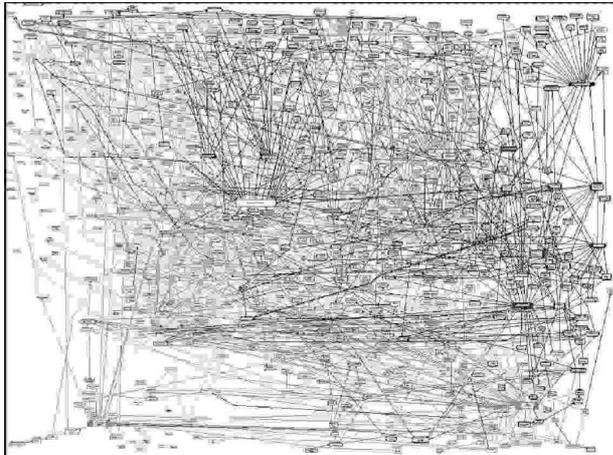# USING SYSTEMS CONCEPTS TO NAVIGATE COMPLEXITY

THE SYSTEMS FIELD IS BIG ……

So is there anything binding it together ? Are there any principles that underpin all these ideas? What are the core systems concepts? What are you doing if you are conducting a inquiry based on systems principles.

A HISTORY OF SYSTEMS IDEAS IN ONE AND A HALF PARAGRAPHS

Three core concepts have emerged in the historical development of the systems field over the past fifty years. During the 60s and 70s the focus was very much on *inter-relationships* and methods were developed that explored these in depth (eg system dynamics, viable systems model). By the mid 70s it was clear that the inter-relationships were not neutral concepts. The relative importance of particular inter-relationships depended on the different purposes you could ascribe to any single situation. Think about this workshop for instance. How many different reasons are we here? How does that affect how we behave in this workshop? How does that affect what comes out of this workshop? Thus methods were developed that helped explore the implications of different *perspectives* that could be taken of the same situation (eg soft systems methodology).   During the mid 80s it became clear that these perspectives were not neutral either. Perspectives determined what was seen to be relevant and what was not, determined what was "in" the system and what lay outside it. Whoever defined the dominant perspective controlled the system's *boundary*. Who actually decided what this workshop was about and who were the "experts" to lead it. Who (people) or what (ideas) gain and lose from that decision? Thus the importance of studying boundaries and critiquing boundary decisions (and who made them) became the third key element of a systems approach.

The important thing to remember is that *all* systems methods, no matter when they were developed, are used with these three basic system concepts in mind.

INTER-RELATIONSHIPS

The study of inter-relationships is key to any systems inquiry. In particular, systems approaches look at the following aspects of inter-relationships :

- dynamic aspects (i.e. where the way the inter-relationships affect behaviour of a situation over a period of time)
- non-linear aspects (i.e. where the scale of "effect" is apparently unrelated to the scale of the "cause"; often but not always caused by "feedback")
- the sensitivity of inter-relationships to context (i.e. where the same intervention in different areas has different results making it unreliable to translate "best" practice from one area to another)
- where the inter-relationships are massively entangled (i.e. distinguishing the behaviour of "simple", "complicated" "complex" inter-relationships as David Snowden does in his Cynafin approach)

Navigating complexity - inter-relationships?

A systemic approach to inter-relationships will help you navigate through complexity by posing the following general questions :

- What is the nature of the inter-relationships within the situation?
- What is the structure of these inter-relationships?
- What are the processes between them?
- What are the patterns that emerge from those processes, what are the results?
- Why does this matter ? To whom? In what context?

Specific systems methods will pose more detailed questions :

System dynamics
- How does "delay" impact on the performance of the situation?

- How do patterns of feedback affect the behaviour of a situation?
- What controls the way in which resources flow through the situation? How does this affect performance?

Viable systems modeling
- What are the operational, co-ordination, management, strategy and governance needs of the situation in order to deliver on its purpose?
- What information is needed at each level of the situation's to achieve the purpose?
- How does information flow through the situation?
- Is the right information available at the most appropriate level of a situation's hierarchy of tasks?

Cynefin
- Does the situation display simple, complicated, complex or chaotic inter-relationships? From whose perspective? With what consequences?
- What patterns have developed within the situation? What have been the likely generators of those patterns?

Complexity Science
- What deep rules may be operating that influence these patterns?
- What levels of turbulence or certainty are there in the situation?
- How do these degrees of certainty and agreement about them interact? With what consequence?

Question
Which of these questions are especially important in helping the development field navigate complexity?

PERSPECTIVES

Just exploring interconnections does not make an inquiry "systemic." A systemic approach is more than a study of the way that boxes and arrows fit together, or networks operate. When people observe the result of inter-relationships they will "see" and interpret those inter-relationships in different ways. People participate in a particular project for many different reasons. Indeed one person will often participate in a project or program for many different reasons. These interpretations, these motivations and the behaviours that flow from them may have little or nothing to do with the formal goals or objectives of a project or program. Yet they will affect how the program performs and what the results are.

Thus we cannot comprehend the behaviour of a program without identifying and understanding a wider range of perspectives. Perspectives help to explain and predict unanticipated behaviours since they give us a window into motivations. It also acknowledges the reality that it is people who make programs work not some imagined "logic" like LogFrame.

Navigating complexity- Perspectives

A systemic approach to perspectives will help you navigate through complexity by posing the following general questions :

- What are the different ways in which this situation can be understood?

- How are these different understandings going to affect the way in which people judge the success of this endeavour?
- How will it affect their behaviour - especially when things go wrong from their perspective? With what result and significance ?

Specific systems methods will pose more detailed questions :

Soft systems methodology
- What are the different ways in which the situation can be viewed?
- How does each of these ways express and give meaning to what some people within the situation value?
- How are these perspectives reflected in people's motivations and behaviours within the situation?
- How does each of these ways affect the performance of the situation?

Activity Systems (CHAT)

What tools, rules and roles were brought to bear on each perspective that motivated participants? With what consequence on whom in what context/histories/environment?

Question

Which of these questions are especially important in helping the development field navigate complexity?

BOUNDARIES

Just looking at the different ways we can perceive inter-relationships doesn't make an inquiry systemic. Many people think that systemic approaches are "holistic" in the sense that they include everything. That's a misunderstanding. No endeavour can include everything. Every endeavour makes a choice between what it includes and what it excludes, what is deemed relevant and what is deemed not relevant. What systems approaches do is identify the most important boundaries and assess the consequences of those boundary choices.

A boundary differentiates between what is "in" and what is "out", what is deemed "relevant" and "irrelevant", what is important and what is unimportant, what is "worthwhile" and what is not, who "benefits" and who is "disadvantaged". There is often a lot of energy around boundaries – they are the sites where values get played out and disagreements are highlighted. A lot of power issues are bound up in boundaries – whose perspective dominates decides the boundaries. Context matters too. Boundaries do not just define difference, but are the sites where differences make a difference. Whether a car is silver or yellow doesn't matter most of the time. Car colour is not a boundary. However, if I am looking for a cab in Manhattan then whether the oncoming car is silver or yellow matters a lot. Suddenly car colour is a boundary.

Systems approaches take a deliberate, deliberated and often debated approach to boundary identification and boundary choice.

Navigating complexity - Boundaries

A systemic approach to boundaries will help you navigate through complexity by posing the following general questions :

- What differences make a difference to the way in which a situation is understood or behaves?

- Who or what is being excluded, marginalised or made a victim by the way in which this situation is being viewed or is operating?
- What does this say about what is "valued", by whom, in this situation?
- What are the consequences of boundary setting decisions.? How can negative effects of such decisions be mitigated?

Specific systems methods will pose more detailed questions :

Critical Systems

Critical systems approaches address four kinds of boundary issues.
- **Purpose/Motivation**. What determines "success"? What are the implications of how we choose to measure the "success" of a program? Did we really measure the success or just something that was easily measured? If we just achieved the measures, then would it be deemed successful? To whom?
- **Control**. Who controls the program with what authority? Who was trusted to take the key decisions in the program and what were the implications of that choice? To what extent were they in control of the program or a pawn in its environment?
- **Expertise**. What expertise is considered important to achieve the purpose? Why were the "experts" considered to have the necessary expertise - and what was the consequence of that decision?
- **Legitimacy**. How was it decided that this was the right thing to do? Who or what was marginalised by that decision, or by the way the program is conceived? What are the practical and ethical implications of this - and what does that say about the values implicit in the program? How might the marginalised be made less marginal, and thus increase the legitimacy of the project?

Activity Systems
- How innovatively did participants handle contradictions between (and within) rules, roles, tools purposes and contexts/histories/environments?
- With what consequence for whom?

Complexity Science
- What levels of agreement or differences are there in the situation? From whose perspective ? What are the implications of that?

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Systems as physical entities and human constructs

One of the often unacknowledged benefits of systems approaches is that they can operate in two modes. One is essentially ontological, and the other is essentially epistemological.

The ontological mode says, "hey there is a situation out there that is behaving in a certain way. We can use systems methods to structure that situation and analyse its behaviour." In other words there are "systems" out there whose behaviours and properties conform to behavioural patterns that can be explained using systems concepts.

The epistemological mode says, "hey there is a situation out there that is behaving in a certain way. Human beings try to comprehend this situation by using intellectual constructs, let's call them mental models. We can help people make better sense if they use systems methods to construct those mental models." In other words, there are "situations" out there whose behaviours and properties we would understand better if we looked at them from a systemic viewpoint.

I'd like to stress that this is not a positivist vs. constructivist distinction. In many ways the systems world took the "realist" route some three decades before anyone else. Yes there is an objective reality out there that we can categorise and study, but we can gain further insights if we also consider that different people will observe the reality and "see" different things. And of course that "seeing" will affect their behaviour and thus the observable behaviour of the system. This is one of the real reasons I like working within a systems frame because it closes the link between the observed (what people do), the "understood" (what people comprehend) and motivation (what people "desire").