

The Future of Information Systems – Thinking Informatically

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A shameless plug ...

‘Thinking Informatically – A New Understanding of Information, Communication, and Technology’

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The IS Discipline

- Issue of disciplinary identity and status has been a constant theme since at least 1970s
- Why is it important?
- Can it be resolved?
- What's in a name?

A question

What is the correct term for the study of the use and application of information and communication technologies?



Four options

- Information Systems
- Information Management
- Information Technology
- Informatics

Phone a friend?
Ask the audience?



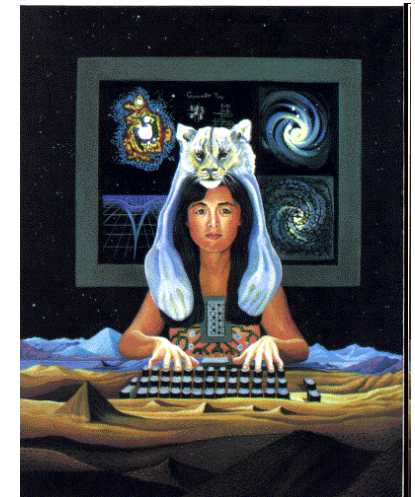
Four options

- Information Systems
 - Confuse the object of study with the process
- Information Management
 - Useful term – but relates primarily to practice
- Information Technology
 - The artefacts
- Informatics
 - An ugly neologism

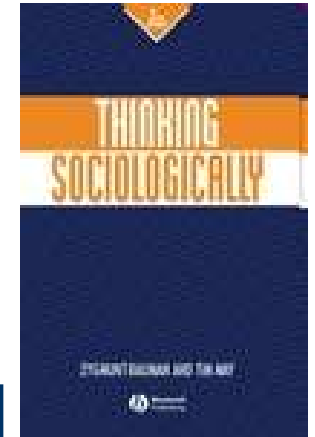
INFORMATICS

Donna Haraway's definition

- study of 'technologies of information *and communication* as well as the biological, social, linguistic and cultural changes that initiate, accompany and complicate their development' (1985)
- The term 'informatics' is now far more ambiguous – subject of a takeover and makeover by computer scientists and their ilk



Thinking Informatically



- A title designed to evoke Zygmunt Bauman's book *Thinking Sociologically*
- He deals with several key issues relevant to IS – Markus' term 'Academic IS'
 - Idea of a discipline
 - Emergence of sociology – emergence of Academic IS bears crucial similarities
 - Context of *Liquid Modernity*

A flawed discourse

- ‘Only a discipline flawed as a discourse has to offer an apology, feels the need to justify its right to exist. ... Concern with self-justification has been, since the beginning, a conspicuous feature of sociological discourse.’ (Bauman)

Academic IS – a flawed discourse

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Emergence of Academic IS as a *discipline*

- Joe Weizenbaum ‘the remaking of the world in the image of the computer started long *before* there were any electronic computers’ (1984)
- discourse of Academic IS centred around ICT was ‘brought into being by the encounter between the awesome task of the management of organizational processes on a grand, *corporate and* societal scale and the ambitions of the modern state *and corporation*’ (based on Bauman)

Initial incarnation of the discipline *Management Information Systems*

- Academic IS has always exhibited a *managerial* and *engineering* tendency
- In particular this is evident in the ways in which IS disciplinary status is often premised upon articulating engineering and management problems – numerous articles in core journals
- Assumed that the issues exist, and the discipline develops in their wake

But what if the converse also applies?

- not a case of reality waiting to be portrayed by ‘its court painter’
- no pre-existing corner of reality waiting to be claimed and explained by a specific discipline; nor is the discursive formation a ‘disturbing element’ which superimposes itself upon some ‘pure, neutral, atemporal, silent form’.
- **The ‘incessant activity of discourse ... spawns the narrated reality at one end and the narrating reason at the other’ (Bauman)**
- IS Academics and Practitioners and *others* ... define the reality and the reason as part of their activities of discourse

... and the *others* are very important

- ... non-specialists would not challenge the statements of the physicists for lack of access to the events which they narrate; the subjects of an authoritarian government would not contest political pronouncements for lack of access to data guarded by official secrets acts. (Bauman)
- But in the information society (virtually) everyone is a specialist in some aspect of IS – or rather of **ICT**



"He's our Spam expert!"

Boundary maintenance is almost impossible

- Claims by other disciplines and fields of study
- Practitioners
- Everyday activities
- Ubiquitous technology



Three Contested Concepts

- Mason argues that a ‘loosely knit field of inquiry becomes a tightly woven discipline when it acquires ... [amongst other things] ... theories and concepts’.
- ICT – three concepts; all ‘contested’

What does this mean?

- Gallie – specifically with regard to terms such as ‘power’ and ‘democracy’
- Often taken to apply to terms that are the subject of substantial disagreement
- Gallie himself offered a set of clear ‘minimal criteria’ for a concept to be seen as *essentially contested*. The criteria can be explained as follows:-

Gallie – Essentially Contested Concepts

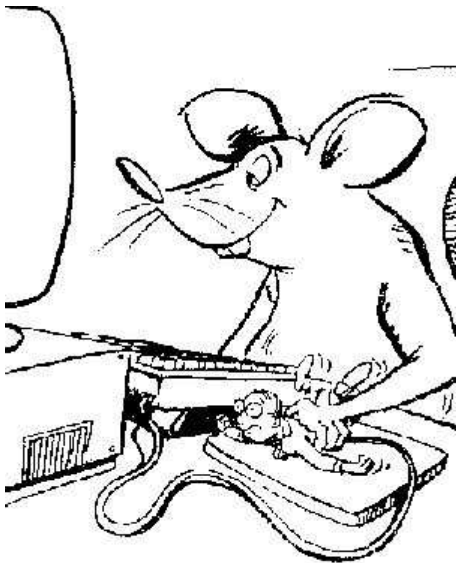
- the concept must be '**appraisive** – signifies or accredits some kind of valued achievement';
- the achievement 'must be of an **internally complex** character';
- this complexity of praiseworthy achievement leads to a **variety of descriptions** of the nature and process of the achievement;

Gallie – cont'd

- 'to use an essentially contested concept means to use it **against other uses** and to recognize that one's own use of it **has to be maintained against other uses.**' It has to be used 'aggressively and defensively';
- there must be some '**original exemplar** whose authority is acknowledged by all the contestant users of the concept', failing which there is the risk of '**radical confusion**';
- the **continuous competition for acknowledgement** should enable the 'original exemplar's achievement to be sustained and/or developed in optimum fashion'. (Gallie, 1956)

... applying this to ICT

- Information
- Communication
- Technology



Information

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"It seems that *their* databank has all the information that's in *our* databank, plus information that's *not* in our databank, plus information *about* our databank."

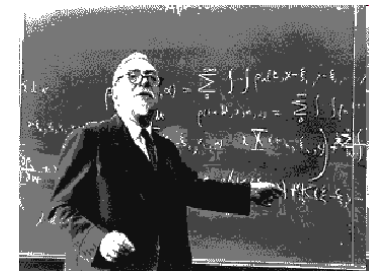
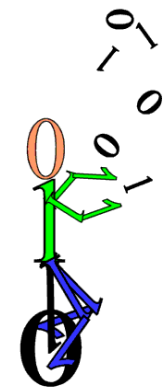
Information

- Boland – ‘information fantasies’
 - Two faces
 - Productively imaginative (weaker)
 - Erroneous and self-deluding (stronger)
- Data & Information
 - Chemical engineering metaphor
 - Processing -> Organization -> Meaning



Original exemplar? 2 from 1940s

- Shannon or Wiener
- Shannon
 - $I = -\log P$... volume of information (p=probability of an event)
 - Information is the same as entropy
- Wiener
 - Information reduces uncertainty
 - Information is the inverse of entropy



Shannon – tried to replace ‘information’ with ‘entropy’

- But he decided against it as entropy was a concept that ‘was too difficult to communicate’

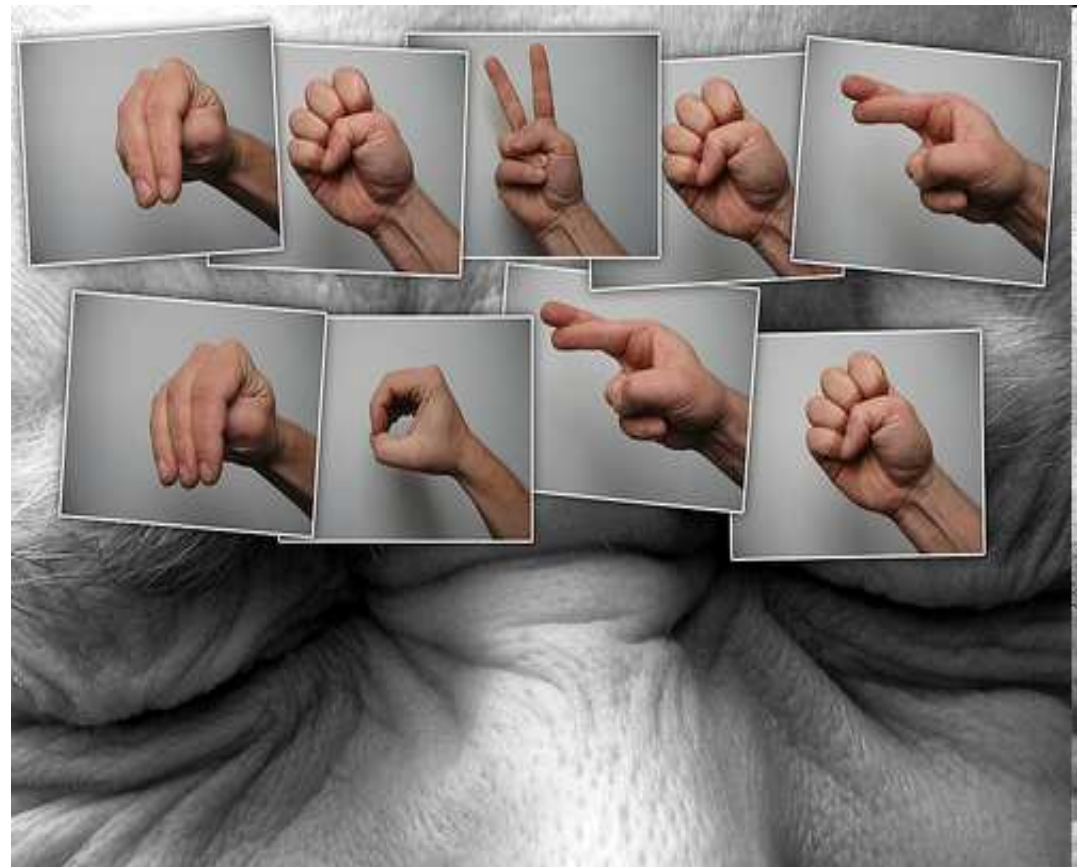


"I need an interpreter. Send in someone who speaks jargon."

The Macy Conferences on Cybernetics

- Participants included Shannon, Wiener, von Neumann, McCulloch
 - Also Kurt Lewin, Margaret Mead, Filmer Northrop, Gregory Bateson
- People reached across their different disciplines often using metaphors for their own or other's work
 - Bateson appropriated the term 'information' in explaining initiation rituals and so on – 'the difference that makes a difference'

Communication



Communication

- Shannon's model as exemplar – but a highly misleading one
 - Deliberately omitted meaning
 - Used the term information – but had 2nd thoughts
 - Great confusion about what is actually being sent
 - Information?
 - Message?
 - Signal?

The Conduit Metaphor

- Michael Reddy (1993)
 - Dominant metaphor for talking about communication
 - Pipes, channels, transfer, loading and unloading
 - ‘get your ideas across’
 - ‘capturing requirements’
 - ‘knowledge transfer’
- Lists 100 variations



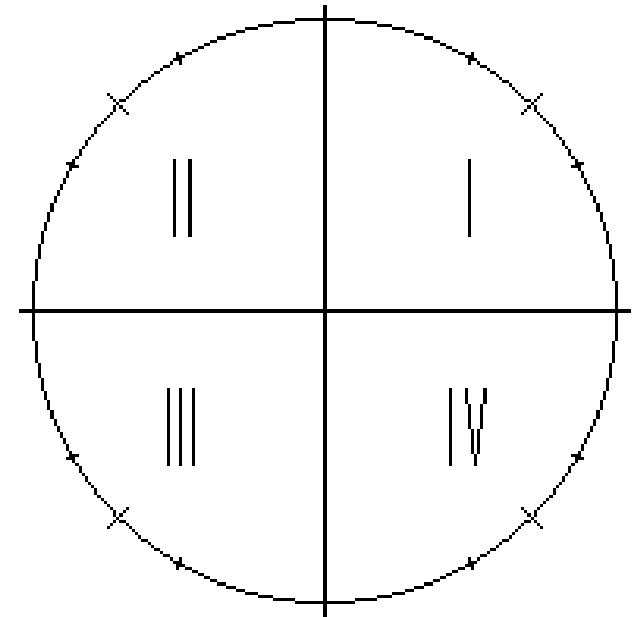
4 key aspects – how we see language and communication

1. Language functions ‘like a conduit, *transferring* thoughts bodily from one person to another’
2. People *insert* thoughts and feelings in the words
3. Words accomplish the transfer *by containing* thoughts, feelings ...
4. The listener *extracts* these from the words



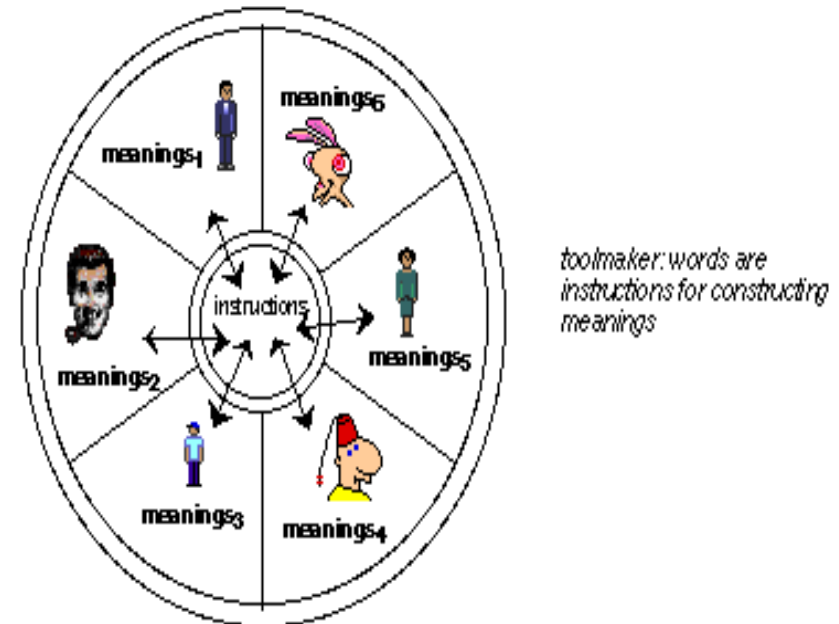
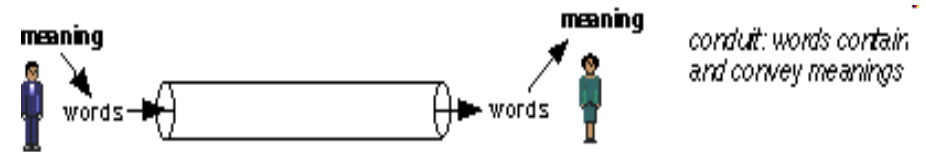
An alternative – Toolmakers Paradigm

- Assumes communication is
 - unreliable and capricious
 - fraught with difficulties
 - requires enormous effort
 - requires constant sustaining since the norm is communication failure or divergent understanding



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Conduit metaphor

Parallels Shannon's model; source, transmitter, channel, receiver, destination ... but what is being sent?

- Information? No
- Message? No
- Signal? No
- Shannon's model obscured by the 'semantic pathologies of the conduit metaphor'.

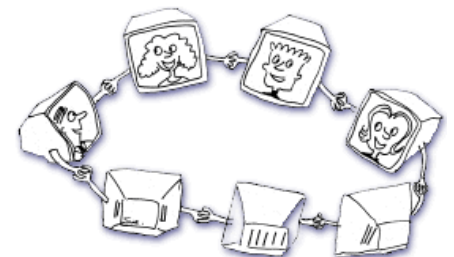
Toolmakers paradigm – revised understanding of Shannon’s model

- Information is the ability to make non-random selections from a set of alternatives. Communication is the transfer of this ability from one place to another, with each party having a set of alternatives and a code relating these to physical signals. Reddy calls this ‘an a priori shared context’.

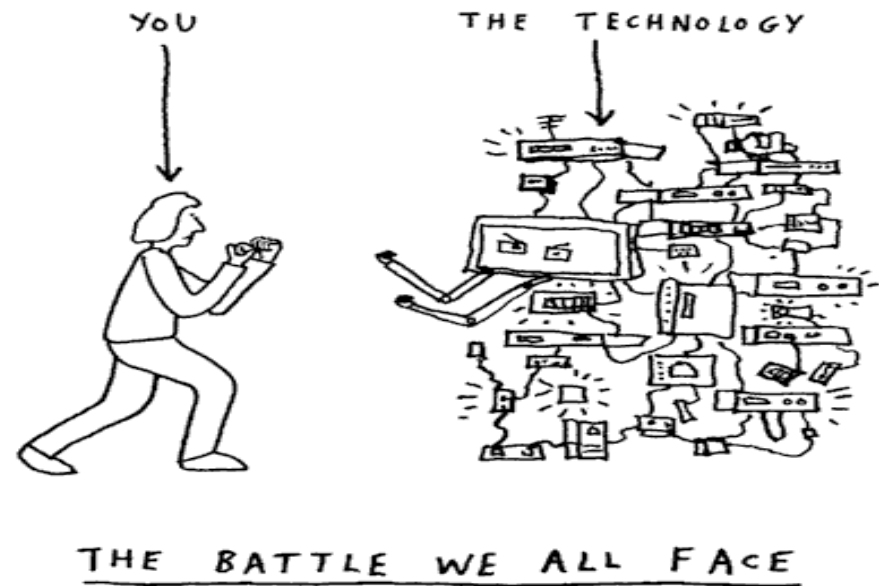


Raymond Williams – Keywords (1976)

- Communication – ‘noun of action’ derived from the Latin *communicare* from the root *communis* – ‘make common to many, impart’.
- Communication then initially meant the *action of imparting*.
- ‘In controversy about communication systems and communication theory it is often useful to recall the *unresolved* (my stress) range of the original noun of action, represented at its extremes by *transmit*, a one-way process, and *share* ... a common or mutual process.’



Technology



A definition

- ‘the use of scientific knowledge to specify ways of doing things in a reproducible manner’ – Harvey Brooks (1971)

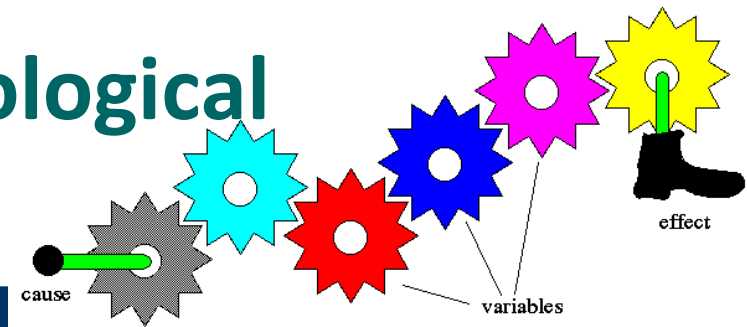


A definition

- ‘the use of scientific knowledge to specify ways of doing things in a reproducible manner’ – Harvey Brooks (1971)
- Used by Daniel Bell and Manuel Castells



Technology, Society, Technological Determinism



- Blame it on Karl Marx
 - ‘the hand mill gives you society with the feudal lord; the steam mill society with the industrial capitalist’
- Castells
 - Of course technology does not determine society. Nor does society script the course of technological change, since many factors, including individual intuitiveness and entrepreneurialism, intervene in the process of scientific discovery, technological innovation, and social applications, so that the final outcome depends on a complex pattern of interaction. Indeed the dilemma of technological determinism is probably a false problem, since technology *is* society, and society cannot be understood or represented without its technological tools. (1996, p5)
- The problem with the Socio-Technical approach is the hyphen!

Raymond Williams



- **Deterministic** – TV was invented as a result of scientific and technical research. Its power as a medium of social communications was then so great that **it altered many of our institutions and forms of social relationships** OR It was then developed as a medium of entertainment and news. **It then had unforeseen consequences**, not only on the other entertainment and news media ... but on some of the central processes of family, cultural and social life
- **Symptomatic** – TV, discovered as a possibility by scientific and technical research, **was selected for** investment and promotion as a new and profitable phase of a domestic consumer economy OR It became available as a result of scientific and technical research, and **its character and uses exploited** and emphasised elements of a passivity, a cultural and psychological inadequacy, which had always been latent in people (Williams, 1974, pp11-12)

Both are incorrect

- ... technology must be seen as being 'looked for and developed with certain purposes and practices already in mind', these purposes and practices being 'central, not marginal' as the symptomatic view would hold (Williams 1974)
- Anticipates Castells and Weizenbaum

Jacques Ellul

- The Technological System
- ‘Whenever there is research and application of new means as a criterion of efficiency, one can say that there is technology.’
- Borrows terms from Talcott Parsons
- Argues that the technological system becomes dominant, and so makes ‘all problems and difficulties technological’. Anticipates Habermas



Ellul – writing in the 1970s

- ‘data processing, television, telecommunications .. constitute veritable electronic systems of communication ... we should henceforth speak of electronic communications systems. This **specific organism** is now the new relationship of the technological subsystems, and is allowed by the foundation of the technological system as a whole’
- The technological system ‘requires its own transformation for itself’.

ICT

- Information
 - challenge chemical engineering metaphor and stress meaning
- Communication
 - challenge conduit metaphor and stress tool-makers metaphor
- Technology
 - challenge focus on artefacts and stress reproducibility, Technological System, Technology as purposive



Embrace *radical confusion*?

- If we use Gallie's terms, we are in a state of 'radical confusion'
- Is this a problem?
- Is it something we should ignore or embrace?



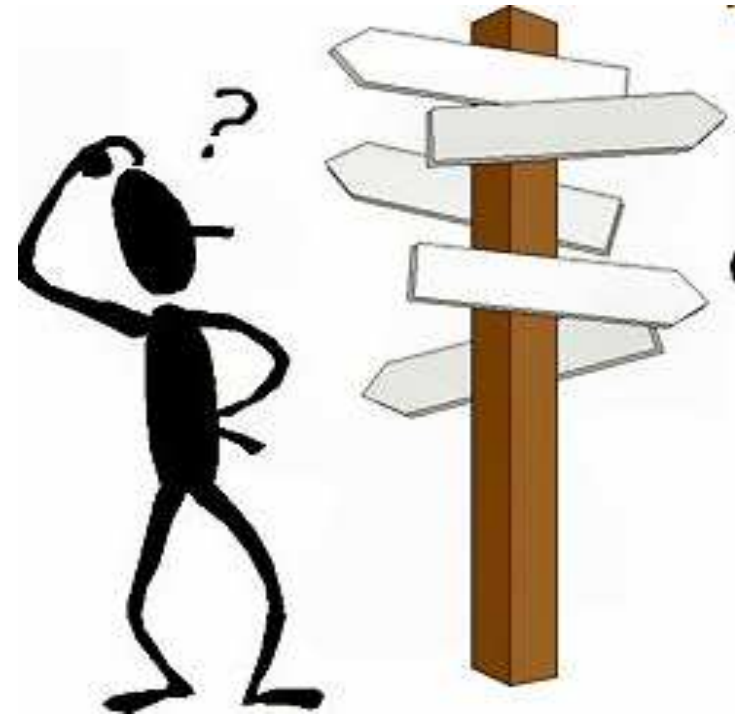
Boland's 5 Fantasies – erroneous and self-deluding

1. stolid and disembodied
2. leading to their being seen in a narrowly defined rationalist manner such that they are readily amenable to hierarchical, command-and-control management
3. precluding issues of power and difference
4. largely ignoring their creative and interpretive natures
5. where *more* is assumed to mean *better*, often with the eventual aim of perfection

Boland's 5 Fantasies – productively imaginative

1. stolid and disembodied
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3. precluding issues of power and difference
4. largely ignoring their creative and interpretive natures
5. where *more* is assumed to mean *better*, often with the eventual aim of perfection

The Alternatives



Thinking Informatically

- open up the possibility for thinking about the world in different ways
- ‘the difference that makes a difference’



Design Science – a new contested concept?

- Managerial and engineering
- Creating its own reality
- Exemplar
- Radical confusion