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Competition Time
Congratulations!
1200+ Organisations
All territorial NHS Boards across Scotland are now linking in!
89 UNIVERSITIES
LEARNING TOGETHER...AGAIN AND AGAIN...

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You can find information on our previous speakers and view recordings of sessions at the links below.

2019

<table>
<thead>
<tr>
<th>Presenter</th>
<th>Organisation</th>
<th>Session name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bas Bloem</td>
<td>Radboud University Medical Center</td>
<td>Do artists make for better healthcare?</td>
<td>31 January 2019</td>
</tr>
<tr>
<td>Chrissie Wellington</td>
<td>Public speaker</td>
<td>Parkrun: The best lifestyle medicine</td>
<td>28 February 2019</td>
</tr>
<tr>
<td>Frank Federico</td>
<td>Senior Safety Expert</td>
<td>A session presented by Frank Federico</td>
<td>25 April 2019</td>
</tr>
<tr>
<td>Dr. Brené Brown</td>
<td>Author and public speaker</td>
<td>Brené Brown book read 'Dare To Lead: Brave Work, Tough Conversations, Whole Hearts.'</td>
<td>28 May 2019</td>
</tr>
<tr>
<td>Will Warburton</td>
<td>Health Foundation</td>
<td>The Spread Challenge: How to support the successful uptake of Innovations and Improvements in health care</td>
<td>25 July 2019</td>
</tr>
<tr>
<td>Dan Heath</td>
<td>Author and public speaker</td>
<td>Leading a switch</td>
<td>29 August 2019</td>
</tr>
<tr>
<td>David Marquet</td>
<td>Leadership Consultant &amp; US Navy Veteran</td>
<td>A session with David Marquet</td>
<td>26 September 2019</td>
</tr>
<tr>
<td>Dr Tejal K. Gandhi</td>
<td>IHI</td>
<td>A session with Dr Tejal K. Gandhi</td>
<td>21 November 2019</td>
</tr>
</tbody>
</table>

http://www.healthcareimprovementscotland.org/our_work/clinical_engagement/qi_connect.aspx
The QI Connect series now features as an approved resource within ISQua’s Fellowship Programme
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Trisha Greenhalgh
E-Health Connect webinar, February 2020

e-health infrastructure – why we need to be interested in “boring things”

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Infrastructure Revisited: An Ethnographic Case Study of how Health Information Infrastructure Shapes and Constrains Technological Innovation

Trisha Greenhalgh¹*, MD; Joseph Wherton¹*, PhD; Sara Shaw¹, PhD; Chrysanthi Papoutsi¹, PhD; Shanti Vijayaraghavan², MD; Rob Stones³, PhD

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Trisha Greenhalgh, MD
“Infrastructure is what other things run on”
– Susan Leigh Star

The Ethnography of Infrastructure
SUSAN LEIGH STAR
University of California, San Diego

Infrastructure and ethnographic practice
Working on the fringes
Susan Leigh Star
University of California, San Diego

Steps Toward an Ecology of Infrastructure:
Design and Access for Large Information Spaces
Susan Leigh Star • Karin Kubicek
Graduate School of Library and Information Science, University of Illinois at Urbana-Champaign, 501 East Shaw Street, Champaign, IL 61801

The 2nd Social Study of IT workshop at the LSE
ICT and Globalization
22-23 April 2002

Got Infrastructure? How Standards, Categories and Other Aspects of Infrastructure Influence Communication
Susan Leigh Star
Department of Communication
University of California, San Diego
lstar@ucsd.edu

Introduction: Boring Things

Some five years ago, in Palo Alto, California, I joined with several colleagues to found a new professional society. The idea for the society arose from a series of conversations we had about our somewhat unusual research topics – things that most people would find quite dull. We called it The Society of People Interested in Boring Things. About every other year since then, we have held small conferences with other like-
“Infrastructure is what other things run on”

— Susan Leigh Star

Boring things

Classification schemes
Wires, plugs, adaptors
Technical specifications
Regulations and standards
Bar and QR codes
etc
This beautiful, modern, ‘simple’ wearable technology for the child with epilepsy....

... must somehow interface with this patchworked, clunky, heavily-regulated and slow-to-change infrastructure
5 defining features of health information infrastructure
(Greenhalgh et al 2019, drawing on Star 1999)

1. A material scaffolding, backgrounded when working but becomes visible on breakdown

2. Embedded in systems; relational and emergent

3. Collectively learned, known and practised (through shared routines and distributed actions)

4. Patchworked (incrementally built and fixed) and path-dependent (shaped and constrained by purchases made and contracts signed in the past)

5. Institutionally supported and sustained (e.g. through standards, norms and codes of practice)
5 defining features of infrastructure
Greenhalgh et al 2019, drawing on Star 1999

1. A material scaffolding, backgrounded when working but becomes visible on breakdown

“What world does contemporary information technology inhabit? Is it the imaginary 19th-century world of progress and advance, novelty and invention, open frontiers and endless development? Or the 21st-century world of risk and uncertainty, growth and decay, and fragmentation, dissolution, and breakdown?”

5 defining features of infrastructure
Greenhalgh et al 2019, drawing on Star 1999

Infrastructure is “sunk into, and inside of, other structures, social arrangements and technologies”.

5 defining features of infrastructure
Greenhalgh et al 2019, drawing on Star 1999

Routine: A repetitive pattern of interdependent action involving multiple actors.

“Routines are performed by people who think and feel and care. Their reactions are situated in institutional, organisational and personal contexts.”

5 defining features of infrastructure
Greenhalgh et al 2019, drawing on Star 1999

4. Patchworked (incrementally built and fixed) and path-dependent (shaped and constrained by purchases made and contracts signed in the past)

Infrastructure is “a layered patchwork of components and associated routines which emerge historically”

5 defining features of infrastructure
Greenhalgh et al 2019, drawing on Star 1999

5. Institutionally supported and sustained (e.g. through standards, norms and codes of practice)

“institutions reflect the routine way in which people do what they are supposed to do”

5 defining features of health information infrastructure
(Greenhalgh et al 2019, drawing on Star 1999)

1. A material scaffolding, backgrounded when working but becomes visible on breakdown

2. Embedded in systems; relational and emergent

3. Collectively learned, known and practised (through shared routines and distributed actions)

4. Patchworked (incrementally built and fixed) and path-dependent (shaped and constrained by purchases made and contracts signed in the past)

5. Institutionally supported and sustained (e.g. through standards, norms and codes of practice)
Case study: spreading and scaling up video consultations in England

In UK (as in Norway and many other countries), the uptake of video consultations is very slow and patchy.
Telehealth services in rural and remote Australia: a systematic review of models of care and factors influencing success and sustainability

NK Bradford, LJ Caffery, AC Smith
The University of Queensland, Centre for Online Health, Princess Alexandra Hospital, Telehealth Centre, Woolloongabba, Queensland, Australia

Assessing telemedicine: a systematic review of the literature

Risto Roine, Arto Ohinmaa, David Hailey

Abstract

etc

Systematic reviews (since 2000) show that video consultations are popular with patients, and safe where clinically appropriate

So why is hardly anyone connecting via video?

The history of video consultation services in every country is of small, local proof-of-concept projects that don’t spread and are rarely sustained
Principles of the ethnographic study of infrastructure

The Ethnography of Infrastructure
SUSAN LEIGH STAR
University of California, San Diego

This article asks methodological questions about studying infrastructure with some of the tools and perspectives of ethnography. Infrastructure is both relational and ecological—it means different things to different groups and it is part of the balance of action, tools, and the built environment, inseparable from them. It also is frequently mundane to the point of boredom, involving things such as plugs, standards, and bureaucratic forms. Some of the difficulties of studying infrastructure are how to scale up from traditional ethnographic sites, how to manage large quantities of data such as those produced by transaction logs, and how to understand the interplay of online and offline behavior. Some of the tricks of the trade involved in meeting these challenges include studying the design of infrastructure, understanding the paradoxes of infrastructure as both transparent and opaque, including invisible work in the ecological analysis, and pinning down the epistemological status of indicators.

1. Focus on boring (mundane, taken-for-granted) things
2. Tease out the master-narratives (over-arching discourses that shape decisions)
3. Apply infrastructural inversion (foreground things that are normally in the background and vice versa)
4. Make invisible work visible
5. Study paradoxes and non-linear effects (e.g. why adding one keystroke makes the whole system unworkable)
Dataset:
- 450 hours of observation
- >100 interviews
- Documents
- Videoed consultations x25

Analysis using Star’s concepts of infrastructure

Narrative synthesis
“The dataset was characterized by a striking prominence of ‘boring things’ such as small material details, protocols... and ... rules and regulations.

The implementation and spread effort was often stalled or distorted by things that were so mundane we initially hardly noticed them. In the early months of our research, we unconsciously backgrounded these ‘boring things’ as our research gaze was drawn to more conventional subjects of ethnographic observation: the talk and action of human actors.

But as the study unfolded, we recognized a recurring pattern – that human actors often found themselves unable to act in a way that would have helped implement and spread the video consultation model.”

Example 1: selection of a platform to use in video consultations

Adobe Connect 2009-11
- Supplied by funder (national policymaker) who had already bought licences
- Staff and patients unfamiliar
- Hard to set up
- Professionally awkward e.g. “conference call” language

Skype 2012-18
- Free, everyone familiar
- Casual connection logic – patients felt empowered
- IT Dept installed as a “favour” for small demonstration study but “we don’t support Skype for hospital-wide use”
- No information governance rules exist for using Skype on NHS computers
- No service level agreements or protocols exist for managing installation and upgrading of Skype software
- Hospital-wide change to Virtual Desktop Infrastructure (VDI) produced technical conflict with Skype
- Could only run via a single ‘legacy’ desktop in one clinic
- Elaborate workaround introduced: set up a UAT (User Acceptance Testing) account on doctor’s VDI
- Doctor “not confident” in this fix → resisted scale-up
Example 2: path-dependencies play out differently in different sites

Skype for Business at hospital B 2018-19
- Previous purchasing decision here had included Skype as part of a wider package
- Recent national update to NHS Mail had included Skype for Business (patients could use consumer version of Skype to link with this)
- Same problem with VDI / Skype conflict → doctor purchased dedicated laptop to run SfB
- Use of laptop required governance approvals and use of ‘Data Protection Impact Assessment’ tool (long delay)
- Finally, tried to use laptop for video consults – but doctor could not get past login page
- Long investigation: Skype for Business within NHS Mail is configured only for internal communication; for external links need to buy additional ‘enterprise licences’
- One doctor bought own laptop and used Facetime (workaround)
Bugs and breakdowns are a fact of life; sometimes they can’t be fixed.

The relational and articulation work of IT implementation is never-ending; it makes stuff happen.

Need to study organizational routines and how they inter-relate.

Local historical decisions and legacy systems shape what is possible.

Regulatory and professional standards may produce long delays and unsolvable conflicts.
Principles for addressing infrastructural challenges when scaling up:

1. Attend to **material things** (e.g. expect bugs and breakdowns, and prioritize basic dependability over advanced functionality).

2. Take a **system and relational** (as opposed to isolated tool or function) view of the technology.

3. Remember that technology-supported work is **cooperative** and **embedded in organisational routines**, and that these routines are embedded in other routines.

4. Innovate **incrementally** (i.e. in small steps), paying attention to technological and socio-cultural legacies.

5. Take note of **standards** – and ask where these standards have come from and whether there is flexibility to adapt them to local conditions.
**SUMMARY**

Infrastructure is about “boring things”: wires, plugs, rules, standards etc.

The best way to study infrastructure is via rich, in-depth case studies.

Infrastructure is not just material – it’s also about (e.g.) roles, practices, routines and regulations.

To study the ‘not-happening’ of an implementation effort, collect a lot of boring data over a long time.

Principles of ethnography of infrastructure e.g.
- Focus on ‘boring things’
- Foreground things that are normally backgrounded
- Study paradoxes
Thank you for your attention

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Lynne Clark
Senior eHealth Facilitator
NHS Highland
Any Questions?
Next Time...

Sir Harry Burns
Former CMO for Scotland and Professor of Global Public Health
University of Strathclyde

Thursday 26th March
4-5pm UK time
QI CONNECT 2020

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25 February

Sir Harry Burns
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Professor of Health Systems Innovation, London Southbank University
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