

Meta-narrative review

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With thanks to Trish Greenhalgh, Geoff Wong & others

Traditional systematic review

Now well established as a central method in evidence-based medicine (EBM)

Quantitative outcomes fit meta-analysis and illustrated with the familiar forest plot

Works best when comparing like with like

Small degree of methodological heterogeneity can be handled with sub-group analyses

□ FLIS HENWOOD & ANGIE HART

University of Brighton

Recommendations for Improving the
Standardized Trials

for the CONSORT Group*

Not just heterogeneity, not just mixed methods, but incommensurability

The article explores the a information and communica explores how gender symboli combine to produce what development of electronic services. In particular, mid computers, seeing IT work : philosophy of midwifery. Th

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Abstract

Western hospitals of some size are characterized by a proliferation of nonintegrated information systems, resulting in considerable frustration both among users and information technology personnel. Consequently there have been many integration efforts. Such efforts typically include some or all of the four principle classes of hospital-based systems: electronic patient records, laboratory systems, radiology systems and patient administrative systems. In this study we trace the implementation process during most of 2004 at the

The meta-narrative approach

Heterogeneity and pluralism

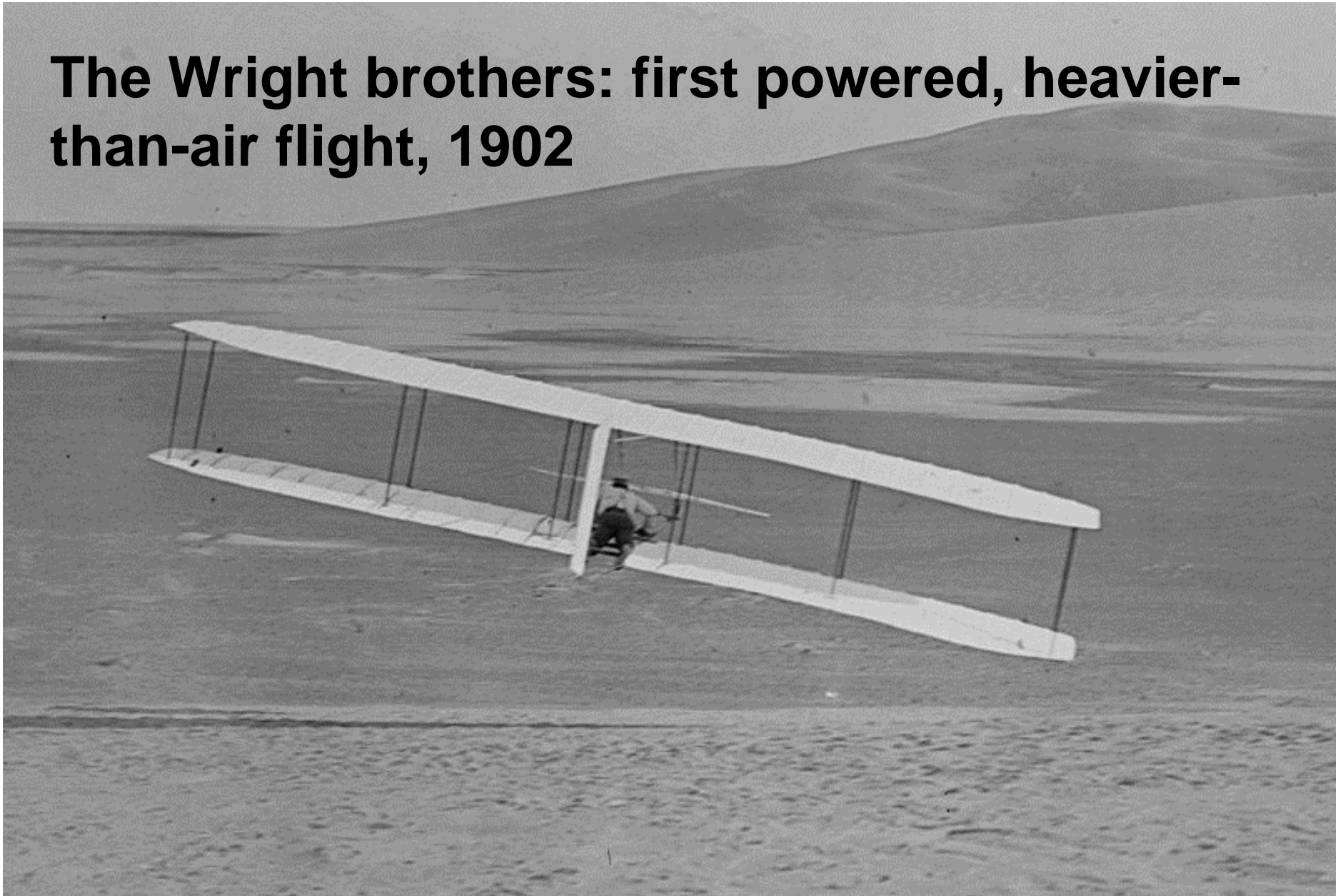
Problems of heterogeneity multiply with more complex questions, with multiple outcomes, varying systems and different methodologies – different **paradigms**

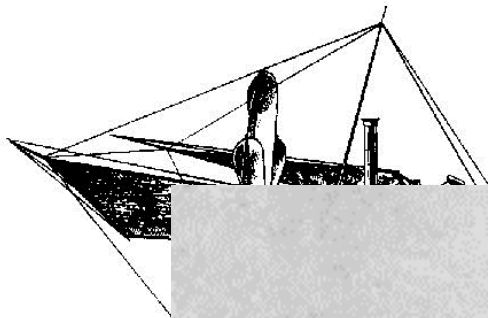
Various approaches developed to review broad methods

Meta-narrative review

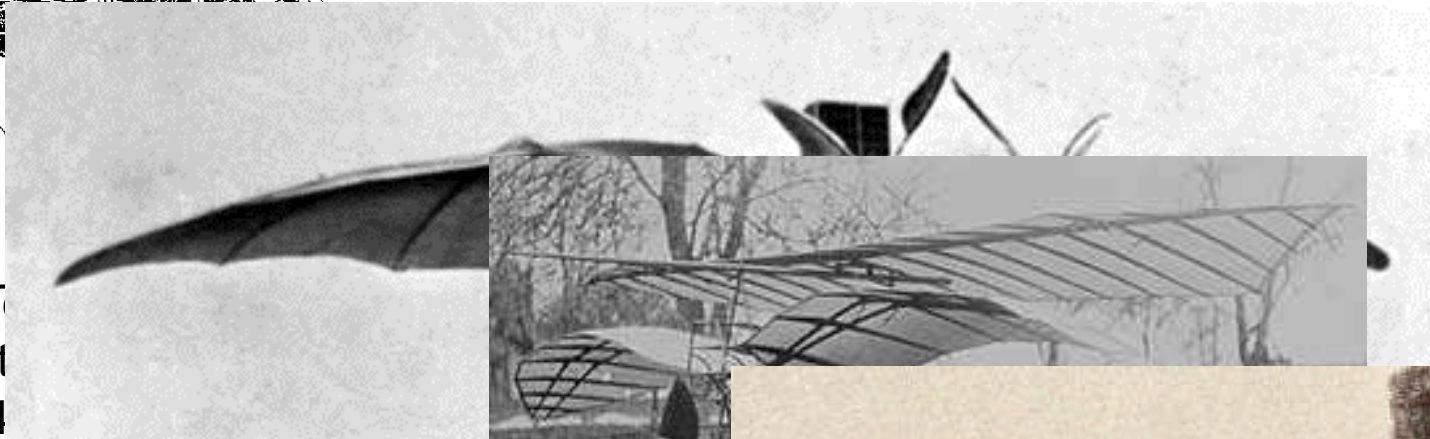
Greenhalgh, Robert, Bate, Macfarlane & Kyriakidou (2005). *Diffusion of Innovations in Health Service Organisations: A Systematic Literature Review*. Blackwell BMJ Books.

The Wright brothers: first powered, heavier-than-air flight, 1902

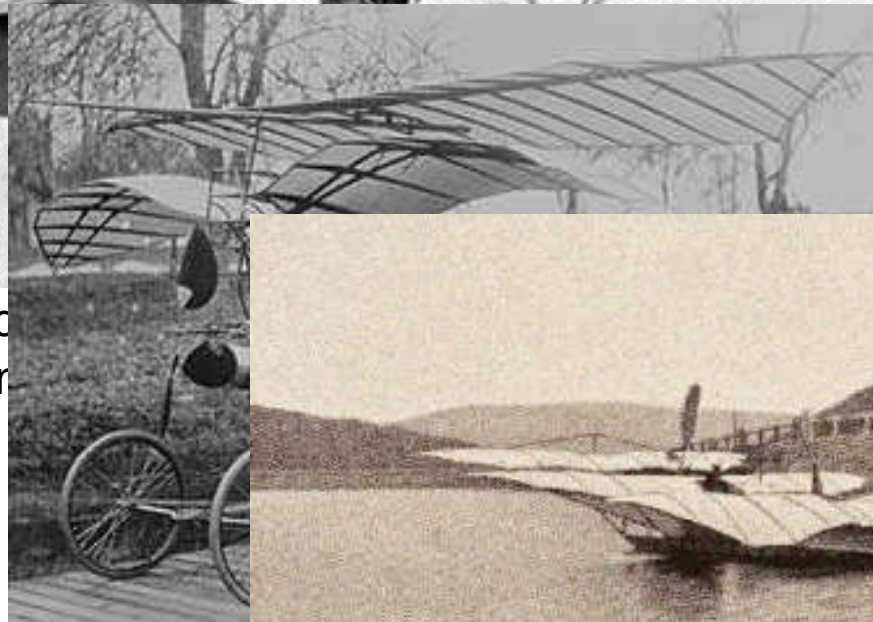




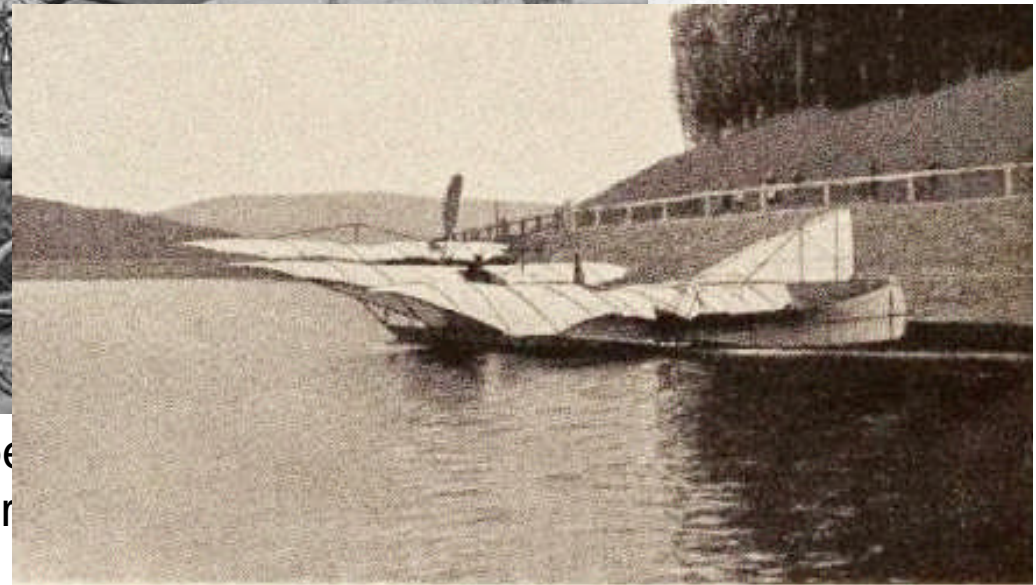
Du T
short
1874



Clément A
short hop in
disputed



CR Nybe
few short



Snapshot of the Kress Fyris-sörplane, while Gliding on the Water

Wilhelm Kress's *Drachenflieger*.
short hops in 1901

... but many others were close. Likewise, this is an emerging field and there is similar work from other groups

Related approaches

Moran-Ellis *et al.* (*Qual Res* 2006;6(1):45-59):

“Researchers who advocate the use of multiple methods often write interchangeably about ‘integrating’, ‘combining’ and ‘mixing’ methods, sometimes eliding these descriptors with ‘triangulation’, which itself encompasses several meanings. In this article we argue that such an elision is problematic since it obscures the difference between (a) the processes by which methods (or data) are brought into relationship with each other (combined, integrated, mixed) and (b) the claims made for the epistemological status of the resulting knowledge.”

Yardley & Bishop (In *The SAGE Handbook of Qualitative Research in Psychology*, 2007: pp. 352-67):

‘Composite analysis’: retain integrity of each method – integrate findings rather than ‘mixing methods’

Noblit & Hare (*Meta-ethnography: Synthesising Qualitative Studies*, 1988):

Distinction between *integrative* and *interpretive* reviews

Meta-narrative review – key principles

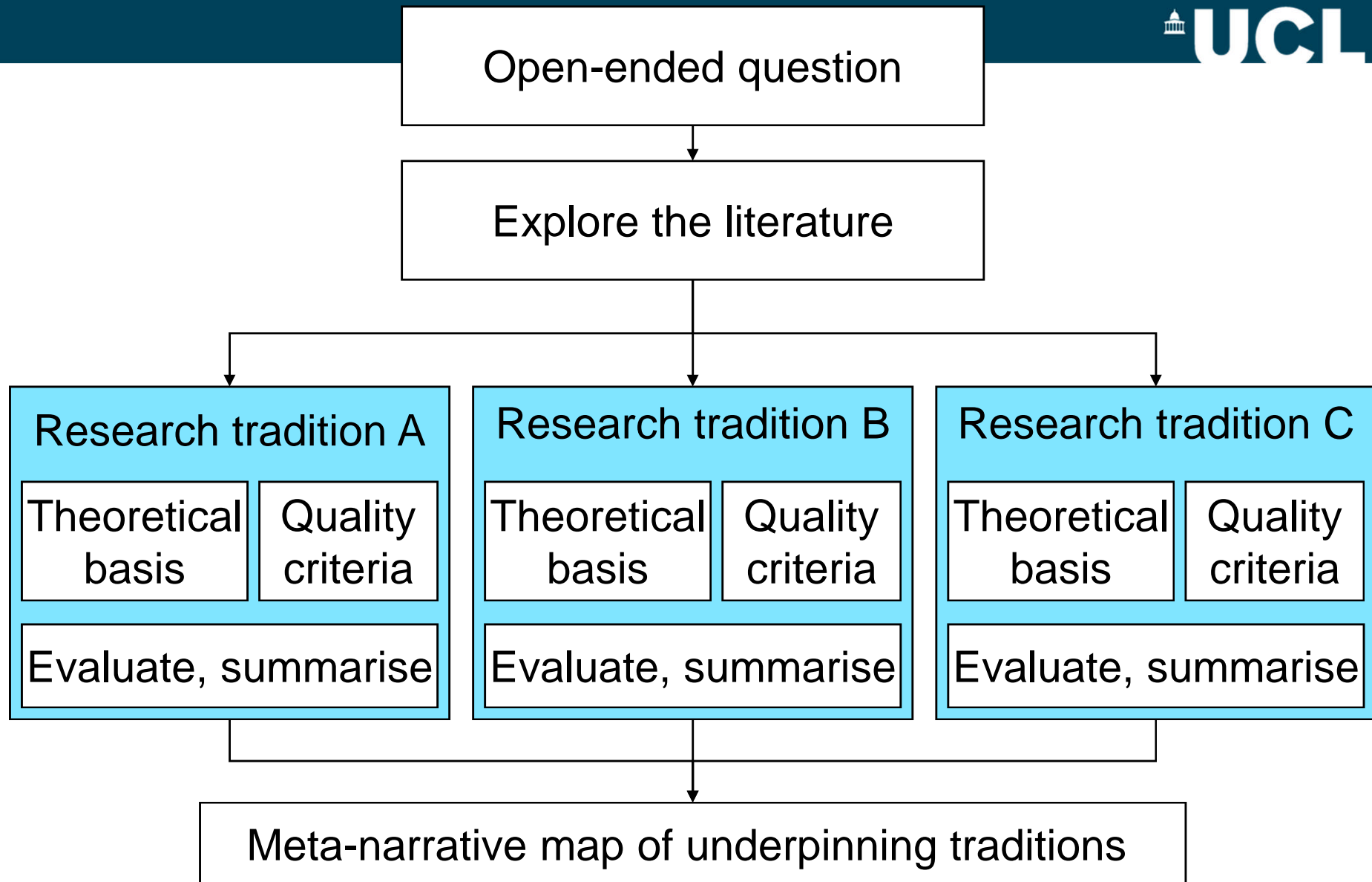
Use a historical and philosophical perspective as a **pragmatic** way of making sense of a diverse literature

- Pragmatism
- Pluralism
- Historicity
- Contestation
- Peer review

Key questions (from Kuhn, “The structure of scientific revolutions”)

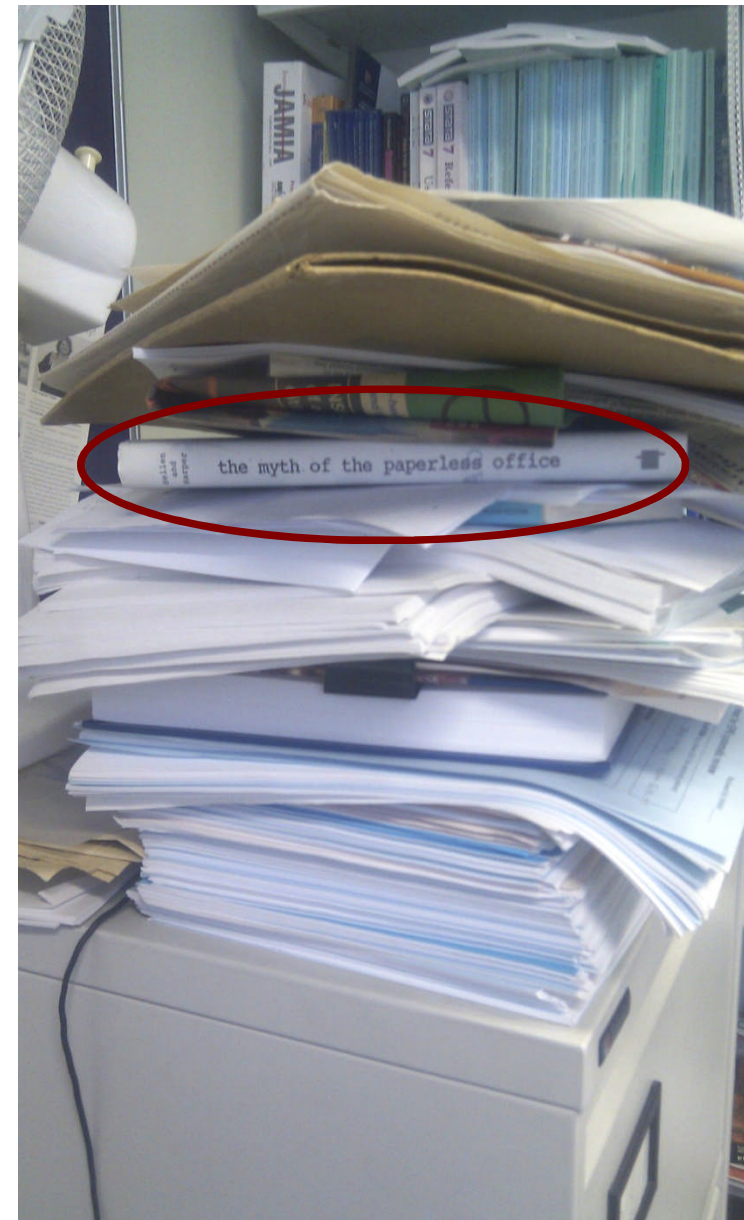
- What research teams have researched this area?
- How did they **CONCEPTUALISE** the problem?
- What **THEORIES** did they use to link problem with potential causes and impacts
- What **METHODS** did they define as ‘rigorous’ and ‘valid’?

Application more post-Kuhnian than Kuhnian



Meta-narrative review (how to get started)

Separating the literature into piles



Synthesis phase

Highlight similarities and differences in the findings from different traditions

Contestation between the disciplines is data (and leads to higher order constructs)

Offer conclusions of the general format “in circumstances such as X, don’t forget to think about Y”

Research tradition	Disciplinary roots	Definition & scope	General format of research question	EPR conceptualised as...	EPR user conceptualised as...	Context conceptualised as...
Health information systems	(Evidence-based) medicine, computer science	Study of storage, computation & transmission of clinical data. Focus often on benefits of EPRs and how to achieve them	What is impact of technology X (EPR, DSS, etc.) on process Y (e.g. clinician performance) and outcome Z?	Container for information about patient; tool for aggregating clinical data for secondary uses	Rational decision-maker whose cognitive ability sets limits to what can be achieved without computers	Potential confounder which can be 'controlled for' if right study design used
Change management (within health services research)	(Evidence-based) medicine, social psychology, management	Study of achieving organisation-level change in healthcare	How can we improve delivery of healthcare and sustain improvement?	Innovation that, if implemented widely and consistently, will improve process and outcome of care	'Resistant' agent who must be trained and incentivised to adopt new technologies and ways of working	External milieu of interacting variables that serve as barriers or facilitators to change efforts
Information systems (positivist)	Business studies, psychology, computer science	Study of how organisations do or do not adopt & assimilate information systems	What factors (independent variables) account for success or failure (dependent variable) of information system X in organisation Y?	Unwelcome change, likely to be resisted, and which may fit poorly with organisational structures & systems	Potential adopter who may engage with or resist change; member of group whose power base may be enhanced or threatened	External milieu of interacting variables that mediate or moderate the relationship between input and output variables

Research tradition	Disciplinary roots	Definition & scope	General format of research question	EPR conceptualised as...	EPR user conceptualised as...	Context conceptualised as...
Information systems (interpretivist)	Management, sociology, social psychology, anthropology	Study of how organisational members make sense of information systems & thereby assimilate them	What meanings does information system X hold for members of organization Y? How to achieve accommodation between different views?	Socio-technical change that holds different meanings for different individuals and groups	Stakeholder whose 'framing' of the EPR is crucial to its assimilation. Agent whose creativity can be drawn upon in this effort	Scene & setting for an unfolding story; webs of meaning in which organisational actors are suspended
Information systems (technology-in-practice)	Organizational sociology, social psychology, philosophy	Study of how social structures recursively shape & are shaped by human agency, & role of technology in this	What is the relationship between organisational actors, technology X, and the organisation – and how does this change over time?	Itinerary and organiser whose physical & technical properties structure & support collaborative clinical work	Knowledgeable creative agent for whom social structures both create possibilities & limit the possible	Generated & regenerated through interplay of action & structure. Does not study 'technologies' & 'contexts' separately but technologies-in-use
Computer supported cooperative work	Computer science, software engineering, psychology, sociology	Study of how groups of people work collaboratively, supported by information technology	How can technologies support the work of multiple interacting people?	Contextualized artefact	Agent who works to local goals in collaboration with others & creatively overcomes limitations of formal tools	External milieu or emergent property of action (constituted by & inextricable from an activity involving people & technologies)

Research tradition	Disciplinary roots	Definition & scope	General format of research question	EPR conceptualised as...	EPR user conceptualised as...	Context conceptualised as...
Critical sociology	Sociology, philosophy	Study of relationship between people & social order, & role of technologies in this	What social structures & power imbalances are embedded in technology X, & what impact does this have on social roles/relationships?	Implicated in micro & macro power dynamics (because of link between knowledge & power)	Constrained by dominant social Structures, which may be built into technologies by designers	Social & material conditions into which the unequal social order is inscribed; more or less stable structure of macro social relations
Empirical philosophy (actor network case studies)	Philosophy, sociology, linguistics	Study of sociotechnical networks: considers how relationships & power shift within network	How has network, with its various relationships, work practices & risks, changed as a result of technology X?	Actor in a network	Actor in a network	EPR & its context together form the network; the one cannot be studied without the other
Systems approaches	Systems & management research, drawing on cognitive psychology, CSCW & ANT	Systems perspective	What role does the EPR play within a complex healthcare system?	Component of complex socio-technical system whose features & properties may come together in unpredictable ways	Component of complex socio-technical system whose features & properties may come together in unpredictable ways	Complex, changing environment

Interrelationships or silos?

Silos

- Most health informatics literature ignores socio-technical perspectives
- Technology structuration (Orlikowski) largely US organisational sociologists and doesn't cite/is mostly not cited by European critical sociologists

Berg & Bowker (1997), *Sociol Quart*, **38**: 513-37
 Berg (1999), *Comp Supp Coop Work*, **8**: 373-401
 Berg (2003), *Methods Inf Med*, **42**: 337-44
 Ellingsen & Munkvold (2007), *Int J Integrated Care*, **7**
 Østerlund (2004), *J Center Inf Studies*, **5**: 35-43
 Pentland & Feldman (2007), *Organization Sci*, **18**: 781-95
 Pratt, Reddy, McDonald *et al.* (2004), *J Biomed Inform*, **37**: 128-37
 Suchman (1994), *Comp Supp Coop Work*, **2**: 21-39

Not silos

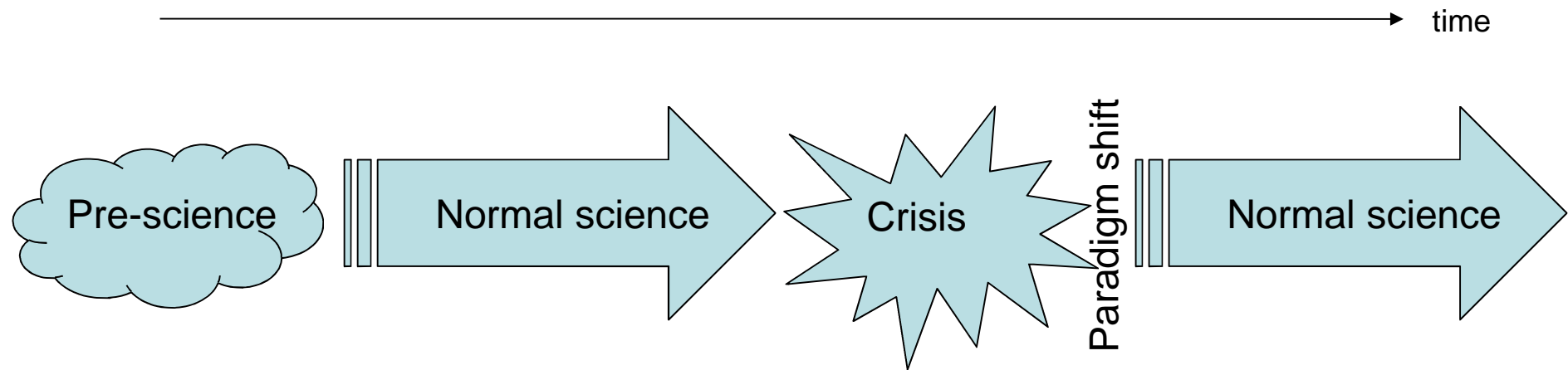
- Biomedicine meets socio-technical approaches
 - Cross-disciplinary appeals (Pratt *et al.*)
 - ‘Multilingual’ researchers (e.g. Berg)
- Socio-technical approaches aligning
 - CSCW and STS have common roots in ANT, Zuboff *etc.*
 - Links between CSCW and STS over the years (e.g. Suchman)
 - Coming together of CSCW, STS and IS with newer researchers (e.g. Ellingsen)
 - Østerlund draws on Orlikowski and Berg + brings in social psychology
 - Technology structuration meets ANT with “narrative networks” (Pentland & Feldman)

What does it mean?

- Common roots (like ANT) perhaps made it easy for CSCW and STS to come together
- A result of the greater accessibility of academic writing through the Internet?
- Repeated overtures from more socio-technical researchers to biomedical informatics up against an optimistic political rhetoric and a naïve, simplistic and fallacious view of EBM

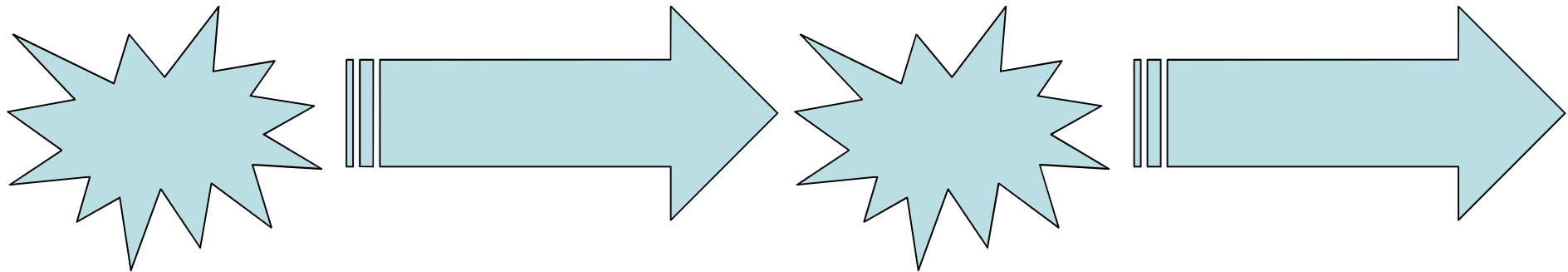
Thomas Kuhn

“The Structure of Scientific Revolutions” (1962)

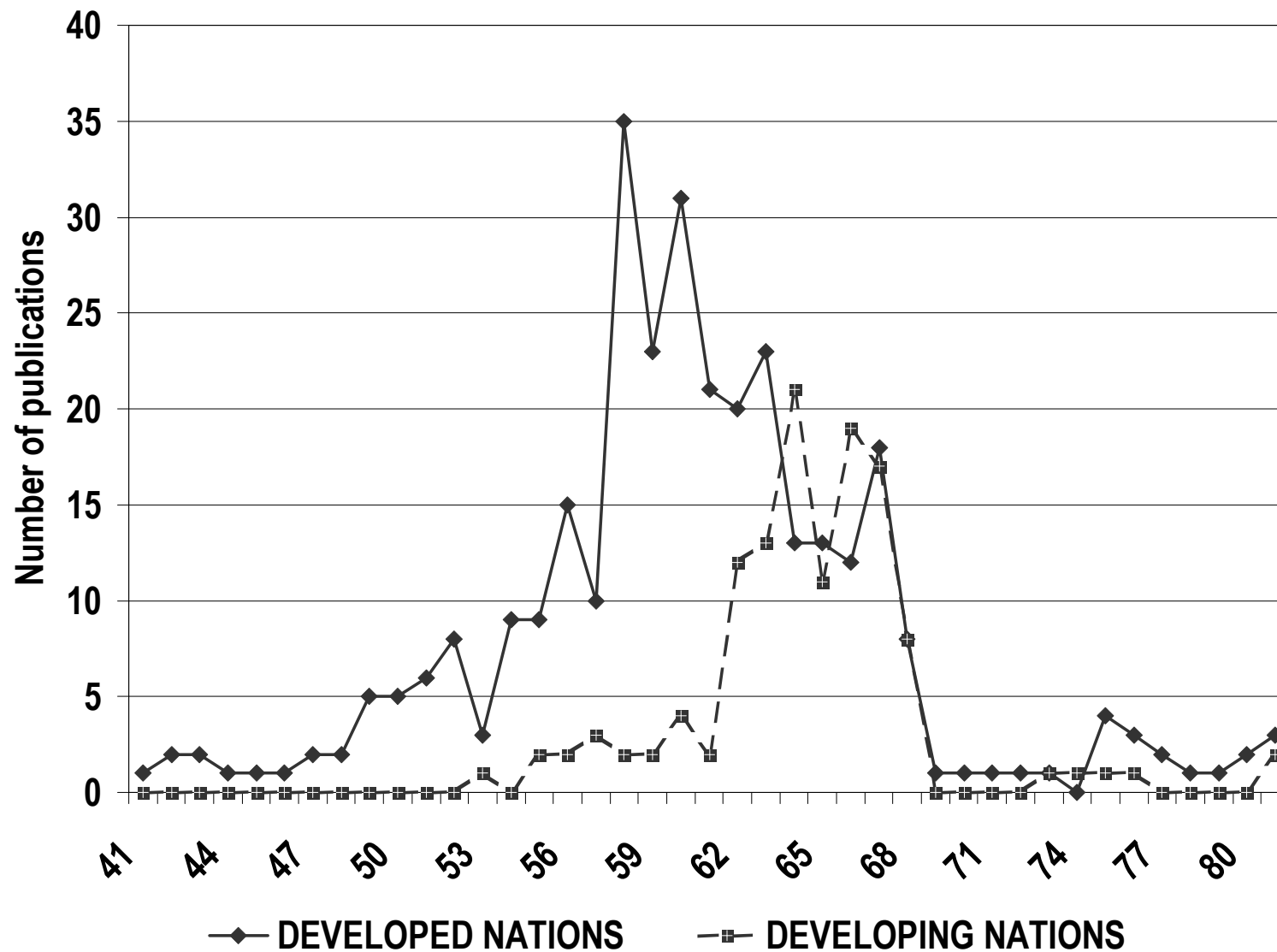


Thomas Kuhn

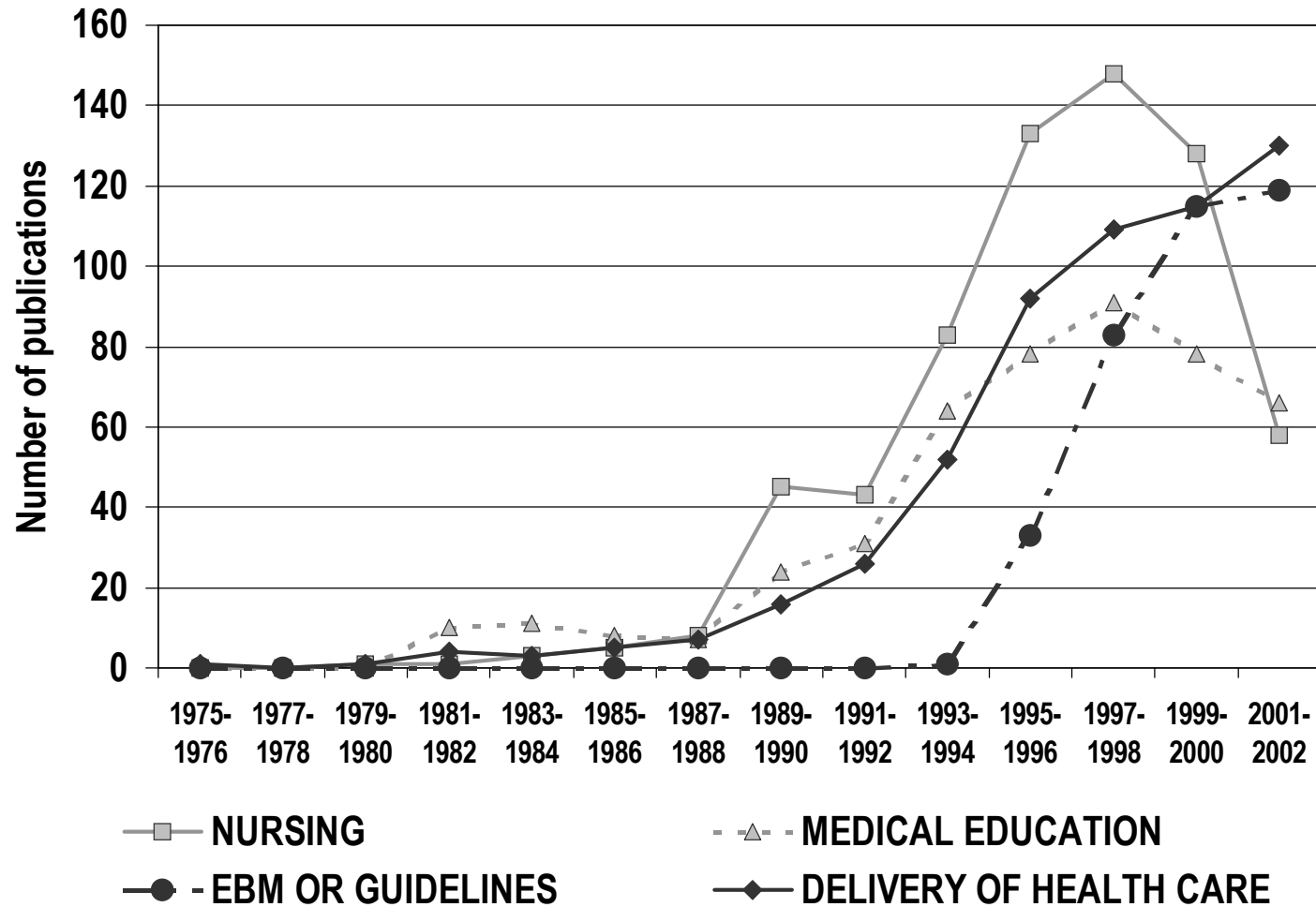
“The Structure of Scientific Revolutions” (1962)



A discipline sees a repeated cycle of ‘crises’, leading to ‘paradigm shifts’, out of which emerges ‘normal science’.



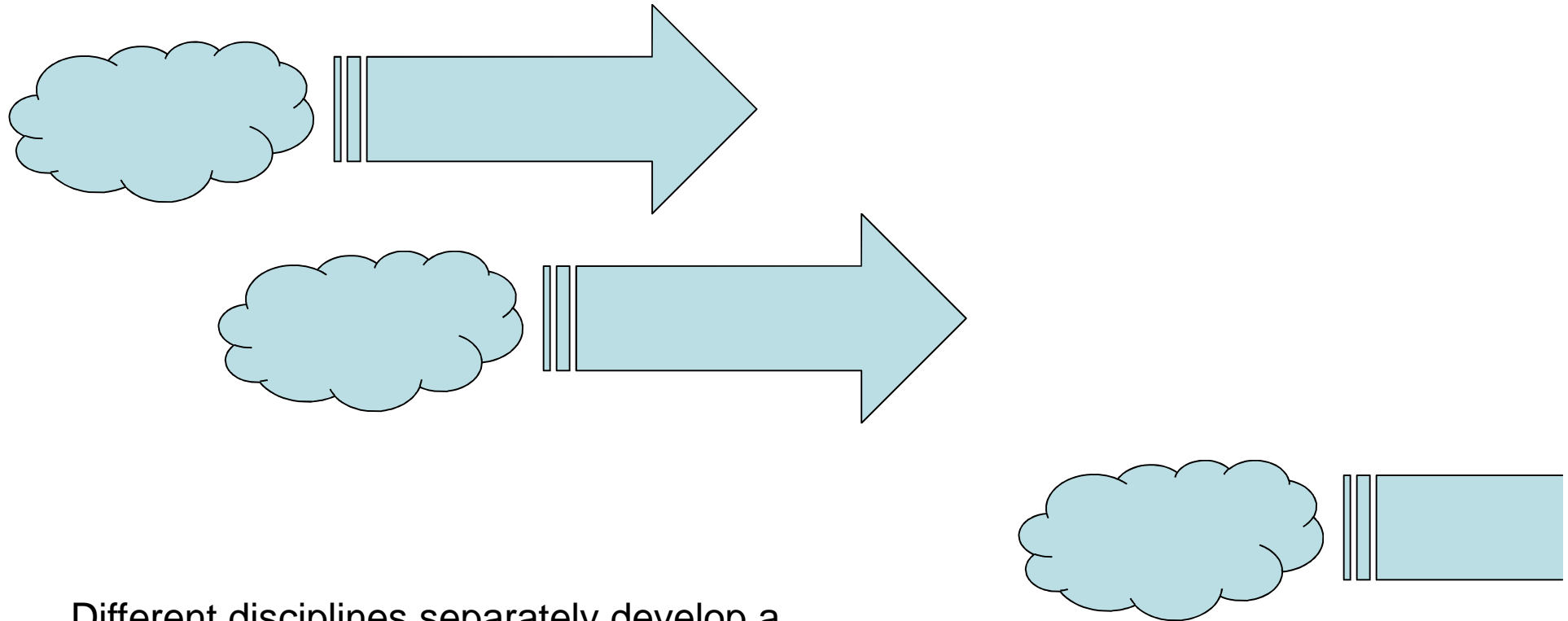
Rise and fall of diffusion research in rural sociology



Rise and fall of diffusion research in health related fields

Greenhalgh, Robert *et al.*

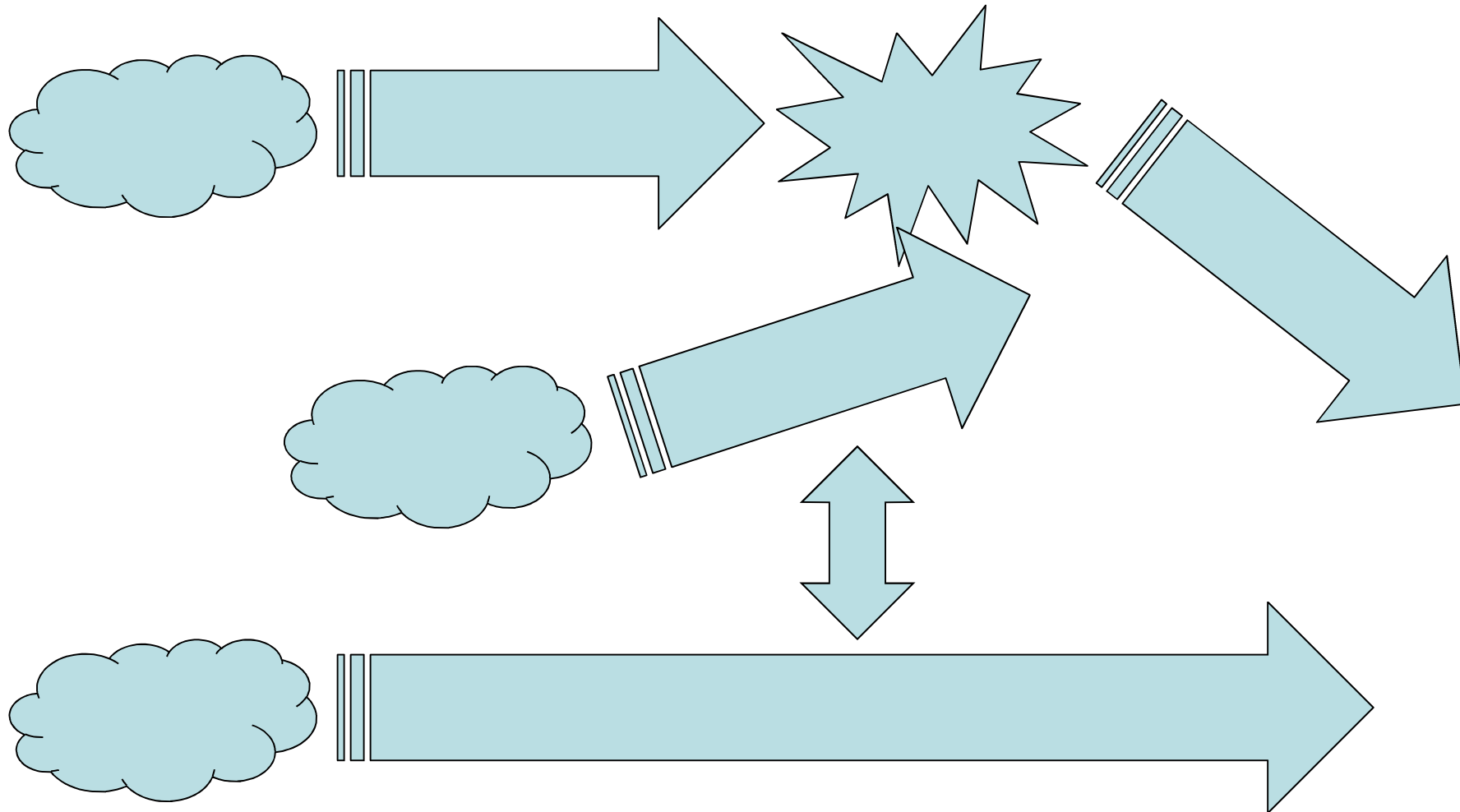
“Diffusion of Innovations in Service Organizations: Systematic Review and Recommendations” (2004)



Different disciplines separately develop a paradigm and conduct ‘normal science’.

Greenhalgh, Potts *et al.*

“Tensions and Paradoxes in Electronic Patient Record Research: A Systematic Literature Review Using the Meta-narrative Method” (2009)



Reflections

- The piles are probably subjective, an interpretive tool
 - Just like normal systematic reviews (ergo sensitivity analysis?)
- Tools for determining piles? Social network analysis
- Synthesis complicated
- Very different picture to traditional Cochrane approach
- Rich array of theories and methods
- Systematic, but interpretive

References

Greenhalgh T, Potts HWW, Wong G, Bark P, Swinglehurst D (2009). Tensions and paradoxes in electronic patient record research: A systematic literature review using the meta-narrative method. *Milbank Quarterly*, **87**(4), 729-88.

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Taylor P, Potts HWW (2008). Computer aids and human second reading as interventions in screening mammography: Two systematic reviews to compare effects on cancer detection and recall rate. *European Journal of Cancer*, **44**(6), 798-807.