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The Domains of Intellectual Capital: An Integrative Discourse Across Perspectives

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Introduction

Intellectual capital (IC) has often been conceived as the sum of human capital (HC), organisational capital (OC) and social capital (SC) (Subramaniam and Youndt 2005: 451), while, in other studies, IC equals the sum of HC and structural capital (Bontis 2001: 45). Elsewhere, it is framed as knowledge that is created and stored in those three capital components, such that knowledge embedded in one component of IC can leverage the value of knowledge in the other components (Reed et al. 2006: 868). While many definitions exist, comprising multiple independent and dependent variables that create confusion in the literature, HC is the common denominator of IC where there is consensus related to its components: (1) knowledge, education and training, (2) expertise and abilities, and (3) behaviour and commitment (Martin-de-Castro 2014: 240). Previous literature enables the more prominent aspects of IC to be explained. Taking the lead from Subramaniam and Youndt (2005), originally conceived from Becker (1964) and Nelson and Winter (1982), HC is the knowledge, skills and abilities and other skills (KSAOs)—for example emotional intelligence—that represent individual-level attributes or individual human assets. Using as a foundation the resource-based view (RBV) (Barney 1991; Barney and Felin 2013; Peteraf and Barney 2003) and the micro-foundations literature (Coff and Kryscynski 2011; Felin 2012; Ployhart and Moliterno 2011), this chapter seeks better to understand how individuals'

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knowledge in the form of KSAOs become firm-level human capital resources at the organisational level (OC), as a means to develop dynamic capabilities. By RBV, I mean determining which heterogeneous resource combinations in factor markets lead to competitive advantage. By micro-foundations, I mean the inseparability and importance of both individual and collective human capital resources (HCR) (Ployhart et al. 2014: 377), the complementarity of these resources (Barney and Felin 2013) and how, through the process of emergence, HCR become transformed and bundled, often via high-performance systems, into useful dynamic capabilities at the organisation level (Boxall and Macky 2007; Eisenhardt and Martin 2000; Felin 2012; Ployhart and Moliterno 2011).

An exploration of HC and HCR, however, cannot be undertaken without understanding organisational capital (OC). OC is defined as institutionalised knowledge that is codified and resides within and is utilised through databases, patents, manuals, structures, systems and processes (Subramaniam and Youndt 2005: 451). Yet it is also useful to think of OC as structural capital, that is, the processes and procedures that are created, and stored in, a firm's technology system and that speed the flow of knowledge through the organisation. While at one time knowledge may be stored and codified, which facilitates a feedback loop at different levels, at another it is rendered informative through the feed forward process between the individual, the group and the organisation (Bontis et al. 2002; Crossan et al. 1999). Some scholars suggest that the evolving stock of IC over time is dependent on knowledge management (Bontis et al. 2002: 440) and how this knowledge becomes transformed, leading to new innovations (Nandkumar and Arora 2012), the basis of which are mechanisms for creating, protecting and transferring knowledge (Argote and Ingram 2000; Hu and Randel 2014). Since organisations need to continuously respond to the environment through superior learning (Hedberg 1981; March 1991), OC must comprise a learning culture that understands (and can measure) how knowledge stocks change and can be transformed over time (Bontis et al. 2002; Murray 2002). The third component of IC is SC, or relational capital that is focused on the development of a complex set of interactions and networks, both internally and externally. The basis of this is obligations, expectations and trust (Coleman 1988), network ties (Granovetter 1973), and norms and shared values (Nahapiet and Ghoshal 1998). Principally, SC is about the 'mobilization of resources through a social structure [...] and an] implicit set of available resources and ongoing relationships implemented through interactions among individuals or organisations'.

The synthesis of IC in the discrete forms described makes sense in research domains where it is possible to use precise measurement tools, and possibly in contexts where KSAOs might be generalised, such as within similar industries with similar isomorphic practices. However, it is more likely, given that significant differences exist in terms of what constitutes IC, that it will be difficult to measure how common inputs lead to competitive advantage in terms of achieving above average rents, that is, over and above firm resources, or above the marginal breakeven rate of near competitors within the firm's product markets. This is because, as I highlight in some detail below, there is little research that examines IC across different constructs, and is also due to the fact that time and space, as well as measurement constructs, often differ. Thus, it is difficult to grasp exactly what attributes are common to which approach. The relationships between the three constructs (human, organisation, and social capital) have been criticised in different ways. General criticism relates to the vagueness and breadth of definitions where different types of IC represent different kinds of knowledge assets (Martin-de-Castro 2014) and differences in human capital (Nyberg et al. 2014), which result in unclear measures that are difficult to generalise across organisations and industry contexts. Take, for instance, a specific HC skill. The latter must be accessible for unit-relevant purposes (Ployhart et al. 2014), which becomes challenging if the skills that a person possesses in one unit, for example selling skills, are not required in another unit—pointing to the existence of many different HC resources present across units. Moreover, the terms 'skills' and 'abilities' are often used interchangeably between different literatures, which conflicts with the psychology literature where skills and abilities are conceived as different constructs (Nyberg et al. 2014: 328; Wright et al. 2001).

Similarly, measuring IC on the basis of RBV alone suggests that this measure would be too broad, as many resource configurations are possible (Maritan and Peteraf 2011; Reed et al. 2006) and there are well-known time constraints related to trading resources in factor markets (Dierickx and Cool 1989). Following this line of thinking, many scholars measure performance that is underpinned by similar resource attributes leading to circular or tautological arguments often described as routines to learn routines (Eisenhardt and Martin 2000: 1107; Hsu and Wang 2012). At the OC level, despite recent studies of the relationship between the different IC components and performance, it is still unclear what role dynamic capabilities (DC) play, either those that develop within or across groups (Bridoux et al. 2017). For instance, we know that DC are described as 'organisational and strategic routines by which managers alter their resource base, acquire and shed resources, integrate them together, and recombine them, to generate new value-creating strategies'

(Eisenhardt and Martin 2000: 1107). But what is less clear is how these capabilities emerge from HCR.

Further, given the importance of trying to operationalise different IC components, are DCs the same thing as firm or unit-level HCR? Moreover, how are DCs operationalised in moderate or dynamic factor markets, given that firm performance should be the end goal of IC processes? Lastly, in nearly all prior studies, the effects of SC have been examined along traditional measures of external social capital (ESC)—capital related to building external social relationships (Coleman 1988; Granovetter 1973). However, it is valuable to study internal social capital (ISC) and ESC as both may lead to fungible and tradeable resources, depending on the context (Nahapiet and Ghoshal 1998; Reed et al. 2006). There are also many recent investigations of the relationship between ESC and performance, studied within a sociocentric paradigm where the focal actor is a collective (McElroy et al. 2006; Mu et al. 2008) as well as into the influence of SC on various forms of innovation, technology and local knowledge (Aribi and Dupouët 2015; Díez-Vial and Montoro-Sánchez 2014; Leal-Millán et al. 2016; Manning 2010). Thus, a potential opportunity for further study is to explore in more granular terms the effects of ISC and ESC on performance, how these relationships can be measured, and how they might transform organisations' existing stocks and flows of knowledge. For my purposes here, this relates to connecting discourses between these approaches. While these many issues cannot all be empirically addressed in a theoretical review, the discussion clarifies the theoretical linkages between the different IC constructs by developing a connecting discourse around IC variables. Several discourses and linkages between individual HC and unit-level HC, OC and SC are developed. To this end, my goals are twofold. First, the main aim is to develop an integrative discourse of the links between HC, HCR, OC and SC. The chapter explores how these components of IC are linked to competitive advantage. The second aim is to illustrate, through a process of emergence, how DCs are created by exploring the connecting discourses between the domains of IC knowledge.

This chapter is structured as follows. First, the discussion explores the first IC domain in HC and its connecting themes. Second, HCR are discussed within the context of the aggregation and accumulation of KSAOs from the HC level. This section goes into the question at some length, to outline how the processes of complementarity and emergence occur as a connecting discourse. Third, I consider how DCs are formulated from HCR and how knowledge is transformed at the OC level. The final part of the chapter explores the SC domain and the connecting themes. Here, the chapter develops a discourse between ISC and ESC and DCs by building on the idea that

it is problematic to measure SC on the basis of collapsing both internal and external SC. Overall, the chapter seeks to make a major contribution to the literature and addresses recent calls for more integration of the IC construct.

Conceptual Framework

The following discussions on HC build on recent research into the relationships between HC and HCR. The first basic tenet of these relationships is, broadly, that many individual attributes that one possesses are innate, representing some individual capabilities that already exist, as Felin (2012) suggests, and that these capabilities grow endogenously, reflecting latent possibility. Felin posits that the ability to do something, anything—whether fly, walk, create or think—is a function of the nature of an organism (2012: 286), such that while scholars are quick to study the environment and how its inputs effect subparts or organs, they often miss the endogenous factors that underlie capability or behaviour. Similarly, individuals are the product of their upbringing, schooling and education; they already possess multiple abilities and behaviours that are latent talents and often poorly matched to organisation needs (Barney and Felin 2013; Boxall and Macky 2009; Campbell et al. 2012). The second broad tenet is that individual-level KSAOs cannot be easily generalised to a wider set of homogenous capabilities that can be accumulated into firm- or unit-level competitive advantage, nor deployed to achieve greater strategic impact (Ployhart and Moliterno 2011; Wright et al. 2001). Following this line of thinking, we see that individual firm-specific skills valuable to a firm may not necessarily restrict the mobility of people between one firm and another, and collective skills are seldom homogenous (Nyberg et al. 2014). Ployhart and Moliterno suggest that ‘researchers assume a relationship between individual KSAOs and unit-level performance but there is little theory to support this association’ (2011: p. 2011). I now turn to a discussion of these relationships.

Individual-Level Human Capital

In a recent study of the relationships between firm-level knowledge and skills and general knowledge and skills, Campbell et al. (2012) contend that KSAOs have limited applicability outside a specific firm, since any HC generated will be valuable, rare and easily kept from rivals. This follows the RBV that the resources held by firms within an industry may be heterogeneous

and thus not readily transferable between firms (Barney 1991; Peteraf and Barney 2003). HC resources include the ‘training, experience, judgement, intelligence, relationships and insight of individual managers and workers’ (1991: 101) that are not easily replicated by other firms. However, this is not the case for general HC, referred to as worker skills, that might be more valuable outside the firm in question (Campbell et al. 2012: 377). For instance, the latter authors suggest that specific skills—such as the knowledge obtained from sending people on a training course—may make these skills less attractive to external firms who may require a different skill set dictated by their own firm-specific requirements. However, a worker may have many unused general skills that are innate, such as high-level problem solving skills, and which are not desired by her current employer but attractive to other organisations. This suggests that firms ought to focus on identifying all general and firm-specific skills and competencies that are attractive in labour markets. This perspective is consistent with other recent studies on high-performance human resource (HR) practices that influence employee attitudes, behaviours and competencies (Cohen 2015; Kehoe and Wright 2013; Shin and Konrad 2017). Moreover, firms should not generalise about how KSAOs might represent the sum of all individuals’ skills, given that many of these will be firm-specific as well as general skills. Further, firm-specific HCR plus general skills influence the mobility of workers between firms, highlighting the importance of how organisations manage and treat their HC stock as complementary and related resources (Nyberg et al. 2014; Ployhart et al. 2014).

This observation is consistent with the meaning of complementarity in the strategy and micro-foundations literature, that is, the idea that the presence of one element of resource combinations in a system increases the value of other elements (Ennen and Richter 2010). Similarly, multiple complementarities of KSAOs are required to accomplish most tasks within a task environment that in itself can either be simple or complex (Barney and Felin 2013; Ployhart et al. 2014). For example, tasks on a production line may be relatively simple but if we asked a worker to perform multiple tasks as part of an assembly unit, further combinative or bundlings of skills may be required across assemblage tasks involving other workers. Barney and Felin note, however, that focusing on HC just at the individual level (whether in combinative or compilation forms) also misses the ‘unique interactional and collective effects that are not only additive but emergent’ (2013: 141). For instance, Ployhart et al. (2014: 384) suggest that KSAOs are not only interactive but also causally related, such as when highly stable KSAOs (such as cognitive ability) influence the more malleable KSAOs (such as job knowledge). Of course, at the individual

level, it would be valuable to try to recognise what all of those complementarities, interactive and collective skills are and how they might be consolidated as HCR.

Recent research of 32,000 HR professionals across the globe led to the development of nine competency domains that were deemed necessary for increased job performance. Some of these for example include HR technical expertise and relationship management, communication and global and cultural awareness, and ethical practice and business acumen (Cohen 2015: 209). The point is that organisations need to take stock of their suite of knowledge at the individual level, both specific and general KSAOs, the complementarities of those resources and how they emerge over time, and what contributions they make to developing a set of competency domains germane to ongoing performance. Managing the stocks of knowledge in this way also adds to the collective perceptions of employees, as revealed in recent studies where high-performance HR practice is positively related to affective commitment, organisational citizenship behaviour and intent to remain with the organisation (Kehoe and Wright 2013: 383). Here, and with a note of caution, it may be equally important to establish a clear line of sight between strategy and performance, and to foster integrative frameworks that support discourse in these areas. That is, strategic development in factor markets demands more than just an understanding of RBV on heterogeneous resources that lead to competitive advantage. People management practices and strategies manifest in organisational capabilities (or competencies), group competencies/norms and individual KSAOs, and are embodied in HC and SC and knowledge stocks and flows that collectively establish superior performance and/or competitive advantage (Buller and McEvoy 2012; Nyberg et al. 2014; see also Wright et al. 2001). These relationships invoke a more detailed review of firm- or unit-level resources.

Firm- or Unit-Level Resources and Organisational Capital

In a recent review of HCR by Ployhart et al. (2014), as well as a meta-review by Nyberg et al. (2014), a distinction can be made between individual-level and unit-level or firm HC resources. Nyberg et al. suggest that while 'KSAOs are unique constructs at the individual level, they manifest different types of KSAOs at the collective level' (2014: 321). The premise of these relationships is that scholars need to shift from thinking about HC as an individual-level

construct to the broader notion of HCR, given that different ‘types’ of HCR across organisations will have different unit-level performance outcomes. HCR then are a ‘unit-level resource that is created from the emergence of individuals’ knowledge, skills, abilities, and other characteristics’ (Ployhart and Moliterno 2011: 127). Ployhart et al. (2014) suggest, however, that emergence occurs mainly across levels, for instance between departments in an organisation, whereas complementary resources can be present within the same unit and across levels. Complementarity exists in the aggregate not only in the formation of individual HC, and with the consistent application of HPWS that act as a lever to allow this to occur, but also in multiple complementarities that are required to complete more complex tasks. They consist of both causally related and interactive resources that aggregate at the unit or organisational level through social interaction, interdependence and influence.

Barney and Felin (2013: 147) contend that emergence leads to collective outcomes that are surprising and not necessarily reducible to different individuals. In much of what follows, I draw on the work of Barney (1986); Barney and Felin (2013) and Felin (2012) and Nyberg et al. (2014) by describing how HCR comprise complementarity, interaction, causality and the aggregation of HC resources within and across higher levels of firm or unit HCR in terms of resource accumulation. Here, and as a way forward, a synthesis of the strategy and change literature suggests that firm- or unit-level HCR acts as a stock of resources at the firm level for the development of DCs. To the extent that HCR represent a multitude of resources that are complementary and interactive (Ployhart et al. 2014), accumulative (Dierickx and Cool 1989), integrative and interdependent (Eisenhardt and Martin 2000), reconfigured, coevolving and transitioning (Brown and Eisenhardt 1997), and enabled through composition and compilation (Ployhart and Moliterno 2011) among others, they are more likely to be a driver of competitive advantage in factor markets. Resources bundled in this way contribute to the formation of organisation-level DCs. I illustrate here that a combination of HCR leads to the establishment of structural capital. Structural capital refers to the structures, systems, processes and established routines embedded within the firm (e.g., Hsu and Wang 2012), which encompass the establishment of routines around high performance plus a compilation (rather than a composition) of DCs.

Both structural capital and DC comprise OC based on this review. Thus, I outline below how OC leads to competitive advantage depending on the environmental context. In terms of how, through more efficient use of OC resources, organisations influence firm performance and competitive

advantage, I use DC as the lever to explain the way firms build competitive advantage in factor markets. Dynamic capabilities as outlined are similar to how Helfat and Peteraf describe DCs as ‘the ability of an organization to perform a coordinated set of tasks, utilizing organisational resources, for the purposes of achieving a particular end result’ (2003: 999). Elsewhere, Helfat et al. (2007: 1) suggest that capabilities relate to the capacity of an organisation to purposefully create, extend or modify its resource base, in much the same way that Stahle (2008: 165) implies that capabilities are a learned pattern of collective activity through which the organisation systematically generates and modifies its operation routines in pursuit of improved efficiencies, possibly because of labour market frictions that lead to more investment in HC (Molloy and Barney 2015). However, given how DC is implemented, the working definition described by Eisenhardt and Martin (2000) is preferred, that is, it constitutes “well-known processes such as alliancing product development, and strategic decision making. ... their value for competitive advantage lies in their ability to alter the resource base, create, integrate, recombine, and release resources” (16). The basis of OC—encapsulating structural and dynamic capability—relies on the accumulation of resources in HCR to achieve competitive advantage as those resources aggregate (Barney and Felin 2013) and, over time, become embedded in structural capital. A number of examples from extant research illustrate the connecting discourse.

First, factor markets can be described in terms of ‘where firms buy and sell the resources necessary to implement their strategies’ (Barney 1986) to achieve above-average rents through heterogeneous resources that create a resource-based advantage (Barney 1991). This occurs in two ways: (1) where a firm has superior information about the value of the resource a priori, or (2) where the firm is lucky (Maritan and Peteraf 2011: 1375). Later, researchers countered these original claims by proposing that resource accumulation processes provide another way to achieve competitive advantage other than resources acquired through superior information. Here, the purpose is not to build on the strategy literature debate about these two positions (e.g., see Dierickx and Cool 1989; Helfat and Peteraf 2003; Pacheco-de-Almeida and Zemsky 2007) but rather to demonstrate through illustrative examples how DC is the driver that helps organisations to achieve competitive advantage. The accumulation of resources occurs in multiple ways, the basis of which is micro-foundations that are aggregated into HCR. Out of these individual and unit-level HC resources, individuals aggregate into teams, groups and organisations in non-linear ways (Barney and Felin 2013: 149; see also Bridoux et al. 2017) and often in novel fashion (Felin 2012; Nyberg et al. 2014). Aggregate resources in turn, and over time, build unique DC based on established

deep-seated organisational capabilities that may yield a sustained competitive position, especially where they relate to training and investments in HC (Eisenhardt and Martin 2000; Helfat and Martin 2015; Riley et al. 2017).

Brown and Eisenhardt (1997), for instance, in a study of the high-velocity computer industry characteristic of blurred market boundaries in dynamic markets, demonstrate how firms built organisational structures and systems based on continuous change. In the more successful of these, capabilities were built around probing routines (capabilities), including those related to a vision of themselves as 'creators of the fastest software on earth' (1997: 16). Furthermore, new product inquiries by new product developers and engineers became product options that were useful in new markets. Here, creators were aggregating their combined bundle of KSAOs to form strong interactive capabilities that related to emergence often in novel and exciting ways. Interdependence within the unit was important, shielding the successful firm from market vulnerabilities and access to only one type of market probe, since new futures in high-velocity markets arrive quickly.

Similarly, in evolving from the present to the future, and by avoiding the prospect of leaving future projects to arrive suddenly, complementarities related to transitioning product portfolios that 'created an almost seamless switch from one project to the next' (1997: 21) became a familiar routine. Less successful were those who relied on structural capital only—in other words, those with structures, systems and processes that were not flexible enough, thereby creating stop/start scenarios, and which lacked well-defined responsibilities or a structured development process and so product profitability and project schedules were unclear (Brown and Eisenhardt 1997: 11). For successful firms, out of the aggregation of design and organisational imperatives there was evidence of both compilation and cross-level emergence that combined distinct KSAOs with the composition of homogenous and similar KSAOs (Ployhart et al. 2014: 387). This often related to training, for instance probing routines, that directly influenced financial performance in respect of new project efficiencies. These findings are similar to those of a recent study into the relationship between whether effective investments in general training can benefit firms financially (Riley et al. 2017: 1896), where 'firms that engage in superior training efforts do receive significant financial returns, and the variance in these financial returns is affected by the firms' investments in the complementary assets of R&D [research and development], physical capital, and advertising'.

In much extant research, therefore, there is an explicit link between modifying current capabilities as investments in HC and creating new capabilities for knowledge creation. However, these capabilities arise from the unit's HCR,

in the above examples, that is the capacity of the organisation to build multiple complementarities between product innovation, and cultural and HCR. Ahuja and Lampert (2001) indicate that when an organisation becomes more exposed to new knowledge domains, for example probing, exploring, training, testing out new project and product ideas as described earlier, then existing knowledge becomes less reliable and attractive. The opposite of this is seen in how HCR are used by firms in more predictable linear situations. In moderately dynamic contexts, for instance, where change occurs frequently but along predictable and linear paths, a firm's structures, systems and procedures reinforce existing knowledge such that the knowledge stock creates 'a path-dependent trajectory of reinforced knowledge' (Subramaniam and Youndt 2005: 453; see also Greenwood and Hinings 1996). Here, capabilities may lose their dynamic features through isomorphic product and service replication as other likeminded organisations adopt institutionalised workplace structures that conform to their organisation environment, largely because firms in this situation seek legitimacy through their structures and systems being similar to those of others (Di Maggio and Powell 1983). An illustrative example can be found in the banking industry, as banks seek similar OC gains, such as in lending practices, as other banks (Reed et al. 2006).

In other studies, complementarities and emergence occur in ways that reveal interdependence between the environment and factor markets, not only interdependence inside the firm. For instance, in a study of how contingencies in the environment influence the relative importance of a firm's capabilities, particularly related to technical and marketing aspects, it is found that the 'external supply of technology diminishes the value of a capability that enables firms to produce a substitute (internal technical capability) that enhances the value of a capability that enables it to produce a complement (marketing capability)' as a source of competitive advantage (Nandkumar and Arora 2012: 248).

Similarly, coevolving capabilities arise out of efforts to capture synergy within HCR in different parts of the organisation. In cross-functional teams, for instance, it is common to share ideas and contexts so that transmitted information and knowledge is easily accessed among team members (Hu and Randel 2014); tacit knowledge shared among team members might later coevolve into quite radical innovations (Perez-Luno et al. 2011). In this situation, complementarities evolve through team processes where emergence leads to shared values and innovations over time (Brideoux et al. 2017). However, DCs also coevolve as explicit linkages between a given firm and knowledge sources that are located externally. For example, in a study by Henderson and Cockburn (1994), external linkages were critical to connect

pharmaceutical firms to new knowledge creation processes. Mu et al. (2008) found that networking through interaction complementarities provided continuous learning between the networking firms, providing timely access to new information and resources. Taken together, DCs are created through complementarities that aggregate up to different levels within and across the organisation, as well as externally. Furthermore, emergence occurs from accessing HCR pools of stocks of knowledge (not always successfully), leading to a complex process of interactions, causality, compilation and composition, as well as coevolving and interdependent relationships.

The foregoing discussion suggests that it is possible to posit a connecting discourse between HCR and DC, since what is occurring is a transformation of existing stocks of knowledge from the HCR pool of knowledge into DCs that help a firm to achieve sustained competitive advantage. Overall, the connecting discourse relates to how firms draw from their HCR to develop DCs. Given that the focus thus far, however, has been more about DC, there is also a connecting interchange of activities between HCR and strategic HR management practices or high-performance work systems (HPWS). For the purposes of my analysis, I have located these within the structural capital domain of IC. I do so because they comprise systems and practices that tend to be embedded and institutionalised. For example, in the meta-review of the resource-based view of HC, Nyberg et al. note that there is an implied causal link between HR policies and practices and unit-level performance (2014: 324). In labelling these connections as antecedent HRM policies, these scholars find that many articles spend little time discussing the links between a unit's HCR and unit- or firm-level performance.

While HRM policies, systems and practices lie more broadly at the OC level, specific practices and systems, such as HPWS, increase the empowerment of workers and enhance their skills (Boxall and Macky 2007). For instance, in previous studies of production workers, work redesign led to workers being able to solve technical problems, providing opportunities for learning through high-involvement routines and greater empowerment. As noted by Boxall and Macky (2007: 265), HPWS—also called high-involvement work systems—lead to drivers of workplace performance, including, but not limited to, renewal in technology (technology work processes), performance and commitment incentives (enhanced commitments to work smarter) and management capability and support (improved investments in management development at all levels). These scholars also discuss complementary practices and the importance of 'bundling', which they see as 'the combination of practices into a bundle rather than individual practices, which

shapes the pattern of interactions between and among managers and employees' (Boxall and Macky 2009: 5).

However, high-performance practices differ significantly within and across firms (Kehoe and Wright 2013; Wright and Boswell 2002) and in different industry settings such as small and medium-sized enterprises (as with larger organisations). High performance work systems (HPWS) also differ within internal organisational capital components, such as practices that define top management team cultures and middle management resistance. Similarly, environmental constraints (customers and competitors) influence the adoption of HPWS in medium-sized firms (Torre and Solari 2012). However, HPWS also create a level of expectancy that strengthens the effort–performance link and instrumentality that in turn strengthens the performance–reward link in recent research (Shin and Konrad 2017). Similarly, HPWS enhance motivation, productivity, ability and opportunity for employees (2017: 977). Shin and Konrad find, for instance, that there is a positive feedback between HPWS and productivity where an increase in one resulted in an increase in the other, such that the beneficial effects of HPWS may be difficult for competitors to imitate (2017: 988). Much of the HPWS literature is also grounded in the RBV approach that improvements or investments in individual human assets lead to higher unit and managerial influence (Wright et al. 1994; 2001), where SHRM policies shape what employees learn, which in turn effects the unit or firm stock of HCR (Boxall and Purcell 2003; Nyberg et al. 2014). In relating the valuable approaches of HPWS to the HCR, it is possible that SHRM practices contribute to the establishment of multiple resource complementarities which lead to DCs that will be embedded at the OC level.

A Discourse Between Human Capital, Human Capital Resources and Dynamic Capability

Table 2.1 illustrates some examples of the process of emergence related to new product development between HC, HCR and DCs at the organisational level which form part of the IC domains of knowledge. At the HC level, these comprise the KSAOs described earlier. Here, skills and abilities may be deemed similar in prior research, which accounts for why many researchers use 'skills' as a measure of performance (Martin-de-Castro 2014; Nyberg et al. 2014). However, I see skills as a 'doing' function, as seen in skills related to managing a project team, or skill at being able to motivate a team towards

shared values. Similarly, an ability is something more innate, such as a latent ability or general skill that a person possesses and which the firm has not developed (Campbell et al. 2012; Felin 2012) but that might also be developed through training to develop a particular competency or increased ability in problem-solving and higher-order thinking (Murray et al. 2009). While knowledge will consist of current knowledge held at the individual level, this existing knowledge will need to be challenged (Espedal 2008) such that any new knowledge acquired by all individuals is aggregated at HCR level. At HCR level, these are the complementarities that comprise multiple skills, bundles of HC resources that will eventually lead to an emerging set of DCs. Each firm will use HCR differently depending on the level of innovation evident—in other words, the capacity to transform HCR bundles into DCs, such as through a culture of learning (Nyberg et al. 2014). The success of this transformation will also depend on how the firm addresses its existing stocks of knowledge embedded within its structural capital.

Firms will most likely build on their existing stock of knowledge through the complementarity process of HCR in developing DCs. Thus, in column 3 in Table 2.1, the emergence of actual capability reflects both a firm's structural capital and dynamic capability, since each firm needs to rely on its existing structures and systems by exploiting their knowledge base (Bontis et al. 2002; March 1991). As noted earlier, DCs reflect the emergence and complementarity of resources that are interactive, accumulative, integrative, interdependent, reconfigured, coevolving and transitioning (Brown and Eisenhardt 1997; Dierickx and Cool 1989; Esienhardt and Martin 2000; Ployhart et al. 2014), and these will most likely reflect new learning routines that challenge the existing stocks of knowledge (Crossan et al. 1999; Espedal 2008). Most notably, these resource combinations will be different across firms and will depend on how each firm transforms HCR into useable and tradeable DCs. Taken together, and in terms of new product development, the HC stock of knowledge informs and leads to HCR's stock of new product knowledge. This in turn, through the process of emergence (Barney and Felin 2013), leads to sets of DC that relate to the capacity of a firm to transform its HCR into the new knowledge stock of capabilities which creates competitive advantage. As Felin (2012: 288) acknowledges, capabilities, whether in the economic or social domain, rely on the aggregation, interaction and coordination of numerous individuals.

The other key component of intellectual capital is social capital. I now turn to a discussion of the key principles of SC and how its domain influences a firm's DCs.

Table 2.1 A discourse between HC, HCR and DC

<p>1 Human Capital (HC)</p> <p><u>Knowledge:</u> Prior experience, building a new product, working in a project team, knowledge of other units, leading new projects <u>Skills:</u> Project completion, keeping the team on track, meeting budget, managing a project team; motivates people towards shared values. <u>Abilities:</u> Communicating, interacting, teamwork, motivating, connecting, leading, planning, solving problems. <u>Other:</u> Understands competing demands, is able to coordinate between top management priorities and lower-level functions; understands environmental complexity.</p>	<p>2 Human Capital Resources (HCR) at the unit or firm level</p> <ul style="list-style-type: none"> - Combined skills of all people working in the unit; complementarity of skills within the unit; - accumulative and compilation of knowledge across the unit aggregated up; - reconfigured, coevolving, transitioning, integrative abilities, such as people learning from others, new knowledge through increased interaction, increased value of heterogeneity; excitement and level of commitment created at the unit level; level of team cooperation in cross-level teams; - culture of learning within the firm; - level of leadership provided as a seamless integration from top to bottom (aggregation of leader skills). 	<p>3 Dynamic Capabilities (DCs) (formed through the process of emergence at the OC level)</p> <p><u>Existing knowledge stock:</u></p> <ul style="list-style-type: none"> - How a firm uses its HPWS to transform existing knowledge and the quality of firm training; - rate of knowledge dissemination across the firm; - degree to which current structures and systems guide the new product development process; - difficult to imitate current structural capital in the firm as a source of competitive advantage; - superior service outlets. <p><u>New knowledge stock:</u></p> <ul style="list-style-type: none"> - New product development process unique to the firm; - culture converted into learning and innovating routines; - rate of acquiring new product knowledge and absorptive capacity; - technological capability and know-how; - speed to market of new products and rate of new product success; - superior management information system around product development; - Highly skilled and knowledgeable workers, such as knowledge of actual innovation process and ability to improvise, create, drive and develop product innovation routines.
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Social Capital

The purpose of this section is to explore several discourses of SC, namely internal social capital (ISC) and external social capital (ESC) and to explore their connecting themes. Sociologists such as Burt (1992), Coleman (1988) and Granovetter (1973) indicate many points of interconnection where social capital is 'defined by its function which is embedded or inheres in social relations between and among actors where the SC becomes a resource for persons' (Granovetter 1973: S98). The social relations produced become useful resources for exchange purposes. Social capital is defined as the 'goodwill available to individuals or groups [...] its source lies in the structure and content of the actor's social relations [...] its effects flow from the information, influence, and solidarity it makes available to the actor' (Adler and Kwon 2002: 23). Internal social structure is concerned with actors' own internal structure and the linkages among individuals or groups within the collective (rather than the collective itself) that establish cohesiveness, such as through bonding (Adler and Kwon 2002), and integrative and interaction routines within a group (Crossan et al. 1999; Nyberg et al. 2014). Fukuyama (1995: 10) describe SC as 'the ability of people to work together for common purposes in groups and organisations'. That is, capital associated with internal relationships (Reed et al. 2006) or ISC. ESC refers to the collective behaviour of a firm whose actions are influenced by its external linkages (Adler and Kwon 2002), that is, capital associated with establishing all external relationships (Bontis 1998; Manning 2010), and networks among individuals (Coleman 1988) that underpins the importance of building social networks. One side of SC is described thus in terms of *sociocentric* theories, where the 'focal actor is a collective [...] where social capital is found in the internal linkages that characterize structures and give them cohesiveness' (McElroy et al. 2006: 128; see also Adler and Kwon 2000) but also in all external structures that relate to social function (Coleman 1988). An important notion for the sociocentric approach is that of a close-knit community that provides similarity, safety and predictability (Kianto and Waajakoski 2010). The other side is described as an *egocentric* approach (Bourdieu 1986), that is, in terms of the 'benefits that an individual actor's relationships bring to this particular actor, and how these benefits influence the actor's relative position compared with other actors within the same social structure' (Kianto and Waajakoski 2010: 6). Similarly, the structural dimension of SC concerns the frequency of interaction (Scott 1991) and the density within a network, while the cognitive dimension concerns how effective collaboration occurs

through shared mental models and narratives (Kianto and Waajakoski 2010; Nahapiet and Ghoshal 1998). In much of what follows, I discuss SC within the domains of ISC and ESC, which encompass many of these broader approaches.

According to Coleman (1988), the basis of SC is obligations, expectations and trustworthiness where reciprocal favours build up a large number of credit slips, some of which remain unused but where, over time, obligations will be repaid. A degree of trustworthiness is thus built into the social environment (Coleman 1988: S102) on the basis of the exchange relationships established. Nahapiet and Ghoshal (1998) illustrate how the components of SC relate to structural capital (not the capital described earlier within OC but rather as part of social relations), relational embeddedness and cognitive capital. For instance, structural capital is the overall pattern of connections between actors, while relational embeddedness concerns personal relationships that people have developed with each other; 'cognitive capital refers to those resources providing shared representation, interpretations, and systems of meaning' (1998: 244). These views augment Coleman's attention to the establishment of information channels through social relations that constitute a form of SC (1988: S104). Similarly, where effective norms facilitate some actions, they also constrain others, for instance where an organisation policy might encourage external networks to be established on the one hand but where policy dictates that these must be run by two or more departments that are likely to be affected. This suggests that in the development of these components, the ability to create and exploit SC will relate to differences in norms between firms, including differences in performance—such as problems of power, where in the initial quest to invest more in value creation where synergistic benefits are expected, the fear of opportunism and competition for value pushes partners to overpower each other (Panico 2016: 1647). By comparison, Granovetter explores relationships as represented by strong or weak ties, a key part of building SC networks. For instance, a smaller number of ties between A and B (strong ties) who are firm friends, even while A might be connected to C (weak ties) through B, will be reflected in the 'combination of the amount of time, the emotional intensity, the intimacy, and the reciprocal services which characterise the tie' (1973: 1361). Importantly, strong ties between two or more people will become less frequent as people become more familiar with what each offers in the relationship over a longer period of time. In reality, however, people and firms have many ties, which are mostly weak but connected through bridges linking central actors. Here, all bridges become weak ties (1973: 1364). The idea is that weak ties produce structural holes arising from the configuration of links between actors (or lack thereof);

however, weak ties might also mean that actors have greater flexibility and a wider access to information (Kianto and Waajakoski 2010).

There is also an important discourse between ISC and ESC. ISC will mostly result through interaction and emergence inside the firm as people with close relationships (e.g., people within the same department) build relationships over time. These relationships and interactions will also occur across departments, since, as discussed earlier, HCR relates to complementarities, as with strong interaction ties built through internal relationships such as teams. For instance, while trust contributes to tacit knowledge-sharing in many previous studies (Lin 2007; Yang and Farn 2009), and to the fostering of personal relationships (Nahapiet and Ghoshal 1998), recent research by Hu and Randel (2014) finds that cognitive social capital is not associated at all with ESC. Cognitive social capital, such as shared values and shared language, however, is highly conducive to tacit knowledge-sharing within teams as a basis for building ISC and extrinsic incentives are found to be positively related to both explicit and tacit knowledge-sharing (2014: 234). Yet the establishment of ESC has its downsides. While weak ties will rely on a local bridge in different sectors, for example areas within the networked community that represent either a long or short path that connects an external actor to a focal actor, such external relationships need be nurtured and maintained because social bonds have to be periodically renewed and reconfirmed (Adler and Kwon 2002: 22). Similarly, firms within the network might be excluded from the benefits of SC, while commitment and cooperation highlight key interaction complementarities if they can be established. Further, the motivation for donors to support recipients in the absence of immediate returns means that firms need to build a sense of shared identity and dyadic mutual social exchange (2002: 25) if ESC is to be successfully negotiated.

The opposite of this is the upsides that create opportunity in ESC situations, such as the leveraging of network contacts that enable firms to act together (Panico 2016). For example, in situations where local bridges create more and shorter paths, a firm—as the focal actor—might have many close suppliers with shorter bridge connections compared to other suppliers who have longer bridge ties. However, this raises another concern based on the time it takes for ESC to develop, given that although weak ties and bridging networks might be many, they seldom develop quickly and, in some cases, take years (Granovetter 1973) and can just as easily be disbanded (Adler and Kwon 2002). Nahapiet and Ghoshal note, for instance, that the concept of embedding fundamentally means the binding of social relations in time and space (1998: 257), where transactions are consummated over a period (Coleman 1990: 91). Here, it seems highly unlikely that ESC can be consid-

ered at a snapshot in time and space as representing a reliable indicator of performance. Rather, I contend that ESC based on this research is more likely to represent a moderating variable between an independent and dependant variable (such as X and Y), affecting the relationships between HC and HCR, and OC—both structural capital and dynamic capital—as outlined earlier. However, this is not to discount previous SC research. For instance, SC has been found to be an individual-level antecedent for career success, job search outcomes and reduced turnover rates (Burt 1992; Krackhardt and Hanson 1993; Nyberg et al. 2014). More recently, in a study linking customer capital (substituted for relational and social capital), Leal-Millán et al. (2016: 458) find that relationship-learning enables firms to compete better and satisfy stakeholders by structuring and reconfiguring resources that influence both green innovation performance and customer capital. Aribi and Dupouët (2015), in a study of the absorptive capacity of firms to acquire new knowledge in the form of bringing new products to the market, find that SC is best suited for knowledge accumulation, maintenance and circulation, whereas organisational capital is a tool for coordination and cooperation (2015: 1002) confirming much of the previous discussion. Fang et al. (2011: 129), use an interesting theoretical model to examine how socialisation factors, namely organisational tactics and newcomer proactivity—such as relationship-building and positive framing—contribute positively to newcomer adjustment and subsequent career success. Much of this research is very valuable in understanding the role of SC in contributing to firm performance. However, taken together, these SC relationships often conflate ISC and ESC, which are applied at a moment in time and highlight the complexity of the SC domain within the overall IC landscape of knowledge.

The proclivity for building ESC to be attractive to stakeholders also relates to how tasks are structured within a network. Here, the value of SC depends on how well the tasks to be undertaken within the network fit with company goals (Adler and Kwon 2002; Krackhardt and Hanson 1993). Task contingencies help explain whether strong or weak ties are more valuable (2002: 34), where strong ties lead to more cost-effective transfers of complex information and weak ties a search for more codifiable information (Hansen 1998). Similarly, tasks can be both highly structured and unstructured in studies of sociology examining worker participation on the basis of race or some other factor (Alexander et al. 2009; Chizek et al. 2003; Walker et al. 2014). Highly structured tasks are allied with more homogenous groups and those with a clearly articulated problem and solution with less external participatory opportunity. On the other hand, unstructured or open-structured tasks create many additional opportunities for participation (Walker et al. 2014), as such

problem-solving benefits from greater diversity. So, task structure and participation relate to how HCR is organised in terms of ISC within a firm's OC.

Interestingly, in a study by Reed et al. (2006: 884) of the banking industry, HC is revealed as influential when ISC is low in personal banks, that is, the sharing of information through interaction is ineffective, or similarly when OC is low—meaning that information-processing infrastructure is inadequate (described earlier as structural capital). Conversely, however, strong ties in the commercial sector through ESC are evident between the bank and the business community because of the need to sell banking services. This research suggests that for ESC, although many weak ties establish more opportunities for connection, strong ties are necessary within certain contexts and are more cost effective. On the other hand, and in relation to ISC, it may indicate that HCR is less effective in establishing complementarity and interaction—the emergence of ideas for sharing information for instance—quite possibly because some firms (banks in this instance) are less effective in managing their HCR. I now turn to how different discourses across perspectives might be combined, the outputs of which become DCs at the organisational level.

A Discourse Between Social Capital and Dynamic Capabilities

Table 2.2 illustrates some examples of the process of emergence related to ISC, ESC and DCs at the organisational level which form part of the intellectual capital domains of knowledge. The SC components in the table are consistent with scholarly understanding of both ISC and ESC and reflect the discussion thus far. Table 2.2 also illustrates the factors to consider in establishing a competitive advantage in the application of social capital. Therefore, the goal of this section is to identify connecting discourses between each of the principle contributors of ISC, ESC and DCs.

In Table 2.2, the establishment of ISC in column 1 is dependent on how the KSAOs of individuals are aggregated and compiled, the degree of interdependence established between these resources in HCR, how these are then combined and reconfigured and the degree to which these are available for immediate action (Nyberg et al. 2014). Similarly, ESC depends on resource complementarity and the aggregation of ESC resources. In both columns 1 and 2, the components of ISC and ESC need to be transformed into DCs through the emergence process. The success of the emergence process will vary across firms and the degree of commitment to building DCs. For

Table 2.2 A discourse between SC and DC

Internal social capital within HCR	External social capital within HCR	DCs (formed through the process of emergence at the OC level)
<p>1</p> <ul style="list-style-type: none"> - Structure and content of internal actors' social relations and close relationships; - how internal actors are linked across departments and foster cooperation; - degree of cohesiveness and bonding within a group; - evidence of interactive and team integrative skills; - working together towards common goals within groups and within the firm generally; - individuals inside the firm create social networks; - ability to establish internal group norms; - ability of individuals to share their tacit knowledge; - how extrinsic incentives relate to explicit and tacit knowledge; - learning interventions that enable individuals to develop ISC skills. 	<p>2</p> <ul style="list-style-type: none"> - Pattern of connection between external actors; - establishment of information channels; - capacity and willingness to invest in value creation in the network; - time, emotional intensity, intimacy and reciprocity; - leverage networked opportunities from resource complementarity; - commitment, obligation and trust common; - donor support in the absence of immediate returns; - shorter bridge connections and strong ties; - maintaining connections over time and space; - relationship learning established; - task-structure fit. 	<p>3</p> <p>ISC</p> <ul style="list-style-type: none"> - Evidence of a strong learning culture related to building ISC; - strong linkage evident in cross-functional teams and cohesiveness; - sharing of goals and norms central across groups; - firm uses HPWS to train individuals how to build social networks; HPWS is a DC for building ISC; - sharing of tacit and explicit knowledge common across individuals and groups; <p>ESC</p> <ul style="list-style-type: none"> - Structure of embedded relationships that are difficult to imitate; - creation of information channels that supplement existing firm channels and create new network opportunities, making imitation difficult; - strong commitment, reciprocity and relationships built on trust commonplace; - strong bonding of ties that lessen inter-firm rivalry over opportunistic value creation behaviour; - evident that partners are willing to invest over time and space, creating a dynamic capability of interdependence as resources shared are aggregated up; - strong evidence of commitment shown by all partners; - establishment of strong network ties and flexibility towards structured or unstructured task arrangements; - strong evidence of relationship learning.

instance, in column 3, the DC will be evidenced by the ability of a firm to create, extend or modify its resource base by utilising organisational resources to achieve a particular result (Helfat 1997), such as by establishing HPWS and creating a culture of learning. Furthermore, the discourse changes to represent what the firm is actually doing by building strong linkages, creating strong ties and information channels, and by building the structure of embedded relationships over time. This reinforces the idea noted by many scholars that although KSAOs may be present, they may not be being used effectively by a firm at the organisational level (Boxall and Macky 2007; Campbell et al. 2012; Nyberg et al. 2014; Ployhart et al. 2014). The resource stocks listed in column 3 as DCs are thus formulated both from the heterogeneous differences that can be established plus the accumulation of resources (Barney 1991; Maritan and Peteraf 2011). However, while Table 2.2 might suggest a seamless integration and transformation of resources at the DC level, this is not always the case, as noted earlier, since all firms learn and acquire knowledge at different rates and both ISC and ESC measurements will be dissimilar, depending on the many contexts in which study constructs are used.

For instance, in a study of 21 managers from large start-up software corporations in China with turnover exceeding 10 million Chinese RMB, Mu et al. (2008) explore whether firm innovation can be leveraged from the accumulated SC embedded within inter-firm relationships, as well as the extent to which networks share knowledge and their underlying mechanisms. In what is mainly a study of ESC, these scholars discover that the ‘identification of the process through which social capital facilitates knowledge flow and consequently innovation enhances the understanding of firms’ strategic behaviour’ (2008: 95). Reciprocal trust needs to be high within these interdependent relationships, enabling the flow of knowledge from one partner to another, thus confirming these resources as illustrated in Table 2.2. From the networking relationships, mainly through strong ties, they note the importance of continuous learning and colearning, creativity and idea exchange, as well as network relationships that are both path-dependent and path-creative, and difficult for other firms to copy, on the basis that they are socially embedded, complex and idiosyncratic. Such strong links thus enhance innovation within a firm.

Similarly, in building on the general idea that ESC is linked to performance, Kianto and Waajakoski (2010) in a study of 143 Finnish firms, explore whether intra-organisational SC—structural capital, relational social capital and cognitive social capital—increase organisational growth. They find that only extended external SC—the extent to which key partner relationships allow the firm to access new partners or customers—is related to organisational growth (2010: 11), and that ISC is negatively associated with growth,

especially for firms that are not part of inter-organisational networks. ISC is associated with growth only for firms within such a network. These scholars note that the type of SC within a firm is contingent on its market, suggesting that stable markets (moderate dynamic markets described earlier) might be best in situations of bonding and of developing close, predictable and harmonious collaborations (2010: 12), which supports the general conception of SC trustworthiness, reciprocity and strong ties (Coleman 1988; Granovetter 1973). The opposite of this situation is arm's-length collaboration through weak ties and structural lacunae, characterised by unpredictable and rapid nonlinear change, especially in situations where inter-organisational collaboration is approached in a disorganised and limited way. The latter recommendation from Kianto and Waajakoski (2010), and to an extent the ESC links established by Mu et al. (2008), confirm recent research by Panico (2016) that greater synergistic benefits push partners to invest more in the creation of value. However, since it is difficult then for partners to terminate, they tend to increase the competition for value, leading to a situation where partners race to overpower each other (2016: 1659). The risks of ESC thus confirm what Adler and Kwon (2002) suggest are the downsides of external collaboration, where social bonds and high-trust relationships have to be nurtured and maintained.

The point is that SC links to performance in the above examples are thus highly dependent on idiosyncratic environments, and the degree to which firms can build trusting relationships in establishing ESC collaborations. ISC may also lead to inertia in firms when it has poor links to organisational performance (Reed et al. 2006). These studies bring into question the connecting discourse between the different SC domains; they may be interconnected but it may be misleading to suggest that antecedents (sets of independent variables) can be easily identified. Moreover, it is highly likely that ISC will be more visible in strongly established external networks that are relatively stable and not in rapidly changing cycle markets. Similarly, ISC is firmly embedded within HCR and a culture that values the building of trust, a zest for acquiring knowledge and high-interaction KSAOs that aggregate into a culture of exploration outside the firm. However, HCR of combined SC will be firm specific and are not readily associated with a general list of SC skills (such as those illustrated in Table 2.2) that can easily be transformed into dynamic capabilities. ESC, by comparison, is established not so much from weak ties but rather derives from strong network ties of established and trustworthy relationships, a situation which is in stark contrast to that found in the network ties literature. The latter appears to be consistent in many studies underlined in this chapter and as seen by the strong relationships

established. Accordingly, in establishing the connecting discourse between ISC, ESC and DC, the complexity of relationships related need to be carefully considered by both scholars and practitioners.

Discussion and Conclusion

This chapter set out to achieve two broad aims. One was to develop an integrative discourse of the links between human capital, human capital resources, organisational capital and social capital. Out of these, OC was divided into structural capital and DCs, whereas SC comprised both ISC and ESC. These relationships have been explored at some length. The second aim was to illustrate, through a process of emergence, how DCs are created by exploring connecting discourses between the main domains of knowledge of intellectual capital. Both aims were explored within the context of the extant literature and from recent meta-reviews. For instance, the analysis built on recent work by Nyberg et al. (2014) and Ployhart et al. (2014) on the HC stock and its link to competitive advantage and the RBV logic (Barney 1991). Similarly, the discussions focused on the key IC domains by exploring a broad literature, highlighting many connecting discourses. Tables 2.1 and 2.2 illustrated how these discourses emerge into the creation of DCs. By exploring the DC literature, I also described how competitive advantage could be achieved both through heterogeneous and accumulated resources (Maritan and Peteraf 2011) and how these aggregate up at unit-level HCR through the process of emergence, and transform into DCs (Barney and Felin 2013; Eisenhardt and Martin 2000; Felin 2012; Nyberg et al. 2014). However, since there is some confusion about whether HCR are to be conceived of at the organisation level—what scholars also refer to as unit-level—I argued that HCR lead to the establishment of structural capital, since they are no longer individual-level resources but rather are bundled as a pool of knowledge at HCR level and embedded in structures, systems, processes and policies so that they can be converted into DCs (Brown and Eisenhardt 1997; Riley et al. 2017). These bundles might ordinarily be transformed through HPWS that help the firm develop new knowledge stock at the OC level. The discussion noted that structural capital and DCs together comprise OC, that is, structural capital representing the existing stock of knowledge and DCs underpinned by new stocks of knowledge as a result of the transformation process between HCR and DC at the OC level. A review of the literature indicated that HC and HCR are not beneficial unless a firm can transform

HCR into DC through a process of emergence (Felin 2012) and unless those resources are accessible (Nyberg et al. 2014; Ployhart et al. 2014).

The discourse of connection in Table 2.1 showed how a firm linked its KSAOs to the compilation of HCR. The KSAOs consist of both firm-specific and general skills, with many firms unfamiliar with how the general skills of employees are also attractive to rival firms (Campbell et al. 2012). The discussion noted the importance of HPWS to enable the transformation of HCR into accessible resources. At HCR level, human resources accumulate through the complementarity process, and through the bundling and compilation of resources. However, since each firm is different, how resources are aggregated up to the next level is context specific, depending on how firms use their current structural capital and how they renew this through more efficient use of HCR. Poor use of HCR would suggest that firms will struggle to convert key resources into the DCs that create competitive advantage (Boxall and Macky 2009; Kehoe and Wright 2013). The illustrative example in Table 2.1 related to new product development routines building on an earlier discussion of DCs in projects (Brown and Eisenhardt 1997). The connecting discourse is that HCR needs to be converted into DCs which reflect a process of emergence in terms of how resources are reconfigured, accumulated and recombined, and which then help release other resources that are integrative and interdependent, complimentary and interactive, coevolving and transitional (Eisenhardt and Martin 2000; Ployhart et al. 2014; Ployhart and Moliterno 2011). The connecting discourse pertains to how each knowledge domain leads to the next. Furthermore, it reflects how well any firm can identify these stocks of knowledge and transform them into dynamic capabilities.

In relation to Table 2.2, firm behaviour will be influenced by a function of both ISC and ESC working together (Adler and Kwon 2002). And similar to Table 2.1, both ISC and ESC resources reside within HCR. The extent to which these can be used depends of how these lists of SC potential are realised—in other words, the extent to which a firm can transform its existing stocks of knowledge plus new knowledge into realisable DCs. Taking this one step further, while different approaches to exploring SC relate to performance (e.g., Nahapiet and Ghoshal 1998; Reed et al. 2006; Subramaniam and Youndt 2005), they also raise important measurement concerns noted by Martin-de-Castro (2014), largely due to the idiosyncratic context adopted. Apprehensions relate to the heterogeneity of contextual settings, such as the selection of populations and samples within a single industry. SC relationships, along with HC, HCR and OC of IC, have led to more recent scholarly attempts to define these relationships within multidimensional models that offer integrated frameworks of the different constructs

(Cohen 2015; Nyberg et al. 2014; Ployhart et al. 2014) and thus offer potential solutions. However, as noted in the introduction to this chapter, SC can also represent a confusing set of variables. Some of these may be antecedents and some end-points or outcomes. For instance, there is extant research that measures the degree to which external capital can be created from the many linkages between and across firms and how this leads to innovation (Mu et al. 2008), and how SC and socialisation factors lead to career success (Fang et al. 2011) and partner relationships within an alliance in which SC is the basis for the creation of value influenced by power relationships (Panico 2016). Furthermore, research indicates that ESC is crucial within certain contexts for influencing outcomes in banking arrangements (Reed et al. 2006), as well as how relationship capital (or SC) influences performance by establishing long-term relationships, among others. Similar to the other IC domains, it is less clear whether ESC is an antecedent, a moderating or mediating variable, a dependent variable, or an outcome. Given that it takes time to build ESC relationships, as discussed earlier, future research might explore ESC as a moderating or mediating variable. For example, given the time involved in establishing bridging relationships, whether weak or strong (Nahapiet and Ghoshal 1998), the idea that strong embedded relationships already exist within HCR is highly problematic. Similarly, information channels will often take years to develop (Adler and Kwon 2002), while trust-dependent relationships, reciprocity and value creation (among other factors) are characteristics of strong and successful networks. In seeking to measure SC, therefore, there may be a need to develop two distinct constructs that measure different things, rather than combining ISC and ESC into one construct.

In summing up, both Table 2.1 and 2.2 represent a list of connecting discourses. The value of these connections lies in how one domain of knowledge informs and builds on the other. For instance, at the HC level of KSAOs, these will reside in individuals. The connecting discourse is how the firm develops these in ways that translate and accumulate into the complementarity of resources at HCR level. Simply listing HC variables will be of little use to HR practitioners, for instance. What will be more important is the recognition of how the training functions extend the KSAOs so that at HCR level more value is created that can be accessed. Based on the literature, it is the bundling of these resources that becomes attractive. In the HCR domain of knowledge, resources will reside in systems, processes, policies and procedures, not just individuals, since skills will need to be recorded for future use and accumulated knowledge and ability assessed for unit-level performance. Collectively, this represents the absorptive capacity of the firm, its ability to

recognise new knowledge such as external information and apply it; yet an evolving form of knowledge accumulation embodied as DC in different forms of learning is applied (Cohen and Levinthal 1990; Crossan et al. 1999; Sun and Anderson 2008). The discourse between HCR and DC will thus depend on how HPWS, or a particular HR intervention, such as a change intervention, may act as an enabler between HCR and DC. The DC in turn will lead to competitive advantage if it is able to create an advantage in factor markets on the basis of heterogeneity and accumulation.

Bibliography

- Adler, P. S., & Kwon, S. W. (2000). Social capital: The good, the bad, and the ugly. In E. Lesser (Ed.), *Knowledge and social capital: Foundations and applications* (pp. 89–115). Boston: Butterworth-Heinemann.
- Adler, P. S., & Kwon, S. W. (2002). Social capital: Prospects for a new concept. *Academy of Management Review*, 27, 17–40.
- Ahuja, G., & Lampert, C. M. (2001). Entrepreneurship in the large corporation: A longitudinal study of how established firms create breakthrough inventions. *Strategic Management Journal*, 22, 521–543.
- Alexander, M. G., Chizhik, A. W., Chizhik, E. W., & Goodman, J. A. (2009). Lower-status participation and influence: Task structure matters. *Journal of Social Issues*, 65, 365–381.
- Argote, L., & Ingram, P. (2000). Knowledge transfer. A basis for competitive advantage in firms. *Organizational Behaviour and Human Decision Processes*, 82(1), 150–169.
- Aribi, A., & Dupouët, O. (2015). The role of organizational and social capital in the firm's absorptive capacity. *Journal of Knowledge Management*, 19(5), 987–1006.
- Barney, J. B. (1986). Strategic factor markets: Expectations, luck, and business strategy. *Management Science*, 32, 1231–1241.
- Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17, 99–120.
- Barney, J., & Felin, T. (2013). What are microfoundations? *Academy of Management Perspectives*, 27, 120–137.
- Becker, G. S. (1964). *Human capital* (3rd ed.). Chicago: University of Chicago Press.
- Bontis, N. (1998). Intellectual capital: An exploratory study that develops measures and models. *Management Decision*, 36, 63–76.
- Bontis, N. (2001). Assessing knowledge assets: A review of the models used to measure intellectual capital. *International Journal of Management Reviews*, 3, 41–60.
- Bontis, N., Crossan, M. M., & Hulland, J. (2002). Managing an organizational learning system by aligning stocks and flows. *Journal of Management Studies*, 39(4), 437–469.

- Bourdieu, P. (1986). The forms of capital. In J. G. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–258). New York: Greenwood.
- Boxall, P., & Macky, K. (2007). High-performance work systems and organisational performance: Bridging theory and practice. *Asia Pacific Journal of Human Resources*, 45(3), 261–270.
- Boxall, P., & Macky, K. (2009). Research and theory on high-performance work systems: Progressing the high-involvement stream. *Human Resource Management Journal*, 19, 3–23.
- Boxall, P., & Purcell, J. (2003). *Strategy and human resource management*. New York: Palgrave Macmillan.
- Bridoux, F., Coeurderoy, R., & Durand, R. (2017). Heterogeneous social motives and interactions: The three predictable paths of capability development. *Strategic Management Journal*, 38, 1755–1773.
- Brown, S. L., & Eisenhardt, K. M. (1997). The art of continuous change: Linking complexity theory and time-paced evolution in relentlessly shifting organizations. *Administrative Science Quarterly*, 42, 1–34.
- Buller, P. F., & McEvoy, G. M. (2012). Strategy, human resource management and performance: Sharpening the line of sight. *Human Resource Management Review*, 22, 43–56.
- Burt, R. S. (1992). *Structural holes: The social structure of competition*. Cambridge, MA: Harvard University Press.
- Campbell, B. A., Coff, R., & Kryscynski, D. (2012). Rethinking sustained competitive advantage from human capital. *Academy of Management Review*, 37(3), 376–395.
- Chizhik, A., Alexander, M., Chizhik, E., & Goodman, J. (2003). The rise and fall of power and prestige orders: Influence of task structure. *Social Psychology Quarterly*, 66, 303–317.
- Coff, R., & Kryscynski, D. (2011). Drilling for micro-foundations of human capital-based competitive advantages. *Journal of Management*, 37, 1429–1443.
- Cohen, D. J. (2015). HR past, present and future: A call for consistent practices and a focus on competencies. *Human Resource Management Review*, 25, 205–215.
- Cohen, W. M., & Levinthal, D. A. (1990). A New Perspective in Learning and Innovation. *Administrative Science Quarterly*, 35(1), 128–152, Sage.
- Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, 94, S95–S120.
- Coleman, J. S. (1990). *Foundations of social theory*. Cambridge, MA: Harvard University Press.
- Crossan, M., Lane, H., & White, E. (1999). An organizational learning framework: From intuition to institution. *Academy of Management Review*, 24(3), 522–537.
- Di Maggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48, 147–160.

- Dierickx, I., & Cool, K. (1989). Asset stock accumulation and sustainability of competitive advantage. *Management Science*, *35*, 1504–1511.
- Díez-Vial, I., & Montoro-Sánchez, A. (2014). Social capital as a driver of local knowledge exchange: A social network analysis. *Knowledge Management Research and Practice*, *12*, 276–288.
- Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: What are they? *Strategic Management Journal*, *21*, 1105–1121.
- Ennen, E., & Richter, A. (2010). The whole is more than the sum of its parts—Or is it? A review of the empirical literature on complementarities in organizations. *Journal of Management*, *36*, 207–233.
- Espedal, B. (2008). In the pursuit of understanding how to balance lower and higher order learning in organisations. *Journal of Applied Behavioural Science*, *44*(3), 365–390.
- Fang, R., Duffy, M. K., & Shaw, J. D. (2011). The organizational socialization process: Review and development of a social capital model. *Journal of Management*, *37*(1), 127–152.
- Felin, T. (2012). Cosmologies of capability, markets and wisdom of crowds: Introduction and comparative agenda. *Managerial and Decision Economics*, *33*, 283–294.
- Fukuyama, F. (1995). *Trust: The social virtues and the creation of prosperity*. New York: Free Press.
- Granovetter, M. S. (1973). *The strength of weak ties*. *American Journal of Sociology*, *78*(6), 1360–1380.
- Greenwood, R., & Hinings, C. R. (1996). Understanding radical organizational change: Bringing together the old and the new institutionalism. *Academy of Management Review*, *21*(4), 1022–1054.
- Hansen, M. T. (1998). *Combining network centrality and related knowledge: Explaining effective knowledge sharing in multiunit firms* (Working paper). Boston: Harvard Business School.
- Hedberg, B. (1981). How organisations learn and unlearn. In P. C. Nystrom & W. H. Starbuck (Eds.), *Handbook of organisational design*. London: Oxford University Press.
- Helfat, C., Finkelstein, S., Mitchell, W., Peteraf, M., Singh, H., & Teece, D. (2007). *Dynamic capabilities: Understanding strategic change in organizations*. Oxford: Blackwell.
- Helfat, C. E. (1997). Know-how and asset complementarities and dynamic capability accumulation: The case of R&D. *Strategic Management Journal*, *18*, 339–360.
- Helfat, C. E., & Martin, J. A. (2015). Dynamic managerial capabilities: Review and assessment of managerial impact on strategic change. *Journal of Management*, *41*(5), 1281–1312.
- Helfat, C. E., & Peteraf, M. A. (2003). The dynamic resource-based view: Capability lifecycles. *Strategic Management Journal*, *24*, 997–1010.
- Henderson, R., & Cockburn, I. (1994). Measuring competence? Exploring firm effects in pharmaceutical research. *Strategic Management Journal*, *15*, 63–84.

- Hsu, L.-C., & Wang, C.-H. (2012). Clarifying the effect of intellectual capital on performance: The mediating role of dynamic capability. *British Journal of Management*, 23, 179–205.
- Jeong, I., & Shin, S. J. (2017). High-performance work practices and organizational creativity during organizational change: A collective learning perspective. *Journal of Management*, 1–17. <https://doi.org/10.1177/0149206316685156>.
- Kehoe, R. R., & Wright, P. M. (2013). The impact of high-performance human resource practices on employees' attitudes and behaviours. *Journal of Management*, 39(2), 366–391.
- Kianto, A., & Waajakoski, J. (2010). Linking social capital to organizational growth. *Knowledge Management Research and Practice*, 8, 4–14.
- Krackhardt, D., & Hanson, J. R. (1993). Informal networks: The company behind the chart. *Harvard Business Review*, 71(4), 104–111.
- Leal-Millán, A., Roldán, J. L., Leal-Rodríguez, A. L., & Ortega-Gutiérrez, J. (2016). IT and relationship learning in networks as drivers of green innovation and customer capital: Evidence from the automobile sector. *Journal of Knowledge Management*, 20(3), 444–464.
- Lin, C. P. (2007). To share or not to share: Modelling tacit knowledge sharing, its mediators and antecedents. *Journal of Business Ethics*, 70, 411–428.
- Manning, P. (2010). Explaining and developing social capital for knowledge management purposes. *Journal of Knowledge Management*, 14(1), 83–99. <https://doi.org/10.1108/13673271011015589>.
- March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, 2(1), 71–87.
- Maritan, C. A., & Peteraf, M. A. (2011). Building a bridge between resource acquisitions and resource accumulation. *Journal of Management*, 37, 1374–1389.
- Martín-de Castro, G. (2014). Intellectual capital and the firm: Some remaining questions and prospects. *Knowledge Management Research and Practice*, 12, 239–245.
- McElroy, M. W., Jorna, R. J., & van Engelen, J. (2006). Rethinking social capital theory: a knowledge management perspective. *Journal of Knowledge Management*, 10(5), 124–136. <https://doi.org/10.1108/13673270610691233>.
- Molloy, J., & Barney, J. (2015). Who captures value created with human capital? A market-based view. *Academy of Management Perspectives*, 29(3), 309–325.
- Mu, J., Peng, G., & Love, E. (2008). Interfirm networks, social capital, and knowledge flow. *Journal of Knowledge Management*, 12(4), 86–100. <https://doi.org/10.1108/13673270810884273>.
- Murray, P. (2002). Cycles of organisation learning: A conceptual approach. *Management Decision*, 40(3), 239–247.
- Murray, P., Syed, J., & Roberts, Z. (2009). Structures of learning for dynamic markets. *Management Decision*, 47(2), 271–288.
- Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review*, 23, 242–266.

- Nandkumar, A., & Arora, A. (2012). Insecure advantage? Markets for technology and the value of resources for entrepreneurial ventures. *Strategic Management Journal*, 33(3), 231–251.
- Nelson, R. R., & Winter, S. G. (1982). *An evolutionary theory of economic change*. Cambridge: Belknap Harvard.
- Nyberg, A. J., Moliterno, T. P., Hale, D., & Lepak, D. (2014). Resource-based perspectives on unit-level human capital: A review and integration. *Journal of Management*, 40(1), 316–346.
- Pacheco-de-Almeida, G., & Zemsky, P. (2007). The timing of resource development and sustainable competitive advantage. *Management Science*, 53, 651–666.
- Panico, C. (2016). Strategic interaction in alliances. *Strategic Management Journal*, 38, 1646–1667.
- Perez-Luno, A., Medina, C. C., Lavado, A. C., & Rodriguez, G. C. (2011). How social capital and knowledge affect innovation. *Journal of Business Research*, 64, 1369–1376.
- Peteraf, M. A., & Barney, J. B. (2003). Unraveling the resource-based tangle. *Managerial & Decision Economics*, 24, 309–323.
- Ployhart, R. E., & Moliterno, T. P. (2011). Emergence of the human capital resource: A multilevel model. *Academy of Management Review*, 36, 127–150.
- Ployhart, R. E., Nyberg, A. J., Reilly, G., & Maltarich, M. A. (2014). Human capital is dead; long live human capital resources! *Journal of Management*, 40(2), 371–398.
- Hu, L., & Randel, A. E. (2014). Knowledge sharing in teams, social capital extrinsic incentives, and team innovation. *Group & Organisation Management*, 39(2), 213–243.
- Reed, K. K., Lubatkin, M., & Srinivasan, N. (2006). Proposing and testing an intellectual capital-based view of the firm. *Journal of Management Studies*, 43(4), 867–893.
- Riley, S. M., Michael, S. C., & Mahoney, J. T. (2017). Human capital matters: Market valuation of firm investments in training and the role of complementary assets. *Strategic Management Journal*, 38, 1895–1914.
- Scott, J. (1991). *Social network analysis. A handbook*. London: Sage.
- Shin, D., & Konrad, A. M. (2017). Causality between high-performance work systems and organizational performance. *Journal of Management*, 43(4), 973–997.
- Stahle, P. (2008). Understanding dynamics of intellectual capital of nations. *Journal of Intellectual Capital*, 9, 164–177.
- Subramaniam, M., & Youndt, M. A. (2005). The influence of intellectual capital on the types of innovative capabilities. *Academy of Management Journal*, 48(3), 450–463.
- Sun, Y. P. T., & Anderson, M. H. (2008). An examination of the relationship between absorptive capacity and organizational learning, and a proposed integration. *International Journal of Management Reviews*, 12(2), 130–150.

- Torre, E. D., & Solari, L. (2012). High performance work systems and the change management process in medium-sized firms. *International Journal of Human Resource Management*, 24(13), 2583–2607.
- Walker, L. S., Doerer, S. C., & Webster, M. (2014). Status, participation, and influence in task groups. *Sociological Perspectives*, 57, 364–381.
- Wright, P. M., & Boswell, W. (2002). Desegregating HRM: A review and synthesis of micro and macro human resource management research. *Journal of Management*, 28(3), 247–276.
- Wright, P. M., McMahan, G. C., & McWilliams, A. (1994). Human resources and sustained competitive advantage: A resource-based perspective. *International Journal of Human Resource Management*, 5(2), 301–326.
- Wright, P. M., Dunford, B. B., & Snell, S. A. (2001). Human resources and the resource based view of the firm. *Journal of Management*, 27, 701–721.
- Yang, S., & Farn, C. (2009). Social capital, behavioural control, and tacit knowledge sharing – A multi-informant design. *International Journal of Information Management*, 29, 210–218.