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Knowledge Creating Routines: Dialogical Exchanges to Guide Repertoires of Potential Action

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Abstract

We substantiate how generative routines, from a dialogical exchange perspective, guide repertoires of potential actions. Research on generative and emergent qualities of organisational routines, and their ability to assist actors arriving at new distinctions in practice, remains underdeveloped. Researchers have established that routines have the qualities of being generative, emergent and producers of ideas. Recent contributions argue for a dialogical approach to creating new organisational knowledge. This paper further develops the explanatory power of routines by combining dialogical exchanges within the ostensive-performative theory of routines. We examine the power of dialogical exchanges using words, understood as imaginal others within schemas, and text within artifacts, as a basis for a processual view appropriate for studying 'knowledge creating'. We analyse data from a multi-level analysis in a university-industry context crossing the theory-practice divide. We find that words and texts within productive dialogical exchanges are influenced and shaped by perceived quality and presence of central artifacts and imaginal others. When they coalesce and are intertwined they coordinate guidance in routines. The combination and recombination of these assemblages coalesce and guide repertoires of potential actions. Through this we gain an improved understanding of generative routines and in turn how knowledge creating occurs.

Introduction

We call for a departure from the established focus in research and practice on improving knowledge transfer in favour of a processual approach to understanding how organisations create new knowledge i.e. knowledge creating. Informed by Tsoukas' question *"what are the generative mechanisms leading to new organisational knowledge?"* (Tsoukas 2009a), we ask what are the processual dynamics related to knowledge creating? By addressing this gap between transferring knowledge and creating knowledge we propose a two-fold contribution: first, we highlight principles for processual knowledge creating, and second, we conceptualise knowledge creating processually by combining a dialogical approach (Tsoukas 2009a, Tsoukas 2009b) with the ostensive-performative understanding of routines dynamics (Feldman and Pentland 2003, Pentland and Feldman 2005). Hence, we propose a better understanding of how routines are 'generative' by showing how dialogical exchanges are inherently 'emergent' revealing 'new distinctions' (Tsoukas 2009). We examine the ostensive-performative theory (Pentland 2005) by drawing upon three dialogical exchanges based on social interaction; real other to real other exchanges; real other exchanges with 'text' in artifacts and real other exchanges with 'words' denoting imaginal others (Tsoukas 2009a). We conclude by arguing for elevating the importance of dialogicality i.e. dialogical exchanges within routines. As previously overlooked in empirical routines research, we argue that dialogue is integral to routines theory, being an exciting new focus for understanding the ways in which routines are generative. More broadly we suggest this as a potential significant approach for researching within the emerging field of knowledge creating.

Contrasting Knowledge Transfer and Knowledge Creating

Previous contributions to research into knowledge creation with modes of conversion (Nonaka 1994, Nonaka 1995) have been criticised for being rehashed versions of the theories

relating to knowledge transfer (Gourlay 2006, Kaufmann and Runco 2009). So while much of the research focuses on improving transfer, little is known about the first stage in the knowledge management (KM) cycle; 'knowledge creation'. Nonaka & Takeuchi (1995) attempt to address this gap in arguing that at the core of the new theories of management relating to knowledge is "*acquisition, accumulation, and utilisation of existing knowledge*" but that "*they lack the perspective of 'creating new knowledge'*" (1995 p49). As we seek out potential sources of organisational capabilities, they note that "*knowledge creation by the business organisation has been virtually neglected by management studies*" (1995 p xiii). They argue that the dynamic nature of the world says organisations should be studied from "*how it creates information and knowledge, rather than with regard to how it processes these entities*" (p15). Therefore those who focus on 'creation' within the KM cycle tend to focus on explicit entities and events, which create something dynamic after an event compared to the conditions before. Knowledge created from this event is understood as explicit and transferable as an output i.e. a patent. This laudable attempt serves to highlight how Nonaka et al's conversion of tacit to explicit knowledge within the SECI model, is hampered however by an eventual i.e. focused on events, perspective relating to explicit knowledge. This results in difficulties for empirical observation focused on the exact time of creation and implies that the conditions before and after this event are less important.

Research on knowledge creation has been subsumed and supplanted by a knowledge transfer research agenda. Due to disciplinary constraints, the KM field has tended to focus on measurable aspects of transfer, for example in a university-industry context relating to patents (Agrawal 2001, Agrawal and Henderson 2002). In acknowledging this, broader calls within KM have been made for a process framework focusing on the '*knowledge process and the context in which that process is embedded*' (Grover and Davenport 2001 p.12). Indeed the focus on events of creation, much like events of transfer, also causes difficulties from an

ontological and epistemological perspective (Chia, forthcoming) as it implies something from nothing or what is termed *'creatio ex nihilio'* (Tsoukas 2009b). Research of this nature is demanding, potentially requiring longitudinal field work with fine-tuned data collection methods, requiring extremes in serendipity under experimental conditions. Identifying created knowledge and devising appropriate methods to capture this event still evades researchers in the social sciences. With this in mind a processual view of knowledge creat-'ing' moves us from organisation to organising and from structure as a thing to structure as process (Feldman 2000). Whereas the discussion around *'creatio ex nihilio'* can be seen as an epistemological discussion, the practicalities linked to application focuses research on the processual or generative mechanisms associated with knowledge creating (Tsoukas 2009a, Tsoukas and Mylonopoulos 2004).

A University-Industry Context

Gibbons et al (1994) introduced a modal theory of societal knowledge production revealing how governments, employers and society increasingly interact to produce knowledge. Knowledge transfer research into patents (Agrawal and Henderson 2002), the absorptive capacity of firms taking advantage of knowledge spillovers (Cockburn and Henderson 1998, Cohen and Levinthal 1989, 1990) as an inter-organisational context have received extensive scholarly attention. As noted above the rich heritage from knowledge transfer research in a university-industry context was considered an appropriate context for rich quality data relating to knowledge creating. We address recent calls for researching knowledge creating in a context of application (Gibbons et al 1994, Huff 2000, Huff and Huff 2011, Nowotny et al 2001) spanning the theory-practice divide (Van De Ven and Poole 1995, Van De Ven and Johnson 2006). The core of Gibbons et al.'s (1994 p.13) thesis is *"that the parallel expansion in the number of potential knowledge producers on the supply side and the expansion of the*

requirement of specialist knowledge on the demand side are creating the condition for the emergence of the new mode of knowledge production".

For the current paper, the interaction between producers (university) and consumers (employers) provides a rich picture of knowledge creating processes. For this reason an internship/placement routine, which connects employers with a university, was adopted for this study. We present this case capturing the day-to-day practices of its three main actor groups of higher education institutional (HEI) staff, employers and students across multiple sites. Within the internship/placement programme, herein referred to as 'the placement' or 'the routine', employers seek to recruit students from the higher educational institution (HEI) for periods of up to 16 weeks. The placement itself was taken as the substantive context for data collection. The placement officer (PO) developed strong employer relationships, with varying degrees of commitment with some employers having long term partnerships over a number of years while others were newly formed relationships. This commitment to the placement reflected different levels of resource allocation and varying understandings of the placements' goals. From a comparative perspective the various levels of commitment to this university-industry relationship formed the basis of how different documents and procedures contributed to actions and development of processes for handling the placement process. Building on the distinctions made in favour of knowledge creating we argue here for the appropriateness of a processual approach in this theory-practice context. In the next section we present the ostensive-performative aspects of routines as generative systems. We develop an argument for utilising dialogical exchanges as the generative mechanism which unpacks routine dynamics. Combined these form the foundational argument for understanding knowledge creating which is supported by broader principles for knowledge creating found in the extant literature.

Dialogical Exchanges & the Ostensive-Performative Aspects of Routines

In Figure 1 we identify from the literature a combination of six elements of the ostensive-performative aspects of routines with three dialogical exchanges as a generative system. Their connections and shared meanings reveal a coherent conceptual framework informing data collection and analysis and enhancing our understanding of generative routine dynamics.

Insert Figure 1 about here

The Ostensive-Performative Theory of Routines

Routines are argued in themselves to be generative. Pentland et al (2009 p.48) note "*when we say that organisational routines are generative systems, it means that there is some underlying mechanism that generates the interdependent patterns of action that we recognise as an organisational routine*". This highlights the interaction between ostensive and performative aspects (Pentland and Feldman 2005 pp793-795, Pentland and Feldman 2008b, Pentland et al 2009 pp.69-92). Routines are also understood as '*producers of ideas'* (Feldman 2000). Feldman notes that "*one can think of routines as flows of connected ideas, actions, and outcomes. Ideas produce actions, actions produce outcomes, and outcomes produce new ideas, it is the relationship between these elements that generates change*" (p.613). Focusing on the role of actors within routines, as producers of ideas, increases our understanding of generative routine dynamics. As practices in routines are always works-in-progress they are always unfinished products suggesting their 'emergent' quality with changing repertoires of responses, actions and outcomes. Salvato (2009 p.68) describes routines as generative and dynamic, rather than being static inert objects, further connecting the notion of being generative to continuous change. From an emergent and generative angle this compounds the

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connections of processes of dynamic change as a basis for knowledge creating. These connections are important as "*each part* [of the routine] *is necessary, but neither part alone is sufficient to explain (or even describe) the properties of the phenomenon we refer to as 'organizational routines'*" (Pentland and Feldman 2003).

The ostensive aspect of a routine allows people to "*to guide, account for, and refer to specific performances*" (Feldman 2000). This process of guiding, accounting and referring occurs within dialogical exchanges as actors negotiate recognisable patterns of activities, refer and coordinate actions within routines. The performative aspect of the routine in turn *"creates, maintains and modifies the ostensive aspect"* (Feldman and Pentland 2005). The purpose is not to create, maintain or modify the routine but to engage in actions so as to achieve its goals. This affects and is affected by the structure constraining and/or enabling future potential actions.

Recent research has expanded this ostensive-performative conceptualisation of generative routines (cf. Pentland and Feldman 2005). However gaps have been identified. Whereas some have noted the lack of focus on agency (Feldman and Pentland 2003) others have argued for more attention to be levied on the role of artifacts (D'Adderio 2011). To overcome conceptual and methodological difficulties as noted above, calls for a broader perspective focusing on action as the basis of a proposed generative model have been made (Pentland et al 2012). They argue by focusing on action at the centre of routines we can incorporate sociomateriality and agency i.e. the role of human and non-human actors. They claim this shift toward action contributes to our understanding of generative routines. These shifts in focus allow for a more comprehensive understanding of generative routines replacing granular perspectives. These shifts inform our approach in three main ways:

First, action from the variation and selective retention of patterns is sufficient to explain routine dynamics. By breaking from the focus of actors alone we can overcome difficulties

relating to the incompatibility of routines as dispositions and routines as patterns of action with action as a common denominator. Second, as action is distributed across actors and artifacts by respecting sociomateriality and agency, it is consistent with theories of practice (Feldman and Orlikowski 2011). Indeed we argue this is also consistent with actor-network theory (Latour 2005) and developments relating to sociomateriality (Leonardi 2010, 2012). Third, the variation and selective retention of patterns as seen through action also develops the evolutionary theory of routines. Our approach, while placing action at the centre, considers routines at the level of representation (Becker 2004) leading primarily to informing potential actions and then more specifically observable actions. Upon review these developments are consistent with Feldman's Residential Life research (2000, 2003, 2004), where observable actions revealed dynamic changes in routines relied upon here as central to knowledge creating. Focusing on action goes some way toward consolidating a generative theory of routines and overcoming some conceptual challenges. It also serves to combine the ostensive-performative aspects as a duality (Farjoun 2010, Feldman and Orlikowski 2011) under the umbrella of potential action. Methodological difficulties over emphasising observable action alone as a panacea for all things generative still remain. For this reason we conceptualise actions as potential action, or repertoires of potential action at the level of representation which contributes to observable action. Developing on potential action at the centre of routines we advocating for a focus on dialogical exchanges to further explain what we understand as being generative.

A Dialogical Approach to Examining Routines

While density of communications is argued as the basis of modal theory at the macro level contributing to knowledge production in society (Gibbons et al 1994), dialogical exchange is argued broadly at the individual level for new organisational knowledge (Tsoukas 2009a).

"The essence of dialogicality is sensitivity to otherness" (Tsoukas 2009a) and the *"realization that the categories we think and communicate with are no more individual creations but dialogically constituted through communication with others"* (p161). Transposable schemas (Sewell Jr 1992), and the ability of individuals to exercise judgement and draw new distinction results in new knowledge (Tsoukas 2009b, Dionysiou and Tsoukas 2013) expressed in words and captured in text. This raises the question as to how new distinctions are arrived at within routines? While remaining true to potential action being at the centre of a generative perspective we ask how can dialogical exchanges (including the spoken word and text embedded within artifacts) contribute to these emerging distinctions?

Consistent with exchanges for increasing the density of communications in society (cf. Gibbons et al 1994 pp34-43), and the emphasis on respecting sociomateriality and agency (Pentland et al 2012), Tsoukas (2009a) suggests three dialogical exchanges: dialogical exchanges among real others, quasi-dialogical exchanges with imaginal others, and quasi-dialogical exchanges with artifacts. Dialogical exchanges with real others is the face-to-face dialogue with two individuals. As conversations in diverse contexts such as detective work, nursing, medical diagnoses and educational practice unfold new distinctions emerge. Secondly there is a quasi-dialogical exchange with imaginal others where individuals are never really alone as they talk, argue and respond to others, such as critics, friends, gods, their own consciousness and even their dreams. Tsoukas argues that the imaginal other is within us. This is not unlike authors in a dialogue with reviewers when revising manuscripts. In an organisational context the most theoretically salient imaginal other is the 'generalised other' such as 'the employer' or 'the profession' where actors learn to construct and label identities, roles, grasped relationships and further learn to adopt attitudes of the community or social group of which they become apart and which in turn reflects routine goals. The potential for otherness across levels of analysis can thus be seen. The third dialogical

exchange is a quasi-dialogical exchange with artifacts. Artifacts, 'reference entities' or 'epistemic objects' are created by actors in the course of their work using text to codify aspects of routines.

Epistemic objects and their importance to knowledge creating have been pointed out by many researchers. D'Adderio (2001, 2011) places artifacts at the centre of the performativity of routines helping organisations innovate, allowing verbalisations which lead to richer conversations. More recently less material artifacts, arguably not unlike imaginal others, are receiving increasing attention as they contribute to potential action or performativity (Leonardi 2010). What is characteristic of artifacts as knowledge carriers is that they have an 'ambivalent ontological status'. As stable and mutable they incorporate knowledge and act as repositories of what actors focally know. But they also incorporate knowledge that is not focally known and hence, as noted above, they are always work-in-progress being inherently incomplete in the process of making and are open and capable of further development (Tsoukas 2009a p.167). Whereas the imaginal other is linked more closely to the abstract ostensive aspects of routines, artifacts are associated with the performative aspect of maintenance of routines (see Figure 1). The understanding of the ostensive-performative aspects of routines through dialogical exchanges is necessary to appreciate the connections within routines as a source of change. The ostensive-performative theory of routines as being generative provides the processual backbone for this study. By further shifting focus onto dialogical exchanges we answer the call to "unpack' the generative nature of routines (Pentland and Feldman 2005) as they contribute to potential action for knowledge creating. By arriving at new distinctions reflected in imaginal others actors, involved in these dialogical exchanges, can be seen within subjectively identified routines to generate new organisational knowledge. We therefore explore how artifacts, actors and imaginal others (Tsoukas 2009a, Tsoukas 2009b) in dialogical exchanges interact in and between

organisational routines on multiple levels (Tsoukas and Mylonopoulos 2004) as our understanding of knowledge creating.

Extant Principles for Knowledge Creating

Our use of the ostensive-performative theory as the basis of generative routines coupled with the dialogical approach as a basis for new organisational knowledge is consistent with broader principles for knowledge creating found in the extant literature. In reviewing this the importance of a processual approach; knowledge creating as interaction and the acknowledgement of dynamic change all contribute to our unpacking of routines. Knowledge creating within processes has long been acknowledged in various research threads (Nonaka 1994, Van De Ven and Poole 1995) most notable in processual analysis (Pettigrew 1997, Van De Ven 2007). In early routines literature (Nelson and Winter 1982), specifically static organisational routines have focused on stable repeatable processes (Pentland and Feldman 2005). Recent discussions of routines move away from an emphasis on structure in favour of process emphasising a routine's *"ability to remember the past, imagine the future, and respond to present circumstances"* (Feldman and Pentland 2003). This processual nature occupies *"the crucial nexus between structure and action, between the organization as an object and between organizing as a process"* (Pentland and Rueter 1994 p.484). Organising as a process rather than as structure (Feldman 2000 p.613) mirrors our discussion above from creation as an event to creating as a process. This '*internal dynamic'*, and '*potential for change'* (Feldman 2000, Feldman and Pentland 2003) illustrates that routines lend themselves to empirical studies relating to change (cf. Becker 2004 p.649). In additional many knowledge creating theories focus on a principle of interaction e.g. Nonaka's SECI Model assumes the interaction between explicit and tacit knowledge saying; *"knowledge creation at the individual level involves continuous interaction with the external world"* (Nonaka, 1994).

As noted above societal knowledge production also points to interaction i.e. the density of communications (Gibbons et al 1994, Nowotny 2005) as core to the modal theory of knowledge production at a macro level. These related theories, albeit at different levels, are consistent with the dialogical approach here. Tsoukas (2009a) argues that '*social interaction*', is the '*bedrock*' for knowledge exchange and that dialogicality facilitates the emergence of new distinctions as a generative mechanism. As scholarly research on the generative and emergent qualities of routines assisting actors arriving at new distinctions is in its infancy our contribution is to use dialogical exchanges as a common denominator and bedrock for understanding knowledge creating.

Data Collection & Analysis

Insert Figure 2 about here

The Structure of the Data

Empirical data from a multi-level analysis in a university-industry context is presented. This inter-organisational context of a placement routine is argued as appropriate for studying knowledge creating (Gibbons 1994, Huff and Huff 2001, Narayanan 2010, Liu et al 2011). Due to the cyclical nature of the placement routine (commencing and ending in September of each year) data were gathered, using multiple methods, across four cycles and nine identified stages from June 2009 to September 2012. The placement cycles included pre, during and post-placement stages, which emerged from the shifting focus of the data relating to specific sub-routines and dialogical exchanges in the data corpus. This illustrates the cyclical nature of the pattern of activities of the macro placement routine (Figure 2). Phases 1 to 3 provided a foundation for understanding the macro issues impacting on placements as well as the day-to-

day practices of participants. Whereas previous research has looked at inter-organisational routines (Zollo et al 2002) a more comprehensive approach to data collecting using multiple methods was taken to gain a more complete picture of the complexities associated with inter-organisational routines across multiple sites, multiple actors and multiple levels of analysis (Empson 2001).

Field Notes and Research Journal: In accordance with Feldman's Residential Life research (2000, 2003) and as an embedded researcher extensive field notes over 30 pages captured multiple anecdotal conversations, observations and additional interviews relating to the placement over also phases within the four cycles (Figure 2). Field notes were timely recorded ensuring accurate accounts. A research journal was recorded over 100 pages supplemented the field notes and aided theory building. These were supplemented by emails, intranet postings and broader institutional communications pertaining to the placement. These sources were also coded within Nvivo.

Direct Observations: The pre-placement stages of each placement cycle was predominantly based in placement classes run by the placement officer (PO) with a view to preparing students for imminent interviews, assessment centres and involved contributions from interested employers, the careers service and consultants providing CV development and interview preparation services. 15 'preparatory classes' were recorded as a non-participant direct observer and transcribed with each class being over 1h 30 minutes (in Phases 2, 5 & 8). Additional notes were captured in field notes revealing dialogues and understandings as lived by the actors. These 'classes' were also relevant for understanding the inter-organisational aspect of the placement. By way of guidance the close relationship between main employer actors and the PO was also a factor in selecting this context so that inter-organisational routines could be discussed at a macro-actor level. In addition these provided insights into the dynamics between the placement service and students (Dialogical Exchange 1).

Interviews: 19 formal unstructured interviews were used for this study with employers (Phases 3, 6 & 9), students (mainly Phases 2, 4, 5 and 7) and academic staff. These were conversational, guided by a topic guide targeted at processes and dialogical exchanges. These were supplemented with anecdotal conversations over the four cycles captured in field notes. Where possible students were interviewed pre, during and post placement and 'snowball sampling' resulted in peripheral actors being interviewed (Warren 2002). Supplementing the data collection in the Higher Education Institution (HEI) formal interviews were conducted with the PO, Academic Head of Programmes (AHP), Career Guidance Counsellors and Quality Assurance Officer. This proved valuable revealing differences in perspectives on macro quality assurance issues and the placement routine.

Documentary Evidence & Artifacts: Documentary evidence and artifacts were collected including recruitment brochures, job specifications, promotional brochures from both the institution and employers, policy documents outlining academic standards at the HEI, sample CVs, slides and presentations totalling 36. Accompanying this over 250 emails, intranet postings and additional communications on platforms such as LinkedIn and Webexone [an intranet platform] were also collected. Intranet postings of communications to student actors from the PO and AHP were downloaded and coded. LinkedIn was used to facilitate communications and improve access between this researcher and students while on placement. Of particular importance was the use of Student CVs and reflective logbooks with entries covering 16 weeks supplemented student and employer accounts.

Data were coded using the constructs of the ostensive aspects of routines; referring, guiding and accounting, and the performative aspects; creation, maintenance and modification (Feldman and Pentland 2003). Data on dialogical exchanges were coded under actors, artifacts and imaginal others (Tsoukas 2009a). Coding was facilitated using Nvivo 9 in accordance with the iterative approaches recommended in recent qualitative research using

computer assisted qualitative data analysis (CAQDAS) procedures (Bazeley 2007a, 2007b, Hutchison et al 2009, Saldaña 2009). Themes emerged inductively from the data. Sub-routines subjectively identified by actors were focused on for data collection and coding purposes. Artifacts and imaginal others provided an understanding of dialogue in action. Coding progressed from the descriptive to theoretical codes, which served to support extensive iterative memo writing (Bazeley 2007a, 2007b, Saldaña 2009) which revealed cross-case comparisons and in turn enriched and informed emerging vignettes which in turn facilitated theory building. Jarzabkowski, Lê and Feldman (2012) developed vignettes as a means of representing different events which might not be linear but may well be interdependent. We applied this approach, which was also advised in previous empirical research on routines to prompt the emergence of rich comparisons (Pentland et al 2009, Pentland et al 2012).

The Challenges of an Inter-Organisational Multi-Level Analysis

Empirical routines research has failed to tackle the nature of inter-organisational routines (Zollo et al 2002) let alone the interactions central to knowledge creating. To gain a full understanding of how placements operate a processual inter-organisational context is argued (Narayanan et al 2010, Liu et al 2011). We address this gap as a conceptual and methodological contribution. Secondly this research also contributes to our understanding of multi-level analyses. Pentland et al's (2012) generative model followed here *"directly links micro-level actions within routines to the macro-level dynamics of routines"* (p.6). Elsewhere it is argued that by connecting individual activities to organisational levels we amplify knowledge (Nonaka 1994, Nonaka and Takeuchi 1995) and contribute to societal level knowledge production (Gibbons et al 1994, Nowotny et al 2001). Feldman adds what Nonaka understands as happening across a hierarchy she argues is happening within a routine

(Feldman 2000). We argue to understand knowledge creating a multi-level inter-organisational perspective of routines is required. Particular care was taken here to collect data at multiple levels of analysis, across multiple sites to tackle noted shortcomings in previous research (Empson 2001, Salvato and Rerup 2011). It is this approach that caters for the problems of granularity and combinatorics (cf. Becker and Lazaric 2009).

Findings

The findings focus on the dialogical exchanges with artifacts which include text and imaginal others as the spoken word as illustrated in Figure 1. In accordance with previous literature the coding for artifacts (Dialogical Exchange 2) was connected to the ostensive aspect of maintenance (Feldman and Pentland 2003) while imaginal others (Dialogical Exchange 3) reveal articulations of schemas associated with the abstract ostensive nature of routines. The conceptual framework evolved during data collection and analysis. The coding process validated the theoretical consistency within our combined conceptualised framework for knowledge creating i.e. dialogical exchanges within ostensive-performative aspects of routines, allowing us to argue its robust generative nature supported by empirical data.

Dialogical Exchanges with Embedded Text in Artifacts

The role artifacts played within the placement routine was considered in detail. Artifacts were found and coded for across all phases of data collection including pre-placement artifacts such as employer job specifications, student curriculum vitas (CVs) and academic quality assurance forms (pre-placement Stage 1). Artifacts related to the multiple employer sites included project management and standard operating materials (during placement Stage 2) and post-placement artifacts included student reflective logbooks (Stage 3). Additional artifacts not specific to any stage of the placement cycle included industry level policy

documents were used in dialogical exchanges across the placement routine. The PO relied heavily on reports and industry documents to account for how she was guided to modify actions and in turn the performative aspects of the placement i.e. when securing interviews for students in a rapidly changing recessionary climate. Standard operating procedures (SOPs) at employer sites (Stage 2 artifacts) and reflective logbooks (Stage 3) could be directly linked to student actions within different sub-routines throughout the placement. These artifacts were shown to guide actions and allow actors to account for their behaviour. This paper focuses on the Job Spec and CV artifacts due to their importance in enacting the 'macro' placement routine. To enact the placement, a CV needed to be created by all students such that CV was used by all actors in the routine. By way of comparison, distinctions with the role of the job spec are set out. Both artifacts guiding the enactment of sub-routines within the placement but did so in different ways.

Insert Figure 3 about here

Recruitment & Selection Sub-Routine: Prior to the involvement of students, the PO asked employers to create job specification or 'job specs' outlining roles and responsibilities. The programme had no standardised pro-forma for this and employer responses varied from simple emails to comprehensive job specs, recruitment brochures and application forms (most notably found in the Big 4 accountancy firms with established and resourced recruitment and selection processes). These artifacts outlined tasks, activities and organisational values. A fund manager in a blue chip financial services employer discussing the role of the job spec in explicitly guiding how the content of the CV should be developed.

> *"It is on the job spec for us that they have good excel skills .… all of our reports ... can be run through excel and everybody runs them through excel. We're basically*

reconciling trades .... So, if you [the intern] can actually build formally into it, it helps you."

[Source: Placement Cycle 2, Phase 3 (C2P3) Interview - Fund Manager, 2nd June 2010].

The job spec stated the importance of having excel skills for the day-to-day reconciling of trades and pricing funds. This ensured that both the PO and students alike would be guided by these criteria in developing their CVs in advance of employer's enacting their recruitment and selection sub-routine.

CV & Interview Preparation Sub-Routine: The job spec, including associated recruitment materials were distributed to students by the PO enacting her screening and matching sub-routine (discussed below). Alternatively some students began to deal directly with employers by accessing recruitment artifacts online to guide CV development. The Career Guidance Counsellor (CGC), commenting on the job spec and recruitment brochures, explicitly guided students on how they should interpret and extract employer requirements, to understand goals and guide actions in developing their CVs, introducing VIPS.

"[Be] adaptable and employers don't want one trick ponies and you ...... need to know yourself. What motivates you and using the VIPS [values, interests, personality and skills] to answer the question and go through each one. Turn the VIPS model into questions that an employer would ask in the interview from the employer's perspective". **[Source: Placement Cycle 2, Phase 2 (C2P3), Career Guidance Counsellor, Placement Class 9th Dec 2010]**.

He explained how employers would use CVs to assess how students matched with organisational values. Employers would then be guided in determining if they had the required interests, personality and skills to be called for interview. When developing their CV, in response to the job spec, the PO echoed the CGC's need to emphasise a long term

perspective in terms of 'employability', understanding employer expectations **[Source: Placement Cycle 2, Phase 2 (C2P2), Placement Class, Non-Participant Direct Observation, February 2010]** and long term career development goals**.** This served to connect the CV & interview preparation sub-routine with the PO's screening and matching sub-routine and in turn to the employer's recruitment and selection sub-routine.

Screening & Matching Sub-Routine: In relation to the job spec, the PO explained that either limited or highly detailed content would serve to under-sell or over-complicate the required roles and responsibilities. This in turn would influence student interest and resultant action in the application process. Strategically, she expressed concerns when asking smaller employers to commit time and resources to even the shortest of job specs, let alone additional recruitment material, as for many firms this was an onerous commitment of resources within their beleaguered recruitment and selection sub-routine. Attempting to find a balance while negotiating for placement positions often required actions to set aside requirements for job specs let alone additional recruitment artifacts. In response to the 'job spec' students developed and submitted their CV, more often through the PO than directly to employers. This screening and matching sub-routine was similar to a commercial recruitment process. A poor CV, subjectively assessed by the PO and later by the employer would most likely stymie a call for interview. The CV guided the PO to match students to employers by assessing if candidates had the pre-requisites as expressed in the job spec linked to organisational values of the employer. This quality assessment was subjective (see Table 1) with the CV artifact representing values, interests, personality and skills of the students or as assessment to match various routine goals of the PO or employers (either short or long term). Without the CV, and without it meeting a subjectively arrived at quality standard, students would not progress within the placement. Presenting weak candidates for interview would also have a long term impact on employer relations within the placement programme. In addition if the CV artifact

is perceived to be of poor quality it would not survive the employer's recruitment and selection sub-routine. In conclusion we see how the job spec serves to guide actors in enacting relative sub-routines in different organisational contexts. Not only do actors use the CV within their dialogical exchange to enact different sub-routines, without the CV subsequent sub-routines would and could not be enacted. The CV played an important and central role in influencing repertoires for potential action and the enactment of subsequent sub-routines.

Dialogical Exchanges and the Spoken Word Reflecting Imaginal Others

This section looks at how 'imaginal others' in dialogical exchanges (Dialogical Exchange 3) provide evidence of organising for potential action. Each dialogue reveals actors intent associated with the ostensive aspect of the placement representing subjective goals. Imaginal others representing sensitiveness to others of 'the employer' and 'the student' were prominent within discussions about CV developed and the application of the VIPS model. These illustrated stereotypical employer expectations from stereotypical students **[Source: Placement Cycles 2,3 & 4]**. The 'employer', 'the company' or 'the organisations' expectations we represented in the job spec and recruitment materials. These guided the CGC and PO when advising students preparing their CVs and as noted above centred on employers goals, values and expectations for the recruitment and selection routine and overall goals for the placement routine. This presented complications for new actors such as students who without an inherited background were tasked with navigating and learning new schemas guided by imaginal others so develop new distinctions. The roles, responsibilities and identities to develop the CV artifact, secure an interview and achieve success initially in the screening and matching sub-routine and subsequently in the employer's recruitment and selection sub-routine is linked with the density and productivity of the dialogical exchanges

using imaginal others. Employers **[Source: Stage 2, Placement Cycle 2, 3 and 4]** expressed differences in perceived identities of the student actors. Some referred to students as 'employees' or 'new employees' with expected roles and responsibilities being no different to others, while some used imaginal others such as 'the interns' or 'the student on placement'. This mirrored how students perceived their own roles reflecting an insight how they were guided to performed sub-routines they referred to and how they accounted for their actions. This sensitivity to otherness reflected long-term versus short-term perspectives for both the employer and student actors. Being just 'the student on placement' resulted in students taking only immediate responsibility for tasks whilst students as 'employees', found in many accountancy placements, resulted in longer-term engagement beyond the immediate placement. Within the accountancy placement the imaginal other of 'the profession' was prominently used alongside students who referred to themselves as 'employees'. This contributed to how students perceived the accountancy sub-routines in the long run toward future trainee contracts and employment. In this context career development as a long-term goal, possibly using the VIPs model was evident. The 'profession' mirrored long term perspectives guiding students to enact sub-routines in different ways. In contrast the absence of a long-term perspective or perceived goal for the placement routine could be when students referred to their own roles as 'interns' or 'student on placement'. The use of imaginal others reflecting short term goals for the placement routines suggested a less routinised placement and was found in industries without professional qualifications i.e. emerging digital media.

Real Others in Dialogical Exchanges

The intertwined nature of artifacts and imaginal others informing action within dialogical exchanges was found. However these form the resources utilised by the actors i.e. real other,

as they arrived at new distinctions (Dialogical Exchange 1). All three groups of actor held different perceptions and levels of commitment to various goals of what it was meant to perform the placement routine. The PO's perception of the routine was cyclical in nature as she repeated the patterns of actions and activities across the four cycles where data was collected. She perceived student actions today as influencing the future availability of placements in subsequent cycles i.e. the actions of a student actor in an interview or at employer sites would impact on employer's perceptions of the placement and impact on her efforts to achieve her goals for the routine. Indeed the PO represented the only actor engaged in dialogues with all actor groups. Her central role thus became important when assessing the quality or productive nature of dialogical exchanges. The PO's role was perceived by students as similar to 'a lecturer' rather than that of 'an administrator' or 'recruitment specialist'. In contrast, the PO described herself as an 'intermediary' and/or a 'recruitment organisation'.

This distinction in the data provided an insight into the PO's central role responsible for sourcing all placements enacting the screening and matching sub-routine. This changed however as students began to deal directly with employers to source placements. As the economic recession intensified, differences in perceived responsibilities for job seeking changed. This had real consequences for sourcing placements i.e. as changes in the responsibility for the job seeking sub-routine shifted to student actors. The PO's role changed to that of a supporting intermediary with the screening and matching sub-routine becoming redundant and employers taking on increased responsibilities for screening and matching within their own recruitment and selection sub-routines. The lack of engagement was mirrored in the absence of dialogical exchanges with the PO, poor attendance at placement classes and confused understanding by students of roles as they facilitate actions and enactment of sub-routines. Data clearly indicated a lack of engagement **[Source: Stage 1,**

Phases 2, 5 & 8] and as reflected in employer comments on poor quality of CVs and interview skills **[Source: Stage 2, Phases 3 &6]**. Indeed student understanding of their own role as being an 'intern' rather than a potential 'employee' illustrated through reflexivity data i.e. 'my role as', also supported this assertion. In subsequent placement cycles this distinction and responsibility for job seeking guided changes in the potential actions of students. This substantively changed the role of the PO from being central to the placement routine i.e. enacting job seeking and screening and matching sub-routines in a 'recruitment specialist' in conjunction with employers to being by-passed altogether making these sub-routines in many cases redundant. The use and understanding of the PO's role, as an imaginal had the knock on effect of reducing how students engaged with the PO. Employer's perceptions of the PO as a recruitment specialist altered the very sub-routines within the placement as they engaging with student directly using online recruitment tools. As the PO officer's role was by-passed by employer's directly communicating with students the screening and matching sub-routine reliant on the presence of the CV became redundant. This impacted on the 'density' of dialogical exchanges with the PO from both students and employers. Whereas students did not engage with the PO the continuous change, related to artifacts and imaginal others, in the placement routine altered the PO's role in guiding the placement routine forward.

Discussion

The guiding aspect of routines is informed not just by artifacts but by their connectivity with imaginal others, so bringing about shared meanings and understandings (Feldman and Rafaeli 2002). Actors combine artifacts within dialogical exchanges resulting in guiding for maintaining aiming at stability and/or guiding for modification aiming at changes within the routine. As artifacts and imaginal others intertwine and coalesce the guiding nature of routines emerges. It is this guiding of repertoires of potential actions that we understand as

our basis for knowledge creating. As guiding within routines becomes more coherent due to the presence, and the density, of dialogical exchanges it raises the question as to how productive are these exchanges? From the data three qualities emerged to answer this: presence, quality and centrality. What is meant by these qualities is illustrated in the following sections.

Insert Table 1 about here

Artifacts Informing Potential Actions: How can artifacts in dialogical exchanges influence repertoires for potential action as a basis for knowledge creating? As can be seen the CV artifact was assessed and utilised by the different actors to enact different sub-routines to meet different perceived goals (see Table 1). This highlights the particularly important role of central artifacts in informing repertoires of potential actions at different levels. A comparison can be drawn with the job spec artifact, which holds different characteristics. The role of the CV artifact, used by all actors, in dialogical exchanges for different goals inhibits or constrains action. Its presence guided sequential enactments of sub-routines. However, its absence prevented the enactment of the PO's screening and matching sub-routine and the employer's recruitment and selection sub-routine. By comparison both artifacts are relied on to guide and account for action. But the absence of a job spec within dialogical exchanges did not prevent subsequent sub-routines from being enacted. The quality of the content of the artifacts helps to explain this. The quality of the job spec, which varied from a simple email to extensive recruitment materials, did not inhibit subsequent sub-routines from being enacted. The quality of the CV content, subjectively assessed during the screening and matching sub-routine, and additionally within the employer' recruitment and selection sub-

routine, would stymie a call for interview and further enactments of the placement for that student would cease.

Insert Figure 4 about here

The presence, perceived quality (see Table 1) and centrality of artifacts within multiple dialogical exchanges suggests a potential for actors to create knowledge, which in turn further enhances their ability to comprehensively influence repertoires of potential action across different sub-routines, for multiple actors in multiple sites. However, the presence of artifacts alone, which might increase dialogical exchanges, reveals a shortcoming in using the 'density of communications' (Gibbons et al 1994) alone to assess knowledge creating. The data presented here is consistent with looking past 'density' toward assessing knowledge creating using productive dialogue (Tsoukas 2009b) as its basis. In conclusion, the centrality, presence and quality of artifacts are significant factors in understanding how artifacts impact on enacting repertoires of potential action.

Imaginal Others Informing Potential Actions

Imaginal others play a role in guiding repertoires of potential actions. These were most evident among students and employers. Students were guided by what 'the employer' expected, as evident in job specs and recruitment materials. Students were also advised by the careers service to utilise the values, interests, personality and skills (VIPS) model to visualise employer expectations and develop goals within the sub-routines of CV and interview preparation. The dialogical exchange with 'what the employer wants' underpinned much of the guidance that was provided in placement classes and present in the job spec and recruitment materials. In response, employers viewed students as either potential employees

in the long term, or as 'interns' or 'students on placement' in the short term. This illustrated a perceived short-term versus long-term goal for the placement and impacted on how sub-routines were enacted. The imaginal others of 'intern' or 'student' were used and associated with the enactment of short-term goals, whereas 'future employees' reflected long-term recruitment and selection goals. This influenced how routines were referred to and how in turn they guided future actions. For accountancy students, a dialogical exchange with 'the profession' indicated a long-term approach that was confirmed with their long-term goal for the placement routine viewed as a career development routine. Students involved in creating CVs are guided by the job spec, by the associated imaginal others within the sub-routine of CV and interview preparation, and by long-term routines, especially the career development routine.

Insert Figure 5 about here

So how does the presence and use of imaginal others inform knowledge creating? As goals become more consistent in conjunction with central and quality artifacts the guidance of routine goals, as an imaginal other becomes more understood. Imaginal others, as sensitivity to otherness, are not only intertwined and connected to specific artifacts but also connected to routines and related actors. This perspective reveals significant scope for influencing how enactments of sub-routines replete with artifacts and imaginal others combined build an understanding of routine goals whether short term or long term to guide potential actions. Consequently, imaginal others used to guide actions are not specific to levels of analysis but mirror a complex multi-level form of guiding repertoires of potential actions consistent with previous discussions on transposable schemas (Sewell Jr 1992, Feldman 2000, Tsoukas 2009b). Guiding is influenced by short-term and long-term goals for the routine in question.

This suggests that the ostensive understandings of the placement, as informed by improved connections (Feldman and Rafaeli 2002), results in more productive dialogue (Tsoukas 2009b) with less confusion. It is the enhancing of the elusive quality of clarity in the routine's goal that suggests a second basis for knowledge creating as it serves to guide potential actions by reducing confusion.

Real Others Informing Potential Actions

Insert Figure 6 about here

The presence of a central actor, equipped with an understanding of the placement in macro terms, can increase connections and understandings and guide the goal of the placement for all actors. The PO, in her role as recruitment specialist involved in screening and matching for employers, provided a service of assessing the quality of student CVs. Her role in using student CVs altered significantly as students began dealing directly with employers. This reduced the number of dialogical exchanges and the PO's influence in achieving her goals for the placement routine of securing and placing students, and altered her role as a central actor. As the density of productive communications is taken to guiding action, a reduction in dialogical exchanges and the ability to guide the routine was evident here. Student actors did not repeat the placement routine and as new entrants in each cycle they were broadly unaware of 'how things are done', unencumbered by an 'inherited background' (Wittgenstein 1979 p.94 cited in Tsoukas 2009b) but also impaired in understanding a clarified routine. Student actors were pervasive in terms of their non-engagement across the four placement cycles where data was collected. But engagement and dialogical exchanges were found when central actors and central artifacts were present (job specs, CV and activities of the central PO). As

the PO's role was later by-passed with the use of online recruitment materials, the ability to guide routines was hampered. It would appear that student actors sought out accessible forms of guidance and while dialogical exchanges using CVs and the PO (combined) changed guidance of the routine was sought through different and more accessible channels.

Coordinating Guidance: The Roles of Presence, Perceived Quality & Centrality

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Insert Table 2 about here

The intertwined presence of actors, artifacts and imaginal others plays a significant role in guiding repertoires of potential actions. By their ability to increase 'connections', which we have discussed here as the density of dialogical exchanges; and 'shared understandings', which we understand as productive dialogical exchanges their significance and influence becomes clear. This is supported in the wider literature, of artifacts enabling performativity (D'Adderio 2011). However, it is when we start considering centrality and quality that we gain further insight into productive dialogical exchanges. The centrality of the CV artifact, used by all actors, increased the density of dialogical exchanges and its absence inhibited enactments of subsequent sub-routines. Being central, it provided a common reference point to focus the choices through the repertoire for potential actions within the placement. The central role of actors such as the PO illustrated how an overview of the macro routine can facilitate, in conjunction with utilising central artifacts, a consistent enactment of the repertoires within the routine toward specific goals. As the PO's central role within dialogical exchanges was circumvented in later cycles, the goal of the placement was opened to additional interpretations as evidenced in the use of imaginal others reflecting a mixture of long-term and short-terms goals and various understandings of employer and student roles

and responsibilities. Both actors and artifacts embody imaginal others coalescing through dialogical exchanges to guide actors. Confusion regarding roles, responsibilities and routine goals, among students without an inherited background, is inevitable.

The centrality of imaginal others is best understood as reducing confusion but in so doing may well reduce the density of dialogical exchanges in favour of more productive streamlined exchanges. In conjunction with central artifacts, guidance is assured to become more coherent. For this reason, we turn to consider 'quality' as it informs an understanding of productive dialogical exchanges. Even with central artifacts present they are subject to quality assessments by the actors involved in the routine. We identified perceived quality, in addition to 'presence' and 'centrality' as being central to enabling, coordinating and guiding potential actions. We found that the role of imaginal others contributes to the productive quality of these dialogical exchanges by reducing confusion with regards to actor roles, responsibilities and routine goals within the placement routine. Interestingly, too many transposable schemas including imaginal others can also confuse potential action. This suggests that guidance that is clarified is dependent on dialogical exchanges including artifacts and actors. Our understanding of quality relating to real other dialogues relates to the use of artifacts and imaginal others as resource to guide potential actions.

Our assessment of presence, centrality and perceived quality supports Pentland et al.'s (2012) point that density of dialogical exchanges may well support knowledge creating on a macro societal level but that it's the productivity of dialogical exchanges as micro level actions that enable the macro-level dynamics of routines. As an obvious point, to understand knowledge creating density of exchanges does not imply productivity within exchanges. The three elements explored here are consistent with Pentland & Feldman's (2008a) research on a failed software implementation where they argue that a artifact-centred approach is not well suited to designing routines. It might be interpreted that the implementation of the new

SeminarPro artifact did not result in productive dialogical exchanges. As the goals for implementation did not materialise, as perceived by the actors, previous patterns of activities were reverted to. The artifact itself appeared to inhibited dialogical exchanges, with the artifact losing its central role. It appeared in that case productive dialogical exchanges ceased. We illustrated how different dialogical exchanges collectively and individually contribute to guidance and coordinating in different ways.

The inter-subjective understanding of the CV artifact and related sub-routines linked with various goals and imaginal others revealed the complexity of intertwined influences in guiding routines are enacted (Dionysiou and Tsoukas 2013). Artifacts depending on their centrality, presence and quality linked to performative aspects of the routine. Additionally imaginal others serve to guide the ostensive abstractions of goals and roles played within the routine. The manner in which artifacts & imaginal others coalesce, influencing potential repertoires of action informs our understanding of the generative dynamics within routines. The logical extension is that as artifacts and imaginal others coalesce, the density and productivity of dialogical exchanges becomes coherent. Articulated schemas, including imaginal others and new distinctions are emergent providing greater guidance for potential actions. Feldman & Rafaeli (2002) outline how routines make 'connections' which in turn enable 'shared understandings' about 'what to do in a particular circumstance' and 'why some actions are appropriate'. We contend that the increasing connections i.e. density of dialogical exchanges, alone is not enough but must be accompanied by shared understandings i.e. productive dialogical exchanges, as shown in our empirical analysis from the three dialogical exchanges. This contributes to our understanding of generative routines and in turn knowledge creating.

Conclusion

We contribute to a better understanding of generative routine dynamics providing a pathway for further empirical research into knowledge creating. We show, substantiated by the analysis of an extensive dataset in a university-industry setting, an inherent consistency supporting the emphasis on dialogical exchanges informing repertoires of potential actions at the centre of generative routine dynamics. We have shown the roles actors, artifacts and imaginal others, harnessing the spoken word and text, have an impact on the 'density' and more importantly the 'productivity' of dialogical exchanges (Gibbons et al 1994, Tsoukas 2009b) as the exchanges inhibit, mediate, enable and guide, as well as coordinate, potential actions within routines. Our approach was informed and is consistent with calls to respect sociomateriality and agency as a cornerstone of the generative routine dynamics literature (Pentland and Feldman 2008, Pentland et al 2012). While action at the centre of generative routines requires further conceptualising, we show the advantages of considering actors' uses of dialogical exchanges as being sociomaterial. Whereas Leonardi (2012) provides one approach for how the social and the material can be entangled, we posit that our conceptualisation of dialogical exchanges, provided by Tsoukas (2009a), provides a complementary understanding of this entanglement. In the absence of dialogue with artifacts and real others, routines are confused and lack clarity leaving actors to rely on their own subjective articulations, informed by schemas which include imaginal others. Here the opportunity for productive dialogue is, we argue, impaired, especially where the perceived quality of text within artifacts is impaired. By additionally focusing on how imaginal others, used in the spoken word, inform potential action we show, as suggested by Pentland et al (2012), links between micro-level actions and macro-level dynamics. Our methodological contributions speak to the challenges of multi-level research and address the absence of research on inter-organisational routines. The university-industry context of the placement was also identified as being an under researched context (Narayanan et al 2010). It provided

us with an accessible context for understanding a macro routine with constituent sub-routines. It was this level of granularity that enhanced the richness of the data required for studying knowledge creating. Without an inter-organisational multi-level perspective a rich understanding of the placement would not have been arrived at. The focus on imaginal others informed by schemas revealed abstractions, within the ostensive, from multiple levels i.e. 'the employer' compared to 'the profession' for example. This provided insights which allowed us to have a more comprehensive overview which might otherwise have been lost. More broadly we departed from knowledge transfer in favour of as a more appropriate and comprehensive processual approach to knowledge creating. We contribute to theory development by combining two theoretical approaches. The explanatory power of the ostensive-performative aspects of routines, understood as a generative system, is enhanced when we incorporate a dialogical approach to new organisational knowledge. Our contribution is to reveal new relationships, connections and shared meanings between these two theories and to operationalise the ostensive-performative theory of routines as being generative unpacked from a dialogical perspective. We illustrated stark similarities between the two approaches, both theoretically and from supporting empirical data suggesting an inherently robust theory for knowledge creating. This approach not only built on the lack of attention in routines given to agency (Feldman and Pentland 2003) but also tackled the recent call to focus on action (Pentland et al 2012). While Pentland et al (2012) have gone a long way to highlighting action, our evidence showed that jointly imaginal others and artifacts are used by actors within dialogical exchanges and that these coalesce (as assemblages) to contribute to this action. Through the use of dialogicality we provide a better understanding of the connections, as density of exchanges, and understandings as productivity of dialogical exchanges (Feldman and Rafaeli 2002) as they coalesce to inform repertoires of potential actions in line with recent developments in organisation studies (Feldman and Orlikowski

2011). It is through the central role of quality artifacts and imaginal others that actors increase their engagement in productive dialogical exchanges and increase opportunities for the emergence of new distinctions using goals (Tsoukas 2009b). For this reason repertoires of potential actions can be clarified and can provide guidance in routine enactment. It is the quality of guidance whether for change i.e. to modify the routine, or stability i.e. to maintain the routine, through productive dialogues, that routine guidance contributes to knowledge creating. Finally, our approach facilitated the emergence of guidance, consistent with the dualist-dualism debates (Farjoun 2010, Feldman and Orlikowski 2011, Pentland 2012). Our data supports the interdependence of dialogue and routines as being interdependent in relation to potential action (Feldman and Orlikowski 2011). In conclusion from a generative routines perspective we argue the case for the power of text and the spoken word within dialogical exchanges as a guiding force at the centre of routines. We assert that dialogue occurs within routines but that routines cannot exist without dialogical exchanges. We suggest the emergence of generative routine dynamics as a separate distinct focus within routines theory and by extension a potential dominant approach to knowledge creating.

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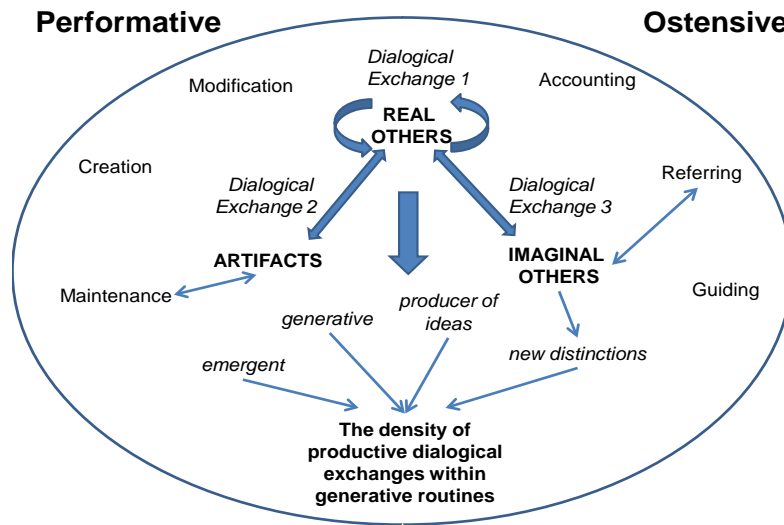
Figure 1

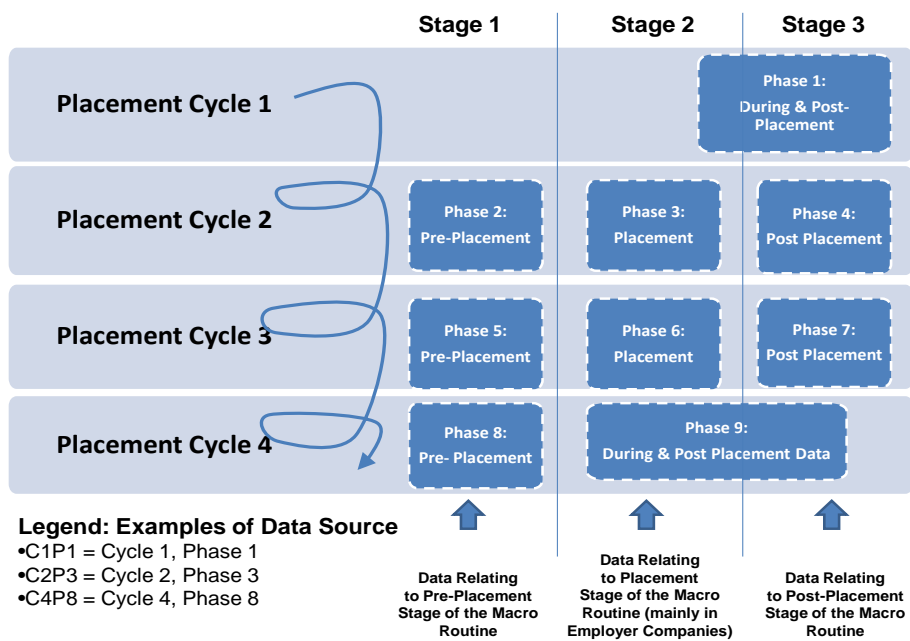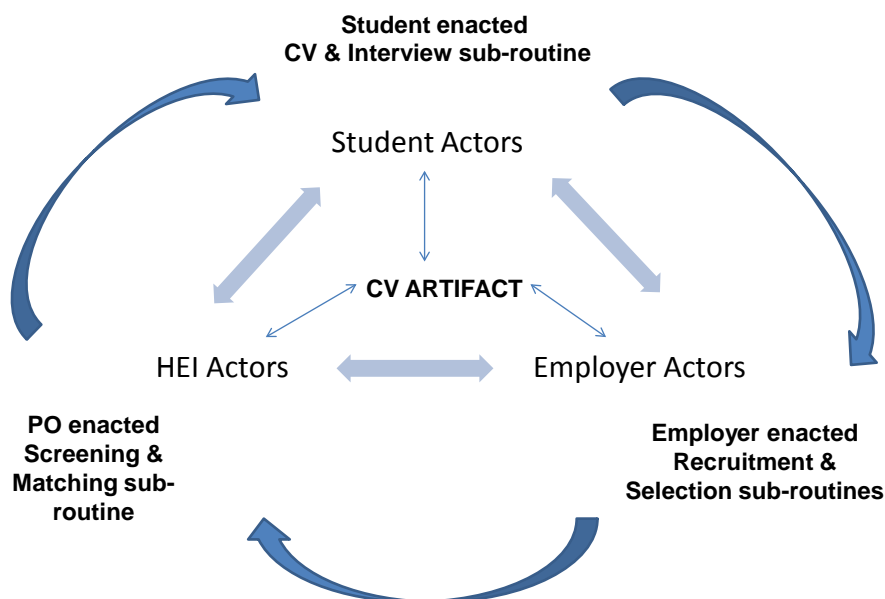*Figure 1: A Generative Framework - Dialogical Exchanges within Routines*

Figure 2

Figure 2: Structure of the Data: Repetition in the Pattern of Activities

Figure 3

**Student enacted
CV & Interview sub-routine**

Student Actors

CV ARTIFACT

HEI Actors   Employer Actors

**PO enacted
Screening &
Matching sub-
routine**

**Employer enacted
Recruitment &
Selection sub-routines**

Connections & Shared Understandings: Sub-Routines, Actors and Artifacts.

Figure 3: The Role of the CV Artifact Connecting Sub-Routines, Actors & Artifacts

Table 1

Enacting Actor	Artifacts	Related Sub-Routines	Quality Assessment	Sub-Routine Goal
Student Actors	Job Spec & CV	CV & Interview Preparation Sub-Routine	Guided to meet with employers organisational values and employment objectives. If met then the CV's quality is understood to be adequate	Goal here was to match students values, interests, personal and skills (VIPS) in the CV to those expressed in the Job Spec and recruitment materials so as to be successful in the PO's Screening & Matching Sub-Routine and then Employers Recruitment & Selection Sub-Routine i.e. be called for interview. This goal for the routine was expressed in both short and long term ways.
Placement Officer (PO)	Job Spec & CV	Short term (primarily) Screening & Matching Sub-Routine	Quality assessed as good enough to be put forward for interview (short term)	Goal here is to match and placement students with appropriate employers by screening the developed CVs and matching them with employer recruitment requirements i.e. to get student placed with employers.
Career Guidance Counsellor (CGO)	CV	Long Term Career Development Sub-Routine	Quality assessed as reflecting the student's values, interests, personality and skills (VIPS model) in the long term and the matching of this to employer's values and organisational culture.	Goal here is to get student to think pro-actively about their career and career development by guiding the use of the VIPS model (values, interests, personality and skills) to develop CVs in the short term and their career in the long term.
Employers	Job Specs & CV	Recruitment & Selection Sub-Routine	Quality assessed as meeting expectations of employability in the short or long term.	The short term goal here is to recruitment appropriate placement students to meet staffing requirements. Long term recruitment and selection during the placement was also present in the data.

Table 1: Centrality of Artifacts linked to Actors, Sub-Routines & Goals (Imaginal Others)
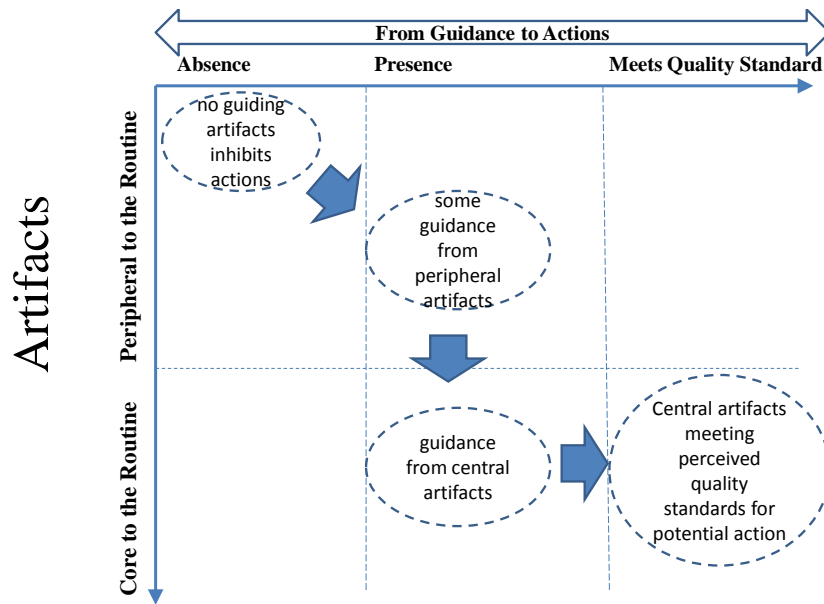
Figure 4

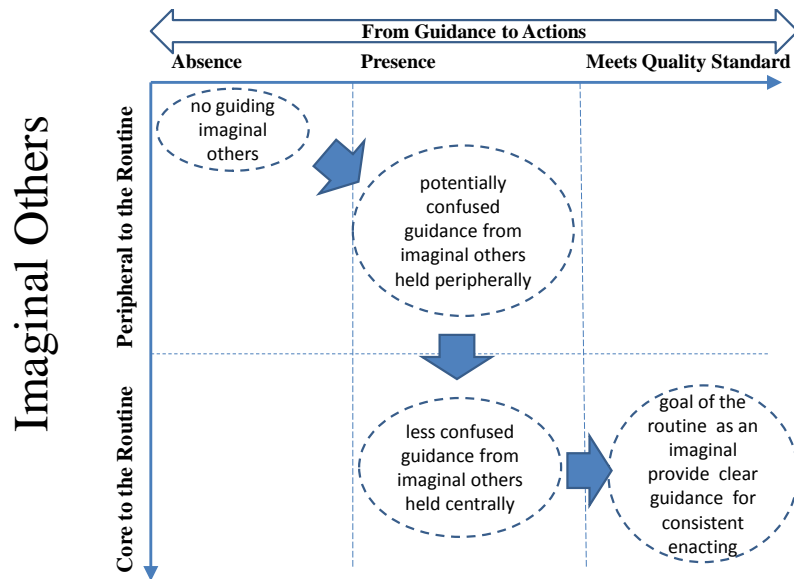**Figure 4: Artifacts guiding repertoires of potential action**

Figure 5

Figure 5: Imaginal Others (i.e. Goals) guiding repertoires of potential action
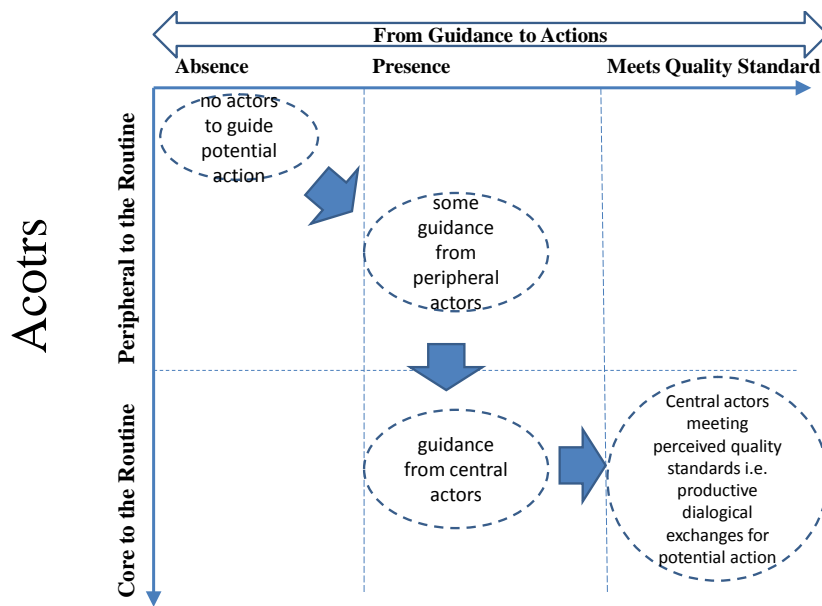
Figure 6

Figure 6: Actors guiding potential repertoires of action

Table 2

	Actors / Real Others	Artifacts	Imaginal Others
Presence	Increases density of dialogical exchanges.	Can increases the density of dialogical exchanges	Can increase the density of dialogical exchanges
Centrality	Increases density of dialogical exchanges by connecting actors.	Increases density of dialogical exchanges by connecting actors	Can increase the productivity of dialogical exchanges as roles, responsibilities and routine goals become coherent. However density of dialogical exchanges might well be streamlined to excluded less productivity dialogical exchanges.
Perceived Quality	Increases density & productivity of dialogical exchanges as guidance becomes more coherent.	Increases density & productivity of dialogical exchanges by enabling enactments of subsequent sub-routines..	Confusion is narrowed as the quality of guidance becomes coherent increasing the productivity of dialogical exchanges. However density of dialogical exchanges might well be streamlined to exclude less productive dialogical exchanges.

Table 2: The Density & Productivity of Dialogical Exchanges