

Dialogue Within Inter-Organisational Routines: Time & Process In Network Research

Special Track: Time and Process in Business Network Research - Competitive Paper

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Abstract

This paper examines the problems of time and process facing network researchers. We argue that the problem of time in network research can be conceptualised as a problem relating to multi-levelled analyses. It is through a multi-levelled analysis that we find different temporal structures and thus different ways of temporal organising.

First, we address both the problem of time and boundary in network analysis and propose introducing organisational routines as a way to appreciate how actors perceive temporal structures. We argue that the problem of time is more accurately described in the context of a process based approach to network research. Second, in the context of inter-organisational routines we consider how actors perceive time and how temporal structuring is negotiated through dialogues. A dialogical analysis, looking at real others, imaginal others and artifacts, can reveal different temporal structures in routines. Case data from a University-Industry inter-organisational context is discussed to illustrate these negotiated temporal structures. Third, we conclude that multiple levels of analysis in network research provide a more comprehensive picture of the network from a process perspective. This paper argues that while temporal structures or the problem of time is a secondary concern, multi-levelled analyses is more pressing for network researchers.

Keywords: Temporal Structuring, Inter-Organisational Routines, Dialogical Analysis, Multi-Levelled Analyses

INTRODUCTION

1.1 The Structure of this Paper

This paper outlines the questions of time and process for contemporary network researchers. The first part highlights the problems facing researchers undertaking case studies in business networks. By focusing on the problems of time and network boundaries (Halinen and Törnroos 2005) we provide a framework for utilising organisational routines to understand processes in networks. The paper continues with a discussion of the concepts of organisational routines (Feldman 2000) and temporal structuring (Orlikowski and Yates 2002). We draw upon data drawn from a University-Industry case study to illustrate how, within self-identified routines that reflect the network boundary, actors negotiated, through dialogues, different temporal structures. From this we consider different forms of ‘temporal organising’ representing the main empirical problem.

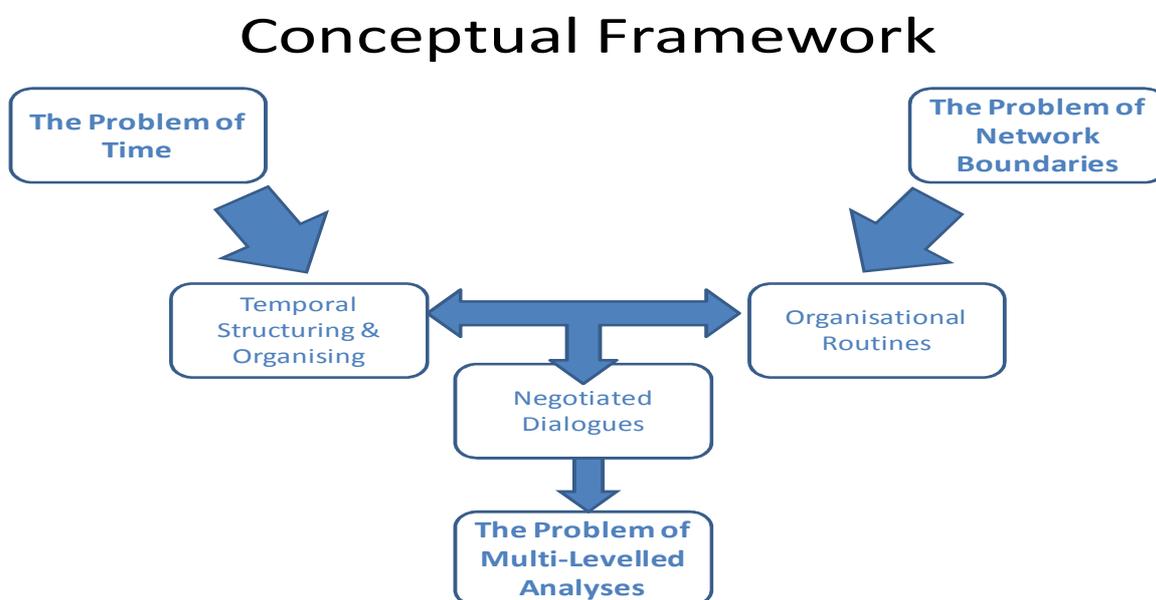


Figure 1: Conceptual Framework

The final part of this paper develops the discussion about temporal and process questions. We argue that while temporal structures are important and can reveal insights into network phenomenon, they are a secondary concern. Of increased importance for network researchers is achieving a holistic multi-levelled analysis, revealing a more complete picture of routines within and across a network. A conceptual structure connecting these constructs is provided in Figure 1 above.

1.2 Temporal & Process Studies: The University-Industry Network

Questions have been raised about the agenda of business schools (Huff 2000; Huff and Huff 2001) and how they link to industry, narrowing the theory-practice gap (Gibbons et al. 1994; Nowotny et al. 2001). Research shows that close relationships between these two types of organisations facilitates innovation (2002; Agrawal 2001; Agrawal and Henderson 2002; Granovetter 1983). This university-industry context is also a fruitful environment for assessing inter-organisational relationships for knowledge production (Gibbons et al. 1994; Nowotny et al. 2001), for understanding the economic effects of this interaction (Agrawal 2002; 2001) and for considering a triadic inter-organisational process environment if we include student actors. This is fertile ground for an empirical study of inter-organisational processes and for a study of the conceptual and methodological problems raised by time and boundaries issues in network research. Case data from a broader study on university-industry knowledge production is drawn on here to illustrate issues relating to time and process.

1.3 Contextualising Temporal and Process Issues for Network Researchers.

Industrial Marketing and Purchasing (IMP) researchers have always taken a healthy interest in conceptual and methodological development. Key concepts, such as interaction (Håkansson and Ford, 2002; Ford and Håkansson, 2006), business context (Håkansson and

Snehota, 1989) and network horizon (Holmen and Pedersen, 2003) all imply a dynamic setting in which units of analysis exhibit a durable quality, but with that durability being tested continually by variations in the stability in the composition of those units of analysis.

Håkansson and Snehota (1995) address, conceptually, how researchers can incorporate the Actor Resource Activity (ARA) model among different units of analysis by picturing it in terms of within an organization, in dyads and triads of organizations, in nets of small numbers of organizations, and in networks (See Table 1 below). To date, a dominant trend among IMP researchers is to work at the individual level (Andersson and Mattsson 2010) and units of analysis, identifying phenomena specific to those 'other' levels as matters of context, and perhaps matters beyond a context's horizon.

Beyond the IMP tradition, this paper argues that levels of analysis imply the presence of organisational routines contributing to organising, regularising and stabilising connections and relationships. Furthermore this paper argues that levels of analysis are characterised by different temporal structures occurring at and between levels. Temporal structures will inform and be informed by network researchers seeking out organisational, or in this case inter-organisational routines, at multiple levels of analysis.

In the following section this paper will concentrate on the questions of boundary and time, developing them using the methodological and theoretical conceptualisations of organisational routines and temporal structuring. Specifically, we seek to develop Halinen and Törnroos's (2005) analysis, in which they identify as four methodological problems network boundaries, complexity, time and case comparisons. Indeed, we see these four problems as non-exclusive. We then present case study data of the interactions between a university and industry in a placement context including student actors. Here we outline the multiple data sources that are collected at multiple levels of analysis to get a holistic network perspective. Stages of data analysis within a theoretical framework are then proposed. The

remainder of the paper looks past these stages arguing that a dialogical analysis highlights negotiated temporal structures.

2. CHALLENGES FACING NETWORK RESEARCHERS

– INTRODUCING A RECONCEPTUALISATION

In this section, we update Halinen and Törnroos's (2005) argument, showing that their four problems are non-exclusive, with many of the spillovers implicating temporal structuring. We focus on two of the four challenges faced by researchers using the case method in network studies: the section on the problem of time introduces the concept of temporal structuring; the problem of network boundaries provides a theoretical foundation for using organisational routines as our basis of understanding processes in a network context within and across different levels of analysis.

2.1 The Problem of Time – Introducing Temporal Structuring.

According to Halinen and Törnroos (2005) the concept of time has been built into the industrial network approach having implications for methodology. They refer to two points developed by Easton (1995) that the unit of analysis is by its very nature dynamic and secondly that the industrial network approach has an explanatory power when explaining changes that are occurring in a particular network.

As a starting point we introduce the concept of temporal structuring. Orlikowski and Yates (2002) propose that the notion of temporal structuring is a 'way of understanding time as an enacted phenomenon within organisations'. They argue that a temporal structure is a shared practice bridging the subjective-objective dichotomous perspective of time. To illustrate this bridging Orlikowski and Yates (2002) and Czarniawska (2004) introduce kairotic concepts of time, as opposed to chronological ones. With kairotic, actors develop concepts internally

within organizations following such processes as meeting cycles and financial reporting cycles. In the University-Industry context this might represent the academic calendar including the annual placement process. Student actors might perceive the placement process chronologically as it is lived once. We expand on the notion of temporal structuring in two ways; that temporal structuring is a network phenomenon experience by actors across organisations in a business-to-business context, and secondly that we arrive at shared temporal structures through negotiated practice based dialogue. This negotiated temporal structure is arrived at through processual organising, or temporal organising.

In summary, where actors have different perceptions of time, network researchers should consider the concept of ‘temporal structuring’ at different levels of analysis. Most temporal research has been at the level of the individual as claimed by Andersson and Mattsson (2010). This paper aims to fill a gap toward considering holistic overview of a network phenomenon. This forms and the foundation to our discussion later in the paper that multi-levelled analyses is more appropriate in a network context.

2.2 Using Organisational Routines to address the Problem of Network Boundaries

In relation to boundary specification, or the ‘boundary problem’ in network studies, Marsden (1990) notes that ‘the researcher faces the problem of specifying boundaries on the set of units to be included in a network’. This is a parallel concern to that of the researcher defining the population to which research results are to be generalised. Marsden refers to how an ‘omission of pertinent elements or arbitrary delineation of boundaries can lead to misleading or artifactual results’. This supports a multi-levelled boundary specification strategy so as to arrive at a richer description of network phenomena. The implication is that researchers require a strategy in specifying a boundary prior to data collection. According to Halinen and Törnroos (2005) this represents the researcher limiting the network ‘a priori on a structural

basis'. Table 1 below illustrates clearly the potential for debate relating to potential boundaries that can reflect different temporal structures. This raises philosophical issues as the presence of a clear boundary, or indeed multiple boundaries, may not be obvious from the outset.

Rather than pursuing a predetermined boundary identification strategy as suggested by Marsden (1990) the subjective identification, or the 'perceptions of involved business actors' (Halinen and Törnroos 2005) should form the boundary. This conceptual debate has methodological implications that can be teased out using the organisational routines literature. Organisational Routines (Feldman 2000) discusses how actors subjectively identify routines through their lived experiences. This is not unlike the argument relating to the network horizon level of analysis when delimiting a case (Holmen & Pedersen 2003). The implication is that the debate moves to a more 'dynamic' context where multiple subjective boundaries are acknowledged; including physical, social and mental boundaries (Harrison and Huemer 2005) across and within levels of analysis. Organisational routines in an inter-organisational context can meet the conceptual and theoretical demands placed on it as will be discussed in more detail in the next section.

2.3 Organisational Routines – A Review of Related Constructs

Organisational routines can be used to tackle some of the time and processes issues raised in network theory research. Organisational Routines have traditionally been seen as unchanging, static and closed (Nelson and Winter 1982). Recent developments suggest that routines are more complex and dynamic than previously thought (Feldman 2000; Feldman and Pentland 2003) recognising their 'internal dynamic' and their 'potential for change' (Feldman 2000). This represents a philosophical shift toward seeing structure in organisational theory as a process rather than a thing (Feldman 2000 p613). A second reason for acknowledging

organisational routines is that they can be seen, according to Feldman (2000) as ‘producers of ideas’. As mentioned ‘one can think of routines as flows of connected ideas, actions, and outcomes. Ideas produce actions, actions produce outcomes, and outcomes produce new ideas’ (Feldman 2000). A third reason for using this conceptualisation in temporal and process research is that people involved in the routine are not separated from the routine itself. In this way a routine itself becomes a ‘richer phenomenon’ (Feldman 2000) and can also be seen as an ‘actor’ of creation according to Feldman and Pentland (2005).

The focus on ‘processes’ within the network perspective finds its historical roots in systems thinking and processual analysis (Van De Ven 2007; Van De Ven and Poole 1995). These threads of research are supported by the literature on static organisational routines within a single organisation (Pentland and Feldman 2005). In contrast to the traditional perspective of the organisational routine, the more dynamic routines which move away from an emphasis of structure and toward process. This brings agency with a routine’s ‘ability to remember the past, imagine the future, and respond to present circumstances’ (Feldman and Pentland 2003). The ‘role of people in shaping the temporal contours of their lives, while also acknowledging the way in which people’s actions are shaped by structural conditions outside their immediate control’ (Orlikowski and Yates 2002 p684) is also of interest. The perception of organisational routines is that they ‘*re-enact the past*’. However this might be a short sighted perspective of the organisational routine as it too has the ability to adapt or mutation or even ‘adapt to contexts that require either idiosyncratic or ongoing changes and reflecting on the meaning of actions for future realities’ (Feldman and Pentland 2003). This suggests that Feldman and Pentland and others perceive the routine ontologically as something other than linear in nature but has now a more kairotic in nature due to the nature of agency being

introduced to the flexible and change perspective of the routine (Andersson and Mattsson 2010).

In the field of creativity and organisational learning a dialogical theory for creating organisational knowledge is outlined (Tsoukas 2009). Tsoukas asks ‘what are the generative mechanisms through which new organizational knowledge is created?’ In his chapter he notes that the concept of ‘interaction’, or as is mentioned later ‘social interaction’, has been identified by previous studies of organisational knowledge as the ‘*bedrock*’ for knowledge creation. The question now is ‘what is in interaction’ that gives rise to new organisational knowledge or what particular form should ‘interaction’ take? This research, while focusing primarily on the subjectively identified routines considers the nature of how the actors interact dialogically. This paper draws on a dialogical analysis within organisational routines.

2.3 Reconceptualising Network Research Problems

In conclusion organisational routines can be used to understand boundary issues in network research as it highlights subjectively lived processes. The temporal issues within these processes arise as individuals’ conceptions of time differ from the organisational and inter-organisational conception. Through negotiated temporal organising we arrive at temporal structures. Therefore organisational routines are explicitly linked to our understanding of temporal questions at different levels of analysis. To understand how researchers can incorporate the concept of time into their theories we argue that a temporal perspective must acknowledge the problem of a multi-level analysis. This will be discussed in more detail later. The following section highlights presents case data that illustrates differences across levels of analysis. The section following this progresses the theoretical discussion in more detail.

3. CASE STUDY DATA – AN APPLICATION OF TEMPORAL STRUCTURING & DIALOGUE WITHIN ORGANISATIONAL ROUTINES

3.1 The University to Industry Student Placement Context

The data illustrated here is taken from a study conducted in an inter-organisational context between an academic institution and an international pharmaceutical company with offices in the Greater Dublin region representing an evolved interaction and long standing relationships with multiple student actors. Through the routine assessment of student experiences while on placement with employers the quality assurance programme was used as the basis for contacting employers to participate in this study. The researcher was embedded with the links/placement service in a quality assurance and mentoring capacity having direct access to institutional, student and employer actors through the data collection period. The relationship between academic institutions and employers as linked by student actors is an under researched phenomena. Very little is known about the performance of students when they move from the academic institution into a practice applied workplace and whether the performance of the academic institution has been a ‘success’ in terms of knowledge production, innovation or preparation for industry roles. The collection of multiple sources of data at multiple levels of analysis was arrived. (Yin 1994).

3.2 Data Collection – Multiple Data Sources

Data were collected at the micro-actant level as well as at a macro inter-organisational level. ‘Employer actors’ and ‘institutional actors’ were interviewed as were placement participants or ‘student actors’. The case study of ‘Pharma A’ was selected due to the numbers of student actors being employed and the number of employer actors involved with those student actors.

This increased the opportunity to reveal internal organisational routines. The three actors can be illustrated in the following diagram.

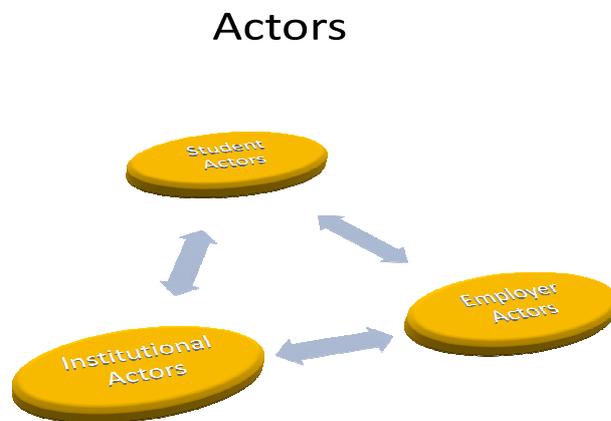


Figure 2: University-Industry Actors

Onsite interviews were conducted with student actors in relation to their experiences with the employer organisation, employer actors and internal processes. Follow-up interviews were also conducted with students after their placement for further clarifications of routines and processes they encountered. With the view of seeking out multiple sources of data student actors were tasked with completing reflective logbooks outlining their experiences while on placement. This was used as a basis for analysing their role in and perceptions of various organisational and inter-organisational routines.

The close relationship between main employer actors and the links placement manager was also a factor in selecting this context so that inter-organisational routines could be discussed at this level. Interviews were conducted with employer actors directly responsible for managing student actors on site. Further documentary evidence including Placement Assessment Forms with open ended questions directed at employer actors were also used. These provided additional evidence as to how organisational and inter-organisational routines

were conducted. Additional data were collected from the Links/Placement Manager and the Academic Manager linked with the service. As an embedded researcher this data took many forms including unstructured meetings, informal conversations and anecdotal hallway comments which we recorded in extensive field notes. In addition to this 'Placement Classes' were conducted between the Placement Officer and Student Actors. This was recorded as a non-participant observer. This 'class' was particularly relevant for understanding the inter-organisational aspect between employer and institutional actors. These 'classes' also revealed dynamics relating to the relationship between the placement service and student actors in the case study. Desk research documents from the employer 'Pharma A' and supporting published material and industry reports in the placement industry were also used revealing trends analysis of the placement industry in Ireland. It should be noted at this stage that actant as well as macro-organisational interactions were highlighted ensuring that a multi-level analysis could be supported.

3.3 Stages of Data Analysis

Feldman (2000) provides a detailed framework for data collection in the context of identifiable routines. Her paper discusses college housing routines and the stages outlined have been relied on here as a basis of structuring data analysis. The following broad stages of collection and analysis were followed;

Stage 1: Internal organisational routines (in both organisations) and inter-organisational routines, as identified by the interviewed actors were focused on for coding purposes.

Stage 2: Within the context of identified routines 'actors' (both human and non-human) were identified. Artifacts (documentary evidence and artifacts identified by human actors) were also considered for the purposes of understanding 'dialogue in action'.

Stage 3: Dialogical examples, representing routines at differently levels of analysis, between actors were then analysed as the basis of interaction.

Tsoukas (2009) provides an outline for analysing available dialogical data. This will be discussed in more detail later in this paper. Tsoukas discusses three types of actors engaged in performative dialogue;

1. The **Real Other** – considers human to human actor dialogues.
2. The **Imaginal Other** – dialogues with ‘the organisation’ or ‘the employer’ is considered. This is of particular interest in relation to how student actors perceive the stereotypical ‘employer actor’ and vice versa. This is often analysed on an inter-organisational level and was predominantly found in the Placement Classes data where the requirements of ‘the employer’ as an imaginal actor was revealed.
3. **Artifacts as Actors** - Items that result in action including CV’s, ‘job specs’ for interviews, training manuals, student logbooks and placement assessment forms and intranet sites etc was assessed dialogically. These items within the links/placement process have the potential to ‘cause’ and ‘guide’ and be relied on to ‘account’ for action (Feldman and Pentland 2003).

Actors/Actants
– Multi-Levelled Approach

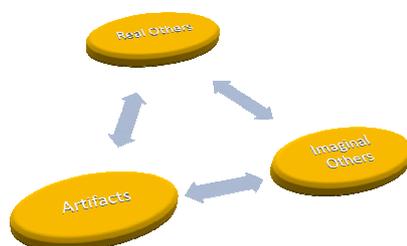


Figure 3: Actors/Actants – A Multi-Levelled Approach

For the purposes of analysis the potential dialogues can be illustrated in the diagram above.

For illustrative purposes we can see that the description of different actors contextually

differs from our analysis of different actors as we would understand them dialogically. This can be seen in the following table;

Description of Actors in the Context	Analysis of Actors (engaged in dialogues)
Student Actors	Real Other
Institutional Actors <ul style="list-style-type: none"> • Placement Officer • Mentors (including the researcher) 	Imaginal other <ul style="list-style-type: none"> • 'the employer' • 'the perfect student'
Employer Actors <ul style="list-style-type: none"> • Macro Employer Actor • Micro Employer Actant 	Artifacts <ul style="list-style-type: none"> • Job spec forms • Logbooks

Table 1: Contextual Description of Actors & Analysis of Actors Dialogically.

Stage 4: Consolidation of Potential Dialogues - There are nine potential 'dialogues' of which the 'real other' to 'real other' dialogue is arguable the most important across different levels of analysis. These levels of analysis incorporate varied and differing temporal and boundary issues. Using the dialogical theory based on organisational routines the interview transcripts have highlighted some interesting examples of routines which at different levels present different temporal perceptions held by actors and different forms of temporal organising. Care has been taken not to mould the data to fit the theory.

3.4 Case Data Examples – Negotiated Temporal Organising

Actors' perceptions of the placement routine leads to temporal organising as indicated in the three examples provided above: Each actor in the case study has a different perception of

time, however each actor is not autonomous and through dialogue arrives at a negotiated temporal structure; this process representing 'temporal organising'. For example the Academic Institutional actor's behaviour is influenced and guided by the year long academic calendar. This artifact influences and guides the actors behaviour, determines when things should be done and/or repeated to as to have all students placed. Student Actors are also influenced by the academic calendar but they don't see the placement routine in an annual context. Their time is negotiated with the Academic Institutional Actor. Employer Actors in this context appear to be only influenced from the interviewing to student departure and their perception of the placement routine is even shorter than the perception held by Student Actors.

Negotiated Temporal Organising - Institutional Actor & Employer Actors: The Academic Actor is in constant contact with the Macro Employer Actors, however it should be noted that for Micro Employer Actants the placement routine is much shorter and chronological as they are not exposed to annual temporal organising. These employer actants enter the routine from the CV review, interviewing and hiring sub-routines through to student departure.

Negotiated Temporal Organising - Institutional Actor & Student Actors: Students don't see the placement routine in its fullest extent in that 'preparatory placement classes' were seen broadly as a waste of time and the data illustrated frustration within this dialogue, on the Academic Actors, part to get the students to engage in the routine. For student actors the routine commences closer to CV preparation and interviewing and there was significantly less engagement prior to this stage in the routine.

Negotiated Temporal Organising - Employer Actors & Student Actors: This dialogue was variably influenced temporally by the presence of job specs, induction programmes, training manuals that facilitated the dialogue and influenced the negotiated temporal nature of the routine and student lived sub-routines. Student actors while on placement have commented

on the repetitive nature of tasks representing possibly a kairotic perception of time as opposed to chronological perception of time.

Artifacts influencing Temporal Structuring or Organising: Student actors engaged with academic and on-the-job artifacts that structured their behaviour prior to and during the placement. The placement actor and employer actors relied heavily on policy and training artifacts to guide and account for their actions.

3.5 How Dialogical Data aid our understanding of Temporal Structuring

Three examples illustrate how dialogical theory can illustrate temporal structuring. The data collected represented multiple sources across different levels of analysis;

1. **Placement Classes illustrating Imaginal Others:** The placement classes provided some insight into two dialogues; the placement officer to macro-employer actor dialogue. At this stage this employer actor is an 'imaginal other' as it highlights what the stereotypical employer would want from the stereotypical student, also an imaginal other. From a first level of analysis it is clear that the actors interviewed simultaneously switch between individuals as actors and organisations as actors. It is within these dialogical contexts that evidence of temporal structuring and thus organising can be found. Each dialogue reveals a routine; in turn each routine reveals a temporal structure. The placement officer's temporal perception was more kairotic as actions today were seen as having an effect in the subsequent placement cycle. Student actors presented chronological temporal structuring.
2. **Interviews with Student Actors illustrating Imaginal Others:** The second dialogue is the how student actor interprets the needs of the stereotypical employer actor. Student on-site interviews also illustrated their perceptions of what 'the organisation' might think of their actions and this reflected negotiated temporal organising. Not

only were they dealing with their immediate superiors in the course of their daily work they also verbalised their relationship with ‘the employer’ and/or ‘the organisation’ as an ‘imaginal other’. Expectations from placement actor was institutionalised in the logbooks and reflective projects.

3. **Dialogues with Artifacts:** Actors engaged with artifacts which results in a forced temporal structure requiring student actors to act within a time frame. On-site interviews revealed how artifacts guided action and allowed actors to account for their behaviour. Multiple sources of data at multiple levels of organization were collected providing a context for considering temporal structures. This was supported with artifacts that took the form of interview transcripts, field notes (research journal) covering embedded/anecdotal conversations, placement logbooks completed by student actors and placement assessment forms completed by employer actors. A notable example of this was due to recessionary times the length and availability of placements decreased. The placement actor relied heavily on reports artifacts and industry documents to account for changes in the placement routine. The dialogues reflecting this was underpinned with a change for the kairotic perception of time for the placement actor but only a change in chronological time for the student and employer actors.

3.6 Summary of the Analysis of Case Data

From the case based data different temporal structures, as perceived by the actors can be seen versus the negotiated temporal structures developed through dialogue. The negotiated temporal structures illustrates that actors are not autonomous and that the placement routine including all actors (human and non-human) influences and guides behaviour (action or inaction) while it is itself also a referencing point for behaviour.

Whereas the stages of data analysis in the broader study were directed at the prevalence of knowledge production within a triadic inter-organisational context a holistic picture of the network phenomenon could be obtained within the spirit of a case study of a contemporary network. It's clear that only by looking at multiple levels of analysis can temporal structures be revealed. This was done by utilising the theoretical framework provided by the organisational routines literature and a dialogical approach to analysis. The following section discusses and teases out implication of the theoretical framework used here for network researchers. The next section discusses how the placement routine and the temporal structuring that we have illustrated can be conceptualised from a multi-levelled perspective.

4. TEMPORAL STRUCTURING AS A MULTI-LEVELLED ANALYSIS

PROBLEM

4.1 Introduction

This section builds on the literature presented prior to our discussion of the case data illustrating the connection between the constructs presented in the conceptual framework at the beginning of the paper. While temporal structuring is used to elucidate the problem of time, and the dynamic concept of organisational routines is used as a theoretical foundation for understanding processes, this section argues that this combination renders the problem of time an aspect of the problem of multi-levelled analysis in contemporary network research.

4.2 Methodological Implications of Temporal Structuring & Organising

Temporal Structuring is key to understanding dynamic environments and yields some interesting methodological statements and recommendations – as temporal structuring is ‘practice based’ and is neither objective/clock based nor subjective/event based. Thus ‘multiple paradigms and methodologies offer distinct and important analytic advantages for

understanding the role and influence of time in organisations’ (Orlikowski and Yates 2002). By focusing attention on what actors ‘actually do temporally’ implications for the study of network phenomenon at different levels of analysis is revealed. In network analysis research the ‘problem’ of levels of analysis needs to be made more explicit. The following table illustrates temporal structures at different levels;

Level	Temporal Description
Individual	Temporal structuring is more close to lived experience and can be linear and subjective in nature. However a kairotic or circular perspective of time, as a temporal structure , is also attached to the actor.
Group	As a level of analysis it requires some common agreed temporal structure as illustrated as the ‘third way’. This temporal organising as discussed above is often linked more to the dialogue than to the individual actor.
Organisational	Has organisational norms and organisational routines that act as a truce regarding temporal organising. Group and individuals negotiate an organisational culture reconstructing routines reflecting some form of temporal organising. It is thus more objective in nature. This is back to how the routine influences behaviour but also how behaviour influences the performance and development of the routine.
Dyadic Inter-Organisational Relationship	Organisational norms influence the inter-organisational routine. Temporal structural norms are thus agreed as the routine is established and lived at this level of analysis.
Triadic Inter-Organisational Relationship	The process toward agreed negotiated norms becomes influenced by different organisational temporal structures resulting in more complex organisational routines within and between different levels of analysis.
Nets of Organisations	This can be seen as boundaries with a focal actor or a micronet-macronet as discussed by Halinen and Törnroos (2005). This reflects how an actor’s view of the network is extended through a network horizon. Temporal structures in this context become negotiated and inter-organisational routines become more complex and dynamic.
Network Level Analysis	Temporal Structuring at this level incorporates all of the levels above recognising the complex temporal structures that influence and are influenced by dynamic routines at different levels of analysis.

Table 2: Temporal Descriptions of Different Levels of Analysis.

In Table 2 it should be noted that the influence of kairotic and chronological time varies across these levels. Arriving at an objective agreed temporal structure; the process of

temporal structuring is done through temporal organising. This occurs in the context of some form of dialogue leading to a negotiated temporal organising. This implies that a perceived temporal structure is linked to the actor whereas temporal organising is linked to the negotiated dialogue between actors at different levels. This debate can be expanded on under the following two headings;

- From Dualism to Duality
- Kairotic and Chronological Aspects of Time

From Dualism to Duality: This practice based view is presented as an alternative to the dualist debate. This third view says that ‘time is experienced in organizational life through a process of temporal structuring that characterizes people’s everyday engagement in the world’. These structures through ‘engagement’ would be produced and reproduced by people and to ‘guide, orient and co-ordinate their ongoing activities’. By acknowledging the active role of people, whose human agency is argued as being dynamic (Feldman and Pentland 2003) it allows network research to ‘bridge the gap’ between these two perspectives of time. People’s actions help shape the ‘temporal contours of their lives’ while at the same time their actions are ‘shaped by structural conditions outside their immediate control’. The analogy of a pendulum might be an appropriate here as at various different stages the influence of subjective perceptions can swing toward objective structures in determining time. We saw this in Table 2 where an objectified temporal structure is negotiated between actors. A basic outline of an alternative perspective on time in organisations ‘that is centred on people’s recurrent practices that shape (and are shaped by) a set of temporal structures is provided. The difficulties in bridging this gap can be seen when we discuss kairotic and chronological perceptions of time.

Kairotic and Chronological Perceptions of Time: At the individual or actant level temporal structuring from a kairotic perspective might be more appropriate. In the University-Industry context here the placement actor perceived the placement process as a circular process with repetition, being heavily influence by the institutional academic calendar representing an institutional artifact. Thus the kairotic concept of time is a circular point in time and as a temporal structure is often related to the perspective of the actor.

As we move to discussing organisational routines the perspective of time becomes more complicated due to a mixture of kairotic and chronological perspectives. As this paper solves a boundary concern by acknowledging the subjective nature of the routines there is also a decidedly objective nature in routines. The nature of the organisational routine is thus influenced heavily by the concept of ‘temporal structuring’ (Orlikowski and Yates 2002) which provides an alternative to the subjective-objective dichotomy in assessing time and social timing. This alternative perspective centred on peoples ‘recurrent practices’. The use of the word ‘recurrent’ would suggests repeatable, regular or reoccurring or kairotic practices. In the University-Industry context clear structures i.e. the academic calendar in turn influences the perception of time, which in turn structures the phases of inter-organisational routines. For some actors this perception is linear or chronological in nature as its enactment. Therefore the temporal nature of the routine must be focused on hand-in-hand with the dynamic or ‘recurring’ nature of the inter-organisational routine. The temporal nature would seem to make sense at the inter-organisational level of analysis as well as at the individual level of analysis.

As we process to a dyadic or triadic level of analysis organisational routines can be re-conceptualised as ‘dialogical processes’ (Tsoukas 2009) illustrating phenomenon between organisations at a macro actor-level and between individuals at a micro-actant level of analysis (Czarniawska and Hernes 2005). A dialogical analysis as presented above between

actors within subjectively identified organisational routines is used as a basis for arriving at an negotiated temporal structure through the process of temporal organising. This negotiated perspective of time has a linear or chronological quality to it. Indeed as we move to a network perspective certain aspects take on a deterministic perspective of time.

This paper argues that these differences are more a function of a problem of multi-levelled analysis than a function of a problem of time per se. So for this reason it is a useful perspective to consider a multi-level analysis.

The Problem of Multi-Levelled Analysis in Network Research

Capturing data from truly dynamic environments has eluded network researchers. Following the discussion of 'dynamic environments' the temporal nature of processes should acknowledge that things change. The role human actors through agency is what is deemed to be 'dynamic'. It should also be acknowledged that current descriptions are often limited snapshots of phenomenon. However, some theories and constructs, including organisational routines (Feldman 2000), are making strides in getting closer to a dynamic and temporal nature of network theory through the use of 'action' and Actor Network Theory. But temporal issues while interesting must bring about some practical implications i.e. a structure for interrogating data to elucidate a new perspective OR toward a conception of time not previously considered managerially relevant. One comparison might be the Cartesian compared to an Oriental conception of time (Nonaka and Takeuchi 1995).

Having multiple levels of analysis to find organisational routines makes sense so as not to miss out on these issues. A multi-levelled analysis emphasises the temporal dichotomy at different levels. One quote broadly captures this point;

'focusing on one side or the other misses seeing how temporal structures emerge from and are embedded in the varied and ongoing social practices of people in different communities

and historical periods, and at the same time how such temporal structures powerfully shape those practices in turn' (Orlikowski and Yates 2002).

Within the problem of a multi-levelled analysis, recognition of how organisational routines shape everyday human actions and at the same time how human agency can influence subjective perceptions of time will bring a holistic perspective when data collecting for network researchers. This 'multi-layered' perspective is acknowledged in the IMP tradition (Andersson and Mattsson 2010) and has an important implication for the methods used in data collection informed by the multi-level argument.

While the literature on organisational routines sheds light on the 'boundary problem', researchers acknowledge that there are multiple boundaries at multiple levels of analysis. In relation to the 'ontological dimension', this paper contends that to understand process and time issues in network research, a multi-levelled approach to data collection is preferred as different temporal structures exist at different levels of analysis as illustrated in Table 2. In conjunction with this our understanding of temporal issues in research can be improved through the multi-faceted lens of the multi-level approach. For this reason the problem of a multi-levelled analysis should be added to the list outlined by Halinen and Törnroos (2005). In addition it is this paper's contention that to truly get to understand time in network theory we need to move past basic descriptions of temporal events.

5. CONCLUSION & CONTRIBUTIONS

By considering actors' roles in recognizing organisational routines and by undertaking a dialogical analysis to arrive at actors' negotiated temporal structures, this paper aims to show how the 'problem of time' could well be handled and reconceptualised through the 'problem

of multi-levelled analysis'. Following the conceptual framework presented at the beginning of this paper we introduced temporal structuring into network research. Its effect is to make us more aware of the differing and co-existing levels of analysis, with different temporal structures and processes of organising that should be considered to get a more complete picture of the network. Whereas this has been considered implicitly this paper argues for a more explicit treatment of the temporal issues in a practice based context, not as a problem of time but as a problem of multi-levelled analysis. Through this explicit recognition of the problem of multi-levelled analysis in conjunction with the boundary problem this paper proposes that the organisational routines literature can cater to the theoretical demands presented in the argument above. A dialogical analysis can help to bring researchers closer to understanding holistic network phenomenon including temporal structuring and organising.

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