A Business Model Architecture: Observation Problems and Solutions in Modelling Businesses and their Networks

- This study uses the Hierarchy Theory concepts of criteria, grain and extent, together with the concept of mutual value exchange, to construct an architectural model of the relationship between any two members of a network

- These dyadic architectures can be assembled into a business model architecture that can be used to analyse the 'health' of the network, to support management or automation and to predict sustainability

Duncan R Shaw, Nottingham University Business School, Nottingham, UK.
duncan.shaw@nottingham.ac.uk

Overview

- **Introduction: Models of businesses: powerful tool but under theorised**
- **Research question**
- **The concept of value**
- **The concept of value: value ‘flow’ system**
- **Two architectures for decomposing along loosely coupled surfaces**
- **Model for analysing a value flow dyad**
- **Case study analysis**
- **Discussion**
- **Conclusion**
- **Further research**

Models of businesses: powerful tool but under theorised

- **Business process** models can be used to: facilitate human understanding and communication; to support process improvement; to support process management; to automate process guidance; and to automate execution support (Curtis et al, 1992)

- Another model of a business is a **business model**

- A recent study by Ostwalder et al reported a surge in occurrences of the term ‘business model’ in the academic journals of the Business Source Premier database (2005)

- Business models describe **what** value is generated and offered whereas business process models describe **how** this is done (Gordijn et al, 2000a)

Models of businesses: powerful tool but under theorised

But

- Business model literature mostly lacks a theoretical basis (Porter, 2001; Hedman and Kalling, 2003)

- Many different definitions (Hedman and Kalling, 2003; Pateli and Giaglis, 2004; Osterwalder et al, 2005)

- Call for structuring and codification of the area and suggest a framework for analysing business models (Pateli and Giaglis, 2004) - taxonomy

- Literature focused on firm-level analysis
- managers increasingly concerned with additional network levels - supply chain management, B2B network orchestration, globalisation (Shaw 2007b)

- Most sophisticated theoretical model in literature is Hedman and Kalling's (2003)

  - assembled a set of theoretical constructs from different disciplines
  - used them as a basis for a component model of business models.
  - each component is theoretically supported

  - **component choice not theoretically justified**
  - **inter-relations are purely superficial links - not theoretically unified**

Research question

What is an underling architecture for business models?

- to theoretical justify elements
- to theoretically unify all relations

The concept of value

- Value is commonly used to mean **economic value** and it is a core business modelling construct (Gordijin et al, 2000a; Gordijin et al, 2000b; Gordijin and Akkermans, 2001, Ostenwalder et al, 2005)

- Economic value is how much a service is worth to someone else relative to other options (OED, 2008) - 'value is defined by the observer' ➔ the concept of valuer perspective

- Different actors = different valuations because they have different uses for the same service, i.e. different service-needs (Shaw, 2007b)

- **Service-needs** are requirements generated by a downstream process for the output of an upstream process

- **The value of a supplier's service is produced by a customer's processes (by a customer's process needs) and not by a supplier's processes.**

- Because value depends upon **perspective**

The concept of value: value ‘flow’ system

Value flow system:

- system of interconnected services and service-needs (Parolini, 1999; Shaw, 2007b)
- model of a business based upon the concept of value exchange
- type of business model base upon a theory of valuation

- A model of business models that describes a value flow system has the power to explain **why particular customers** chose **particular suppliers** and **particular services**

- scalable from the sub-firm, to the firm and then the network level because its axiomatic concept is the service versus service-need fit which is empirically measurable and theoretically describable on **all levels**

But value flow systems are **complex** & modellers (observers) are **boundedly rational**

- need to decompose the system along natural architectural line or surfaces
- Hierarchy Theory: an approach for modelling complex systems (Wilby, 1994; Ahl and Allen, 1996; Allen and Starr, 1982; Salthe, 1985)

Two architectures for decomposing along loosely coupled surfaces

Scalar hierarchy ('levels')	Specification hierarchy ('process stages')
Larger scale entities are *made up* of smaller scale processes. Level separation based upon degree of *aggregation*	Sequence of development from general to specific, a *process* of refinement. Stage separation is based upon degree of *specification*
Parts are nested within *emergent wholes*. Can be just organisationally nested, e.g. soldiers nested within a general's command	Nested stages represent *emergent orders* of greater or lesser specification
Higher level variables appear as constants to lower levels. They constrain lower levels.	Higher levels are more *defined* than lower levels.
Synchronic – scalar systems simultaneously exist on all their levels in different spatial and frequency locations	Diachronic – specification systems exist over time
Three levelled. Level 0 constrained by level 1, driven by level -1. Mostly *non-transitive*. The boundaries between levels block inter-level signals. Signals *attenuate* with distance between levels. Signals are two-way.	Two levelled. Level 1 specified from level 0. Inter-level relations are *one-way* and *epigenetic* "one stage is required in order to get to the next". Inter-level transmission is fundamental

- contrasting scalar and specification hierarchies (based upon Salthe, 1991)
- commonly specification phenomena = lower level scalar cyclic phenomena

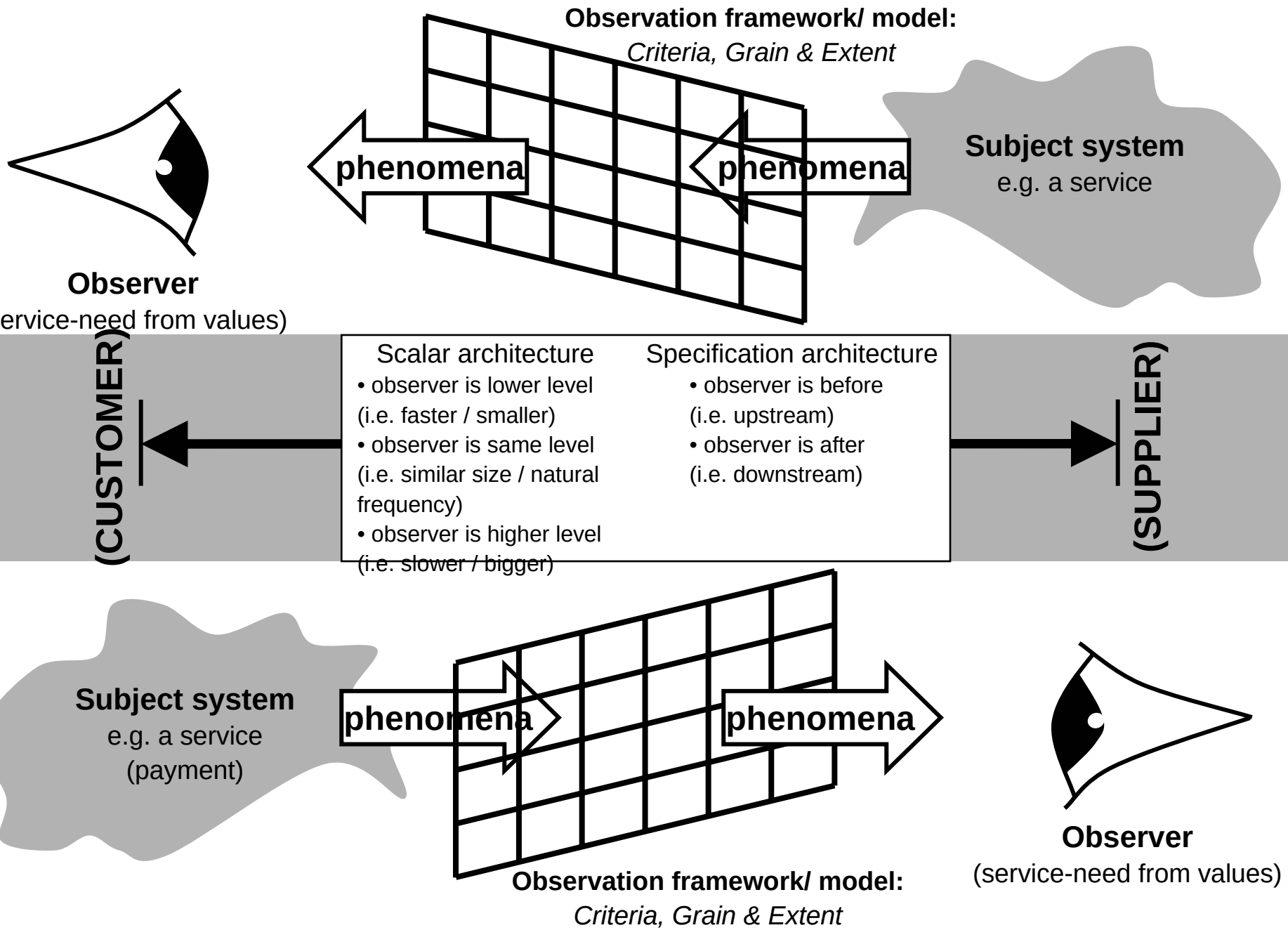
The concept of value plus the 2 hierarchies

- Different values ➔ difference criteria
- Bounded rationality ➔ minimum granularity & maximum scope
- Scalar emergence & Specification emergence

All lead the observer to different choices of **criteria**, **granularity** & **scope**

In a value flow system all stakeholders are observers

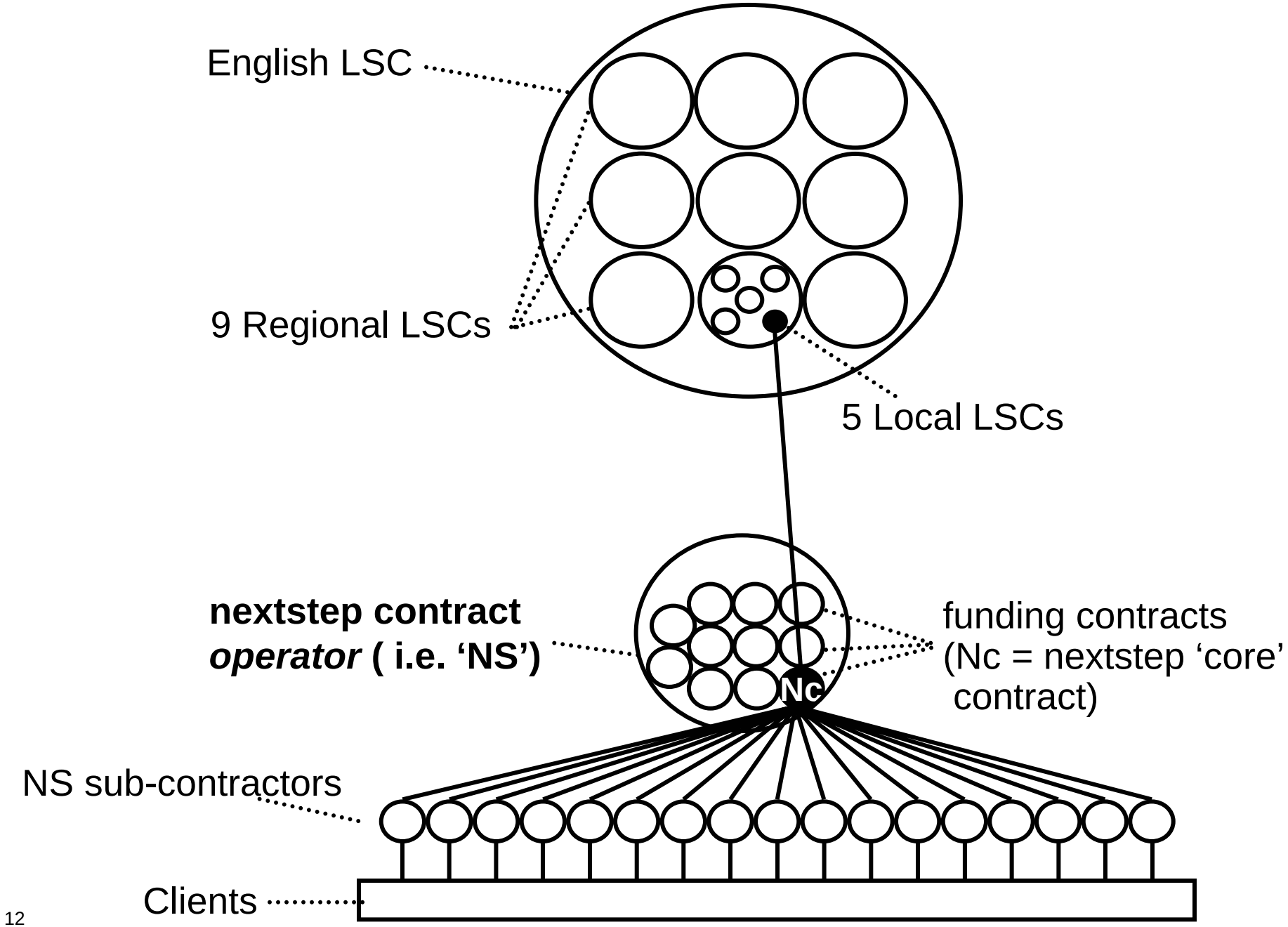
Analysis of a value flow dyad



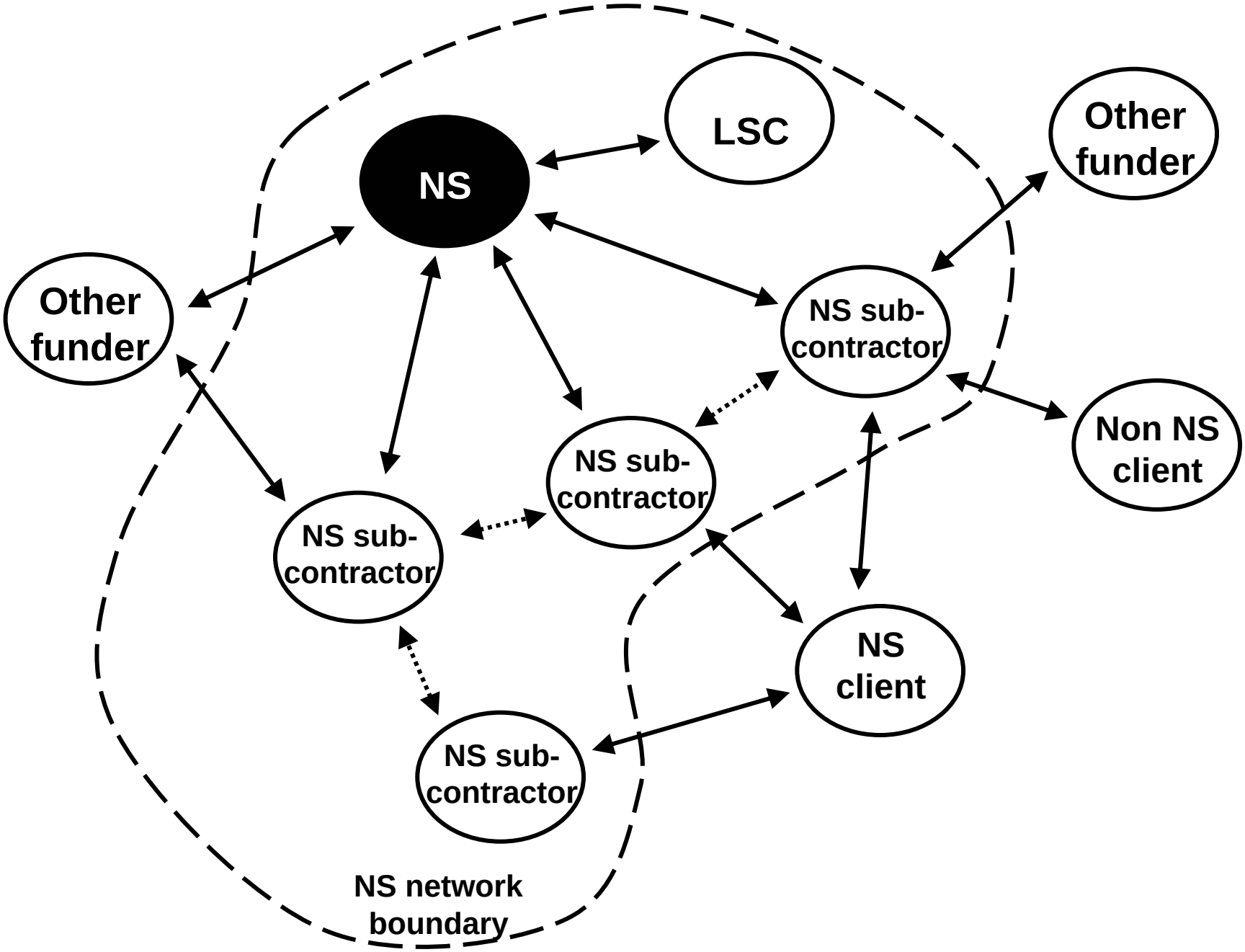
Research method

- Multi-actor as well & multi-level study ➔ interpretive stance
- Initial questions of ‘how’ and ‘why’ rather than of ‘how many’ ➔ qualitative
- Contemporary phenomena, no control, many different business relationships ➔ a case study approach (Yin’s, 2003)
- Dynamic phenomena ➔ different data collection methods & sources (Eisenhardt, 1989)
- Short informal conversations to semi-structured meetings and interviews with the organisations’ key managers & staff
- Triangulation to converge evidence, analysis and synthesis upon the same process and network structure phenomena
- Relationship over 18 months to reduce validity reactivity & increase trust & disclosure
- Data sources: meeting notes, telephone conversations, archival data, reports, website content
- Preliminary case report findings and these results were validated by a senior manager

Case study: the ‘nextstep’ careers guidance network



Focal network



Analysis: contrasting perspectives on grain, extent and criteria for each dyadic relationship in the nextstep network

	LSC (nextstep funder role)	Nextstep (NS)	Sub-contractor	Client
LSC (nextstep funder role)	(from perspective of row heading member)	*Grain*: LSC have local contract managers that connect the LSC to each nextstep. *Extent*: the LSC manages all the nexsteps. *Criteria*: LSC is interested in an organization that can manage and develop a network of sub-contractors on its behalf.	*Grain*: The presentation did not need to differentiate between sub-contractors. *Extent*: LSC's presentation reached all the sub-contractors. *Criteria*: The presentation was meant to *introduce* the new funding project.	*Grain*: Client IAG and follow-up data is secured. *Extent*: All leaflets had addresses. As many clients are given IAG as is possible within the funding. *Criteria*: LSC is interested in a set of IAG sessions and their affect on a client population.
Nextstep (NS)	*Grain*: NS connects to local LSC contract managers. *Extent*: LSC holds client data for 1 year. *Criteria*: NS is interested in developing sub-contractors ability to guide clients through a whole job-finding process that may take years.		*Grain*: NS manages sub-contractors individually & together. *Extent*: NS manages all sub-contractors. *Criteria*: Different strengths of sub-contractors can be combined to meet a full portfolio of geographical, client-type and stage needs.	*Grain*: sub-contractors pass data from client meetings to NS. *Extent*: all client meetings generate data. *Criteria*: NS is interested in fulfilling a 'mosaic' of contracts to generally help clients in the area.
Sub-contractor	*Grain*: LSC's presentation did not differentiate between sub-contactors' expertise & data needs. *Extent*: Some sub-contractors did not need to be there. *Criteria*: sub-contractors have organisational missions that focus on themes such as race, location and specific sets of client needs but the LSC did not differentiate between them and invited irrelevant sub-contractors.	***Grain***: NS manages sub-contractors individually & together. *Extent*: NS manages all sub-contractors. *Criteria*: Sub-contractors get funding, developmental help and better contact with other sub-contactors.		*Grain*: Clients have individual IAG meetings. *Extent*: Number of clients seen limited by funding. *Criteria*: Sub-contractors offer specific services due to their founding objectives, capabilities and location(s).
From Client	*Grain*: leaflets produced by the LSC did not differentiate between different meeting locations that a client would use. *Extent*: The LSC funds just one IAG session but a client needs several of them to serially connect stages in their job-finding process. *Criteria*: A client uses IAG meetings to serially connect stages in their job-finding process.	*Grain*: A client's individual IAG meeting is funded. *Extent*: A client is seen (if there is funding left). *Criteria*: A client uses IAG meetings to serially connect stages in their job-finding process.	*Grain*: A client has an individual IAG meeting with a sub-contractor and some other form of support. *Extent*: client is seen if there is funding left. *Criteria*: A client chooses a specific sub-contractor due to their specific needs, location or ethnicity	

Discussion

Greatly contrasting **criteria** e.g.:

client: progress along a journey that ends with a new job

/other members: view the clients as one group but to differing levels of granularity.

Each member's perspective comes from its own developmental process and organisational goals

Perspectives also contrast in **grain:**

- some relationships there is a fit between grain e.g. local LSC presence fits each local NS or sub-contractors have individual IAG meetings with clients
- sometimes there is a contrast between the granularity of how one partner views the other, e.g. LSC may not differentiate between sub-contractors or clients

Similarities and contrasts also exist for the **extent** viewed from each partner:

- extent of funding problematic for a client who cannot be seen because the funding has been consumed.
- but a sub-contractor may perceive this funding extent as planned

Less differentiation of lower levels by higher levels:

In a progression from high level to low level, the LSC differentiates between clients the least, then NS sees more differences between clients, e.g. an IAG meeting may point to accessing another sub-contractor's services, and finally the sub-contractor actually meets them individually

Discussion

However, only the client can perceive its route to a new job as a process. The other members just experience greater or lesser abstractions of collections of stages in clients' processes.

Strongest contrast between the processual perspective used by clients consuming services and the structural perspective used by service producers:

- clients are concerned with their serial progress towards their new career and job
- sub-contractors view them as a population of IAG and training events

The sub-contractor's perspective of its own service-needs is **specificational** - comes from its own developmental process and goals - also applies to the other members.

Also members' perspectives of the services produced by other members are **specificational** for the same reason.

A member's perspective of the organisational arrangement of other members is **scalar** because they are perceived to exist upon higher and lower hierarchical levels.

Duality of perception: services and service-needs that the member **directly** experiences are specificational and **indirect** experiences are scalar

- 'direct' and 'indirect' are indications of relative differences in scale between different members

Conclusions

Customer and suppliers are both the observer and the subject of each other

Appropriate choices of grain and extent are needed when observer and subject are on different system levels

Scalar level perspective: higher level service producers should **differentiate** between the requirements of lower level service consumers & **include** all appropriate potential customers

- Also, lower level service producers should remove **irrelevant** details from submissions to higher level service consumers, e.g. sub-contractors to NS

Specification stage perspective: explains why service producers can never completely forecast all the uses of a service even when consumer is on a lower organisational level of their own firm

Appropriate choices of criteria are needed to fit each producer's service with consumer's specific service-need

A scalar model of the customer's place in the network can be used to organise which potential consumers to forecast a service-need for

The service-need concepts can then be used to forecast a service design using a specification model

The scalar model focuses mangers on specific potential consumers & the specification model then enables them to forecast specific needs

Conclusions

This is an architecture for modelling business models by modelling the value flow system of a network

The model:

- describes the sum of the service-needs & services in the network
- enables the check for fit at different levels and stages and according to different criteria

If the services and service-needs of the different members at all levels and stages of a subject network fit then the network has a healthy business model

If some particular service-needs are not met by current services then the model has highlighted changes that are required

If some particular services are not consumed by current service-needs then again the model has highlighted changes that are required

This model enables the organisational design of services that should satisfy service-needs, via business processes, to be checked at different scales and frequencies.

The ability to check such systems of mutual satisfaction is based upon the modelling of the values of the people involved at different scales and frequencies

This theoretical model is theoretically completed and unified by hierarchy theory and the concept of value flow explain why and how any configuration functions

Further research

- One limitation of this study is that clients do not pay for these services and this points to further research on networks whose services consumers also fund the service

- Another limitation is that it is a single case and single sector study

Acknowledgements

- I would like to thank the members managers and staff of one of the 45 nexstep networks in England

Questions

Extra: H&K's model of a business model