Systems and the Information Society Network
Spring Seminar Series
Light Blue Topic

Society as an Information and Communication Technology

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"We explore the hypothesis that the social system (society) is not composed of human beings, but by their interactions and communications (Luhmann, 1984). Social order can then be considered as the complex dynamics of the expectations exchanges among us." (SISN syntegration outcome resolve - Light Blue group, 2001)

Notes on rapportage:

This report attempts to capture the ideas presented and discussed during the *Light Blue* group's Spring Seminar presented by Dr. Loet Leydesdorff (15Feb2002). They are not intended as a chronological summary of the presentation, but rather aim to (re)present key themes identified by the rapporteur and felt to be of transferable general interest to the whole *Systems and Information Society Network*.

This reporting process may in fact be seen as another example of the communication process as suggested by Luhmann; consisting of information, utterance and understanding. My notes here reflect my utterance of a personal understanding of the meanings intended within our February seminar. I hope that Loet and the other attendees will find some resonance with their own interpretations[1], and that where this is not the case the difference itself may create some useful further discussion.

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[1] I am grateful to Loet for checking the first draft of this document and clarifying a few points made.

Difference between action and communication

If we follow the ideas of Luhmann to explore possible new models for thinking about society then we need to be prepared to separate our consideration of the human actors from the communications between them. In particular, we need to clarify the difference between action and communication. When something happens between human beings, these events can be attributed as actions to the actors, but as communications *between* actors (e.g. communicating the expectation of future activity or the reporting of past actions). Luhmann proposed to consider anything that happens between human beings as communication[2].

"Communication is action, but with a different system of reference. Such a distinction allows us to focus our attention on the communications themselves. Communications can endogenously be made more reflexive" (Leydesdorff).

Footprints of Communication

When we focus on the communications between human agents rather than their physical activities, we enter into an analysis of that which is almost always transient: "social order". Leydesdorff argues that communications are visible and also measurable in the footprints that they leave. For example the so-called 'Scientific Revolution' could in fact be successfully viewed as a communication revolution. Analysis of the footprints left behind illustrate this (e.g. observing the number of interacting communications over the time period as measured by the number of scientific journals in existence). This analysis shows an exponential 'explosion' of communication sustained over several centuries.

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[2] {Ed: such an analysis also invites us to consider to what extent this perspective of 'action' limits our ability to capture and replicate the observable characteristics of human activity as we generally understand the term. LL: Inherently, this involves a reflection that reduces the uncertainty that prevails.}

The results (footprints) of communication can only be made visible on the basis of the specification of hypotheses concerning communications that can be expected.   Leydesdorff emphasises that we have no direct access to communications as physical things.

Functional differentiation

The footprint of a communication revolution is often characterised by the exponential growth in some measurable observation of communication.   As illustrations of this Leydesdorff suggested the scientific revolution and the historical philosophical transitions from the 17th to the 20th century.

In the case of the Scientific revolution, 'scientific' communications (as measured through journal production) grew exponentially as dialogue became freed from previous constraints. It also seems that communications picked up their own momentum (in hindsight we might say as a result of increasing freedom from Religious control).

Leydesdorff argued that it is fruitful to consider the philosophical & social developments from pre-Enlightenment to modernity through a consideration of communications.

A model is presented of knowledge as the parameter that upsets equilibrium and constantly generates innovation. Tensions within a domain may lead to functional differentiation into different domains. Each (sub)domain having its own codes and *dimension* of communication. In other words we have a model of a dynamic system with certain distinct 'languages' operating as communications in different domains.

Leydesdorff presented this as a strongly anti-positivist attitude for one is not working toward some assumed state, but rather shaping *what is hypothesised* as a "domain for the observations".

Structural / institutional differentiation

The dynamic creating of functional differentiation in turn was presented as the trigger for institutional differentiation. For example, the functional differentiation observed in the relations between Science and other domains (e.g., Capitalism) between 1500 and 1700 may be connected to the institutional differentiation observed during the mid 19th Century (e.g. with the creation of Health Services etc). Further differentiation may then be traced through the creation of regulatory systems of control and management from 1860 onwards.

Such a (re)reading of history could also view modern Nation States as those which have found political and economic solutions to integrate their own particular functions and institutions.

Co-evolution of Domains & policy implications

Critical to this thesis is the appreciation that any such solution will only be temporary. Times change. People experiment, (particularly using knowledge, that is, through trying to make the system more knowledge-based). Functionality and institutions co-evolve in attempts to produce higher quality interactions.

Leydesdorff proposed that inadequacies cause tensions and drive changes. Two or more communication domains may co-evolve; each mutually shaping each other to the extent that they eventually may get locked-in to a stable form of interaction. Historically this synthesis may have created (long)

periods of stability, e.g. the existence of Nation States (during the 19th and 20th centuries).

Every now and again institutions get 'stuck'. Inadequacies are sufficient to create new institutional forms to solve the *puzzle* of the interactions between the various domains. After W.W. II, for example, a European layer was increasingly created in order to mitigate tensions among European nations. Leydesdorff reflected that the new layer is reflexive with respect to its evolutionary character (e.g., the notion of "subsidiarity").

What implication does this have for policy? Leydesdorff suggested that we should not wish institutional differentiation to be too heavily embodied because institutions tend to stabilize against innovation. He suggests that policy processes should be designed in an attempt to avoid undue levels of organisational lock-in. He suggests that one shouldn't start with the phenomena, but rather start with *what* is communicated when a system communicates….i.e. why does it communicate? Then, one can investigate (for example, by measuring the flows) whether the communication might be shaped differently.

Translation and intersection between domains

As well as developing their own communication capacity (codes) within a functional domain there is also an area of co-evolution as the various domains interact.

It would be possible to consider this using a Venn-type diagram representation. Whilst most communication is internal to each Domain there is also usually an area of overlap or intersection. Thus the differentiation in

communications also operate upon each other and in turn may also create a source of some co-evolution , including further differentiation[3].

At the intersections there can be a shared communication between institutions. This in turn requires a need for translation (from the communication codes used by one grouping into those used by another). This activity may itself create possible new codes through additional differentiation.

We are left with a model of evolving solutions to this puzzle over time, producing a 3-D Venn-diagram.

This understanding suggests that there is no core, higher system necessarily at work. "We no longer believe we have an unambiguous answer", "The hypercycle at the intersection of the institutional system remains very fragile….when this gets stuck the underlying systems also get stuck e.g. economy, policy-making, legal constitution etc"[4].

Extensions to Luhmann's work

Luhmann's description seems quite rigid. Leydesdorff has attempted to improve its flexibility by viewing the differentiated model more as an issue of puzzles and puzzle-solving. ("We no longer believe we have an unambiguous answer").

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[3] {Ed: or indeed simplification, through the collapse or assimilation of domains and communication codes used by them. For example, ideas or even paradigms sometimes become obsolete, disciplines and institutions loose their distinctive form and codes e.g. consider Alchemy or the Spanish Inquisition.}.

[4] Unless otherwise stated all quotes given in the text are approximations of verbal remarks made by L.Leysdesdorff in the Seminar. Any use beyond this document should be confirmed directly with LL.

This approach leads to local solutions, legitimised locally. It supports a move away from imperative solutions and towards new *heterarchical* institutional arrangements (i.e. those non-hierarchical arrangements that appear from the 'bottom-up').

Social Abstraction

Another key theme that Leydesdorff presented was that of abstraction and analysis. He argued that in a sense Luhmann's work has contributed to the structural differentiation of society into two domains. 'Luhmann has taken the soul out of society and presented something that can be studied by mathematical interpretation. The 'soul' has been left to the field of psychology'.

Leydesdorff likened this to the activity of Galilei in separating *nature* into concepts such as gravity that can be studied by examining the measurable traces they leave behind.

This activity can be considered as another example of functional differentiation. The two fields (Mathematics and Psychology) study different aspects of society and develop different languages or 'codes' to talk about them.

By e.g. measuring footprints left by communications we can study abstracted properties of 'society'. Increasingly these studies may create their own languages but there is also likely to be an intersection with other approaches and the languages that they use[5].

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[5] {Ed: other fields also operate studies of society based on similar abstractions, e.g. Social/Human Geography. Exploring this 'intersection' may prove valuable}.

Expectations and 'the social order'

'A knowledge-based system does not 'solve' a problem, it sells a hypothesis as a solution'.

Throughout this Seminar the focus has been on communication and expectations. In the American Pragmatist tradition perhaps this can best be described as '*Social Order is what we are expecting it to be*'[6]

'There are no hard facts in society. The communication system is not hard-wired and therefore is able to learn at a very high rate. There is no real social order- just a fragile expectation. We have turned this post-modern corner'.

Handling Complexity

As individuals we may have relatively simple solutions to social issues, as we each have individual viewpoints. *However we need some forms able to handle complexity in a more meaningful way.* In particular we need to be able to *think in a distributed mode*.

One way that was suggested in the Seminar is to observe changing stories about semantics. Perhaps through doing this we can measure/quantify these changing semantics. As an example Loet presented a study of European currencies over a number of years. From year to year one could assess whether or not it self-organises.

This involved looking at the historical (intra-National) pattern and the cross-interactions ('*incursion*'). The research question is posed: 'can it maintain itself as an aggregate in the present?'.

Questions were raised from the seminar participants about the closed nature of the model. Historical analysis is not always sufficient to anticipate future behaviour. At present this model is closed to outside (exogenous) shocks. However some unexpected changes could be simulated to test the models 'future' robustness.

'Social Exclusion'

The group discussed social exclusion and how this communication perspective might help illuminate the subject. We discussed the difference between total and partial exclusion. It was felt that often the implicit objective of communications about 'social exclusion' is to eradicate all exclusion. This was felt to be a flawed concept. The group felt a better definition would be to ensure the '*ability* to be included'. Society should not seek to include people in all domains, nor seek to have universally understood languages across all domains. Instead the focus might more fruitfully be to ensure access where desired, translation at the intersections where desirable and to ensure no individual is unconnected from all domains.

An example was given of access by community groups to funding grants. There is a clear language difference here between the funding providers and receivers, which seems to imply the need for the services of some kind of translator. The current approach is to train the recipients to understand the language of the providers (funding jargon, grant applications, formation of constitutions, bank-accounts etc). Another way would be to create intersections where appropriate individuals co-evolve a shared language/understanding of each other. This would not need to be all

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members of either group but should be sufficient to allow each group to understand the other through the translations offered by the interpreteur(s).

Discussion then followed about how to create a (co)domain. This discussion focussed upon ideas of self-construction. The suggestions discussed might be characterised by the following (simplified) heuristic process: *Talk about it. Start to build it. Build a network and become part of something!*

Interest was also raised about the evolutionary nature of this process and what it *feels* like to participate in a process that has no overarching single goal. The metaphor of surfing was suggested by the participants. The activity progresses catching wave after wave where Power/politics are driving the surf forward. At each stage the skilled surfer moves forward in an unrehearsed, non-predictable manner.

Outcomes and measures of communication

The group discussed how and why many European-funded projects no longer require scientific outcomes. In their place the focus seems to have shifted to ensuring a transnational element. Interest has also increased in the production of 'grey publications' ('deliverables'). These documents and reports can then be used to justify next steps.

The agenda appears to be to produce communications, ideally transnational communications. The group discussed the observation that the specific 'scientific' output of projects is frequently felt to be quite poor ('and should be hidden!'). However what is valuable is the communication obtained. This point was debated.

This may be a good note to close on. It may well be that the human communication achieved is the most important outcome of our Seminar in February (and not robust scientific reporting). However I hope that I have captured some of the discussions held and that this itself may also contribute to further communications on the subject.

RJM Herron

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