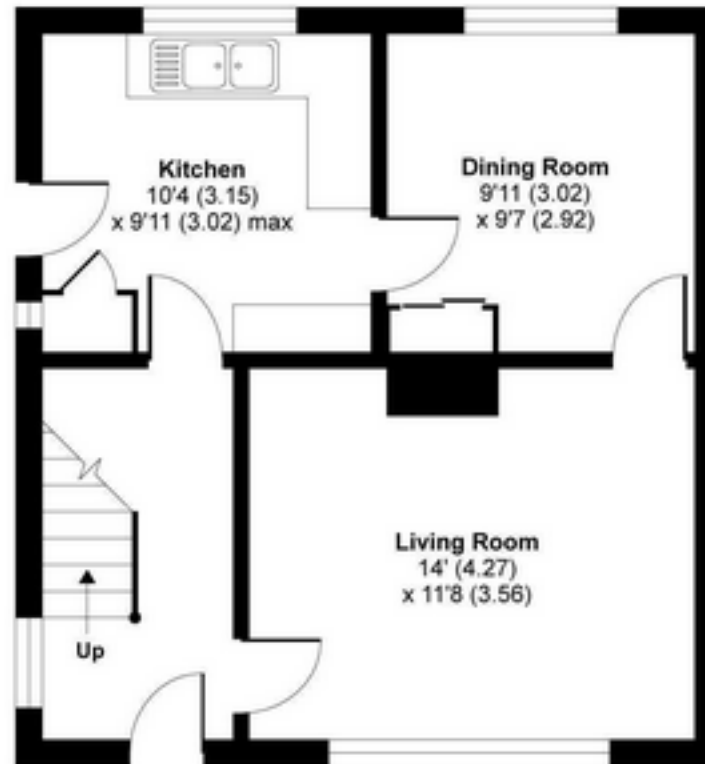
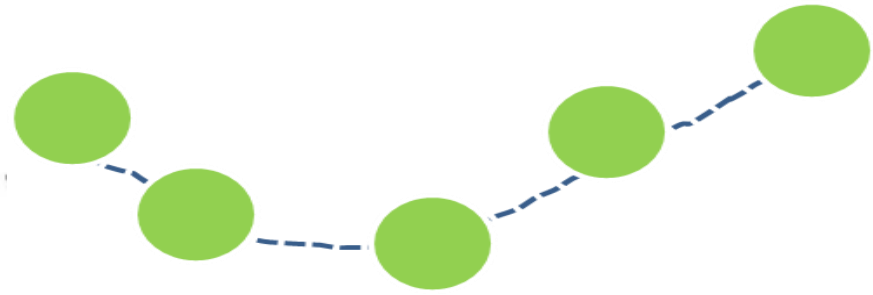


There is nothing natural about 22°C.

Freezing 'behaviour'

From built in larder to electric fridge: 1928 plans and from estate agents: 2014
Issues of responsibility, ownership, normal provision, the cold food chain.

Local politics, international systems of provision, trade, diet



Complexes of social practices

David Nye (2010) *When the lights went out*

Office working 1950s

Go home at dusk

Office working 2014

Go home immediately

No typing, no filing, no communication, no internet, no email, no lifts, no ventilation systems

Technologies, politics, systems of provision and energy demand

Shell and core will comprise the structure, its cladding, its base plant, completed common areas and external works. More specifically it will generally include:

High and low voltage switchgear.

Transformers.

Lift systems.

A standby generator.

Boilers.

Chillers.

Cooling towers.

Water and fuel tanks.

Sprinkler plant.

Building control systems.

Air conditioning chambers and fans.

Water and fuel pumps.

Dry risers.

Fire detection, alarm and hose reel systems

- Design to meet all needs.
- Everything else is taken out again when the tenant leaves

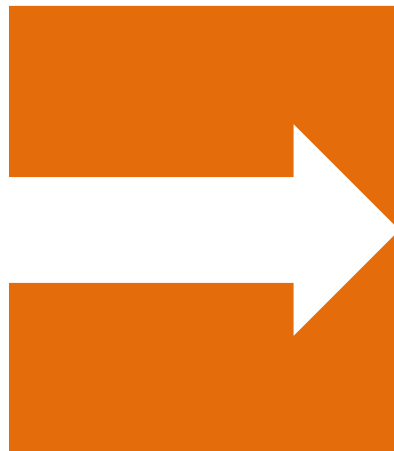
Where is the 'behaviour'

[http://www.designingbuildings.co.uk/wiki/Shell and core#Normal shell and core provision for a high-spec city office](http://www.designingbuildings.co.uk/wiki/Shell_and_core#Normal_shell_and_core_provision_for_a_high-spec_city_office)

<http://www.propertyfinder.ae/en/commercial/office-space-for-rent-dubai-downtown-dubai-1902253.html?img/0>

Energy efficiency

More efficient technology



Attitudes

Behaviours

Choices

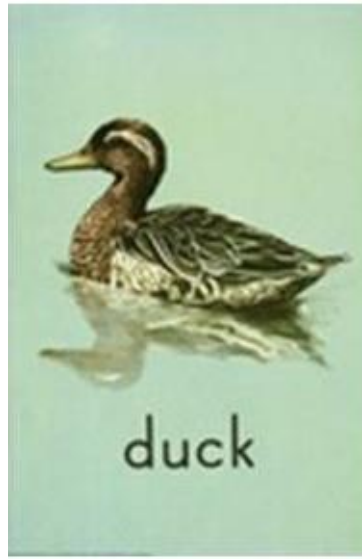
Adopt technology

Reduce demand

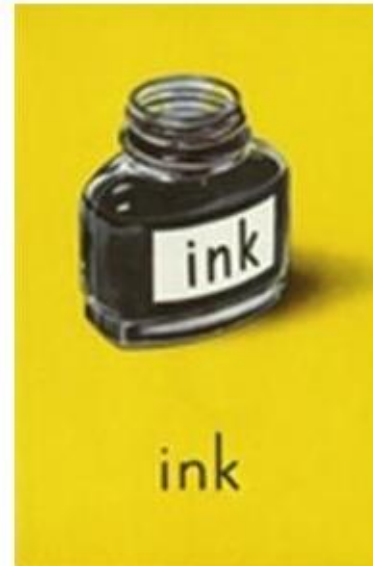


apple

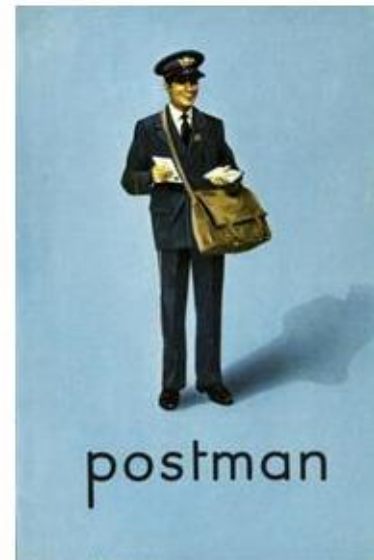
Attitude
Behaviour
Choice



duck



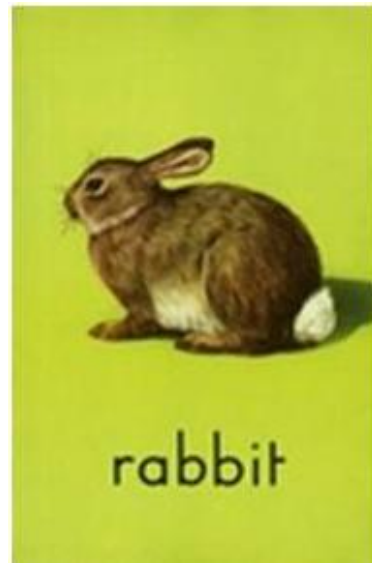
ink



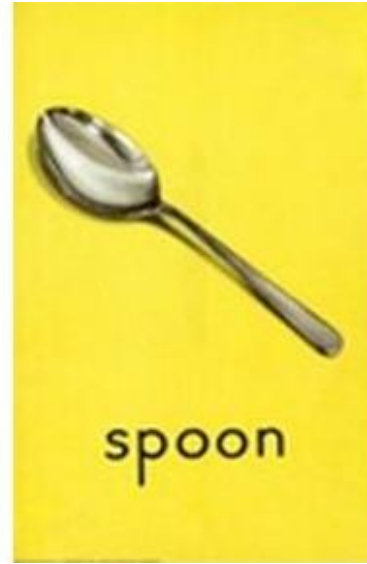
postman



balloon



rabbit



spoon



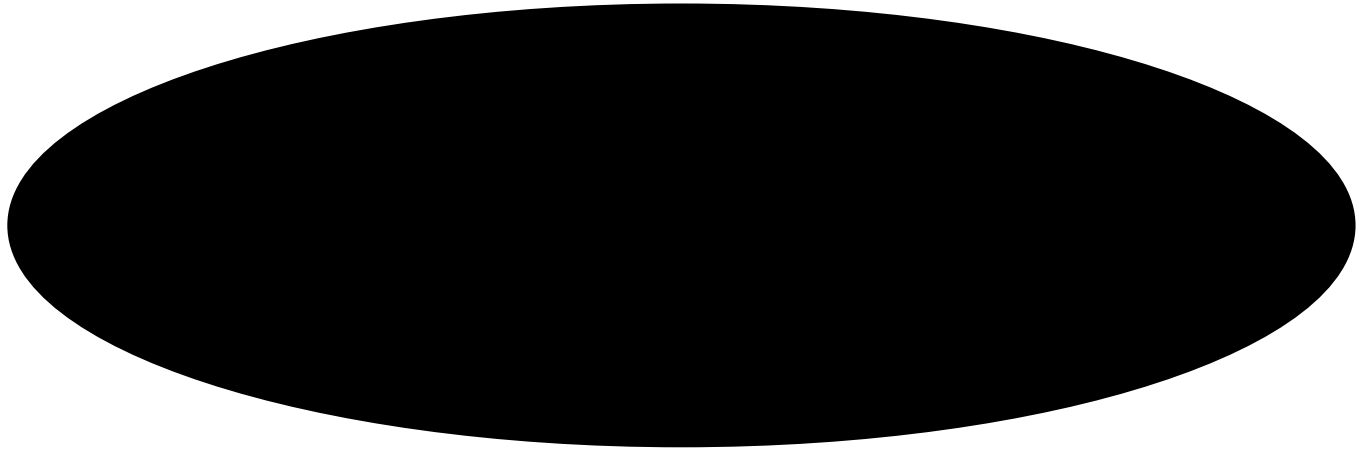
table

Dynamics
Infrastructure
Practices
Regimes
Systems
Transitions



cake

THE CONCEPTUAL CHASM of EFFICIENCY

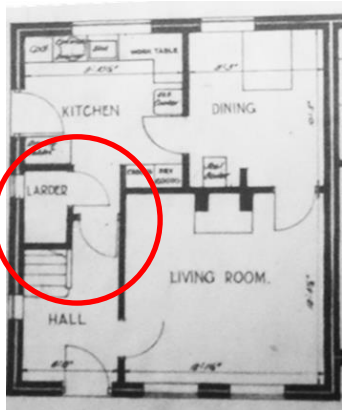


This agenda fails to engage with the dynamics of energy demand: it has no history
it fails to question the status quo
it obscures big policy opportunities

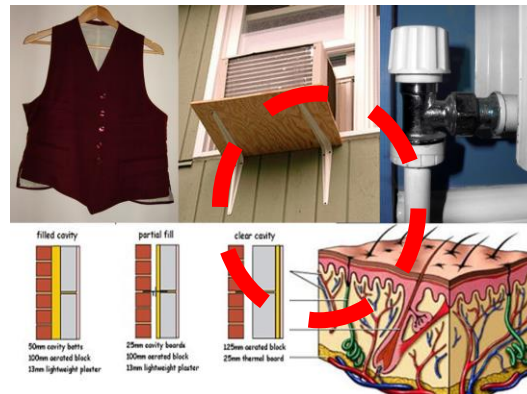


Clo factor varies by 3.5 times

'A' rated heaters, or air conditioning systems



'A'rated freezers



Many people think

The challenge is to maintain present ways of life but make related goods and services more efficient.

However

Strategies to increase efficiency play out in a social world that is constantly on the move.

Future ways of life are unlikely to be the same as they are today.

DEMAND reduction

depends on understanding how end-uses of energy are changing and how they can be modified and steered.

DEMAND reduction

depends on asking more fundamental questions about what energy is for.

Many people think

Energy demand reduction depends on making technologies more efficient, and persuading people to adopt them.

However

Technologies and infrastructures of supply are implicated in making and reproducing services and practices.

Efficient technologies can sustain social practices that call for high levels of energy demand.

DEMAND reduction

depends on reconfiguring services and social practices.

DEMAND reduction

depends on recognising that technologies and infrastructures do not simply meet existing needs: they shape future practices and the demands that follow.

Many people think

The only policy relevant to energy demand reduction is energy policy.

However

There are many areas of public policy that unknowingly impact on the range of social practices enacted in society, and hence on energy demand.

These include education, employment, business, health, planning and more.

DEMAND reduction

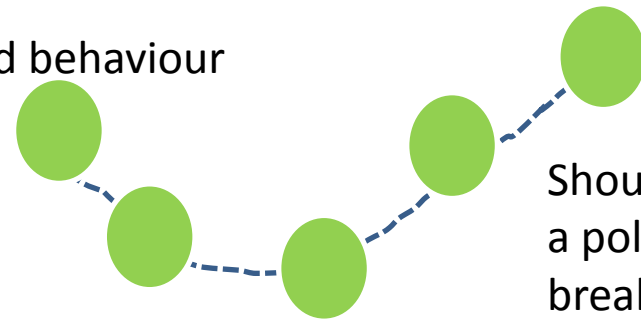
Depends on understanding the unintended consequences that 'non energy policies' have on what people do, and hence on energy demand.

DEMAND reduction

Depends on actively fostering new social arrangements and different ways of life.

Policy strategies - Beyond energy efficiency and behaviour

Real and imagined



Should there be a policy of breaking the cold chain?

Or of changing office life?



Are these energy efficient technologies?

Graph of daily energy profile here.



How do employment policies structure energy demand?

The **really big** questions

Which energy demanding practices are changing and how?

How are different energy demanding practices changing in different countries?

How do such changes relate to infrastructures/technologies?

How do interpretations of normality and need evolve?

How is energy demand constituted, how does it change, how can it be steered?



How does energy demand change and how it can be steered?

Further reading available on request if you can't follow these links.

Articles

What is energy for? Social practice and energy demand: <http://tcs.sagepub.com/content/31/5.toc>

Beyond the ABC, climate change policy and theories of social change

<http://www.envplan.com/abstract.cgi?id=a42282>

Explaining daily showering: <http://www.socresonline.org.uk/10/2/hand.html>

Putting practice into policy: <http://www.tandfonline.com/doi/abs/10.1080/21582041.2012.692484#.VPjaVy7K7Cs>

Books

The dynamics of social practice: <http://www.uk.sagepub.com/books/Book235021>

Sustainable practices: social theory and climate change: <http://www.routledge.com/books/details/9780415540650/>

Comfort, cleanliness and convenience: <http://www.bloomsbury.com/uk/comfort-cleanliness-and-convenience-9781859736302/>

Other stuff

DEMAND: www.demand.ac.uk

The extraordinary lecture: how social science can help climate change policy makers:

<http://www.lancaster.ac.uk/staff/shove/lecture/filmedlecture.htm>

Transitions in practice: an exhibition of ideas: <http://www.lancaster.ac.uk/staff/shove/lecture/lecture.htm>

e.shove@lancaster.ac.uk