INSTITUTIONAL THICKNESS AND INTER-ORGANISATIONAL COLLABORATION IN CLUSTERS

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INTRODUCTION

Regional and national innovation policies increasingly seek to promote institutions conducive to clustering based on the relationship between firm clusters and performance, and regional competitive success (OECD 1999; 2001). Much research supports the view that clusters enhance firm performance through collaboration, facilitated by ease of access and 'interpenetration' of each others' organisational boundaries (Harrison 1992). However, recent reviews provide inconsistent support for the link between clusters and organisational success, with many studies generating support for an insignificant or even negative relationship, suggesting that clustering may not necessarily bestow performance-related advantages (Hakanson 2005). Coupled with case studies indicating that different regional clusters have a different mix of collaborative and competitive approaches, with some organisations strongly embedded in inter-organisational networks and others peripheral or isolated (Giuliani 2007), this research suggests that the development of, and mechanisms facilitating, inter-organisational collaboration in clusters, are not well understood and merit continued research focus.

This paper investigates the role of institutional thickness in inter-organisational collaboration in clustered firms. Institutional thickness refers to an integrated and interlocking web of supporting formal and informal institutions including local chambers of commerce and trade associations as examples of the former, and social networks as examples of the latter (Keeble et al 1999). We theoretically explore the extent to which, and mechanisms through which, institutional thickness facilitates collaboration, drawing on concepts of reciprocal altruism, transactive memory and institutional proximity. We argue that institutional thickness fosters a cluster-wide climate of trust and a context conducive to reciprocal altruism (Trivers 1971), which reduces the threat of

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opportunism and stimulates collaboration towards shared valued outcomes. We further propose that institutional thickness facilitates the development of a shared understanding of sources of valued resources, as well as the adoption of shared values, approaches and policies, which minimise misunderstanding and normative barriers to collaboration.

This review makes a number of important contributions to the field. First, we respond to the recognition that much of the research interest in collaborative interaction in clusters has been focused on its description and categorisation, and there have been recent calls for a movement away from ontological investigations to an explanation of the underpinning causes and assumptions (Knoben & Oerlermans 2006). In investigating the factors underpinning the mechanisms through which institutional factors support collaboration, we directly respond to criticisms that much extant literature gives no attention to the factors that differentiate between high-performing and unsuccessful clusters, and begin to address the research gap surrounding the complex, but highly important, micro-level interactions that explain cluster effects on firm dynamics and performance (Cooper & Park, 2008). Second, we highlight how institutional thickness can contribute to value adding activity at the level of the individual firm and in the context of the cluster as suggested in the model of an industry cluster as a value adding web (Brown et al, 2007). We then refer to the Hunter Wine cluster to illustrate the outlined analysis.

Literature Review and Proposition Development

This paper assumes that successful collaboration within clusters provides a source of competitive advantage for individual firms and for the cluster as a whole (Cumbers et al 2003). Inter-organisational collaborative interaction acts as a boundary-spanning mechanism between organisations, enabling the sharing of knowledge and other resources (Malmberg & Power 2005), providing access to a broader array of knowledge, opportunity for innovation and resource efficiency (Burt 2004; Cumbers et al 2003; Grant & Baden-Fuller 2000). However, while a review of research indicates that the specific spatial arrangements between organisations influences inter-organisational collaboration (OECD 1999), little research has been conducted to understand the extent to which, and specific mechanisms through which, cluster membership enhances organisations' collaborative capabilities (Todtling et al 2006). There remain significant unanswered questions relating to how clustering of firms exerts an influence on inter-firm collaboration.

In addition, while collaboration potentially provides clustered organisations with access to opportunities for collaboration (Hargadon & Sutton 1997), competition and perceived vulnerability

to knowledge leakiness (Brown & Duguid 2001) also means that relationships between clustered organisations may be characterised by lack of trust, threat of opportunistic behaviour and lack of explicit collaborative routines (Coleman 1988; Gulati & Singh 1998). An inverse relationship is found between such characteristics and successful collaborative alliances, and the processes of collaboration in localised environments has been specifically linked to mechanisms that reduce uncertainty and associated risks (Keeble et al 1999). The core of these mechanisms encompasses institutional components. For example, Campagni's (1991) research highlights the role of institutional links and networks within clusters, reflecting the degree of institutional thickness (Lawson 1997).

The following four sections discuss the mechanisms through which institutional thickness facilitates knowledge flow, a summary of which is provided in Table 1. The first section introduces the mediating role of reciprocal altruism, which contributes to collaboration by motivating interaction and exchange. This is followed by a discussion of institutional thickness' role in developing knowledge of resource distribution and location within the cluster, thus facilitating identification of appropriate collaborative partners. The mediating role of collaborative context, incorporate collaborative routines and cooperative goals, is subsequently introduced, through arguments that institutional thickness enhances access to collaborators by reducing uncertainty regarding their motivation and by reducing coordination barriers. The mediating role of institutional proximity is discussed, based on the link between a dense web of formal and informal institutions and the emergence of shared norms. The contribution of institutional thickness in facilitating value adding activity is then explained. The final section of this paper summarises its contributions and outlines its implications, particularly for future research.

Mechanisms through which Institutional Thickness affects Collaboration

A key mechanism through which institutional thickness affects collaboration is by increasing firm perception of trust and shared value outcomes, and through this, providing a context that engenders reciprocal altruism, and therefore willingness to collaborate. Evidence supports the impact of numerous specific relationship factors on the decision to collaborate including the perception of reciprocity and the development of trust, which have been found to substitute for relationship strength in facilitating collaboration across weak ties (Cross & Borgatti 2000; Gulati 1995; Inkpen & Tsang 2005; Levin 1999; McAllister 1995; Thuy & Quong 2005).

Reciprocal altruism refers to an interaction in which exchange between parties is perceived to produce a net benefit to both sides (Trivers, 1971). This type of behaviour has been recently studied in relation to organisational transactions (Fehr & Gachter 2000). For example firms have been found to share knowledge with the expectation of future benefit (Schrader 1991). Between clustered firms, reciprocal altruism similarly reflects the tendency for organisations to engage in 'altruistic' collaborative actions, consequent to the perception that they too will benefit from this action. Recent research has revealed evidence of such behaviour, for example, in Chile, knowledgeable firms provide valuable expertise to other firms on the expectation of return, and develop strong ties based on a norm of reciprocity (Giuliani & Bell 2008).

Institutional thickness is linked to reciprocal altruism through implicit norms and/or explicit rules governing informal exchanges such that opportunism is subject to severe sanctions (Boschma 2005a) limiting the threat of non-reciprocation, and through shared values relating to the role of collaboration in mutual enhancement of competitive position. The existence of formal institutions have been found to foster the perception of shared valued outcomes and the associated belief that collaborative behaviour towards these outcomes will produce benefit to both involved parties (Raco 1999). Formal institutions have also been found to reduce the threat of 'opportunism', and 'cheating' or non-reciprocation (Jeffrey & Weatherhold 1996). Representative and professional associations have been shown to enhance the likelihood of collaboration by enhancing cognitive trust and monitoring adherence to ethical norms (Claus & Collison 2004; Freidson 1973). Sharma (1997) has argued that formal associations facilitate and often mandate peer scrutiny, which allows comparison against ethical and professional standards and reduces uncertainty, the likelihood of 'cheating' and threat of opportunism.

Research into embeddedness indicates that dense informal (social) institutional networks have been linked to the development of perceived trustworthiness or cognition-based trust (Cook & Wall 1980; Parkhe 1993; Uzzi & Gillespie 2002), which incorporates competence, responsibility, reliability and dependability (McAllister 1995), and which enhances willingness to collaborate including the 'altruistic' sharing of useful knowledge and resources on the expectation of return (Mayer et al 1995; Tsai & Ghoshal 1998). Similarly, research into personal exchange theory indicates that involvement in inter-organizational exchange relationships leads to a norm of reciprocity, which increases motivation to contribute to another organisation as a gesture of 'goodwill' (Blau 1964; Watson & Hewett 2006).

In addition, to an expectation of return, institutional thickness also enhances collaboration is by increasing knowledge of the location of expertise and resources. The decision to collaborate with another is affected by awareness of that source as a valuable fund of relevant knowledge, skills or other valued resources (Borgatti & Cross 2003). Research into transactive memory systems provides some support for this claim. For example, there is substantial evidence that individuals who bring new knowledge into organisations rely on complex networks of relationships to search for, and identify, relevant knowledge (Boschma & Wal 2007; Lorentzen 2007; 2008). As individuals are likely to seek information from others whose areas of expertise are known to them, knowledge sharing is dependent on members knowing 'who knows what' (Moreland et al 1996; Wegner et al 1991). Research into transactive memory systems and knowledge mapping also indicates that a system for encoding, storing and retrieving information that conveys an understanding of who has access to what specialised information is a key factor that enables the sharing and reuse of tacit knowledge (Moreland et al 1996; Wegner et al 1991; Wegner 1986). Based on this research, when individuals need resources outside their current portfolio, and seek to collaborate with known sources rather than having to invest personally in learning new information or purchasing new resources (Yuan et al 2007), knowledge of the location of such resources expedites the identification of, and enhances confidence in, collaborative partners (Moreland & Myaskovsky 2000).

Evidence supports the role of institutional thickness in building knowledge of resource location by enhancing the strength and closeness of individual ties, including the frequency of information exchange and personal interaction (Rempel et al 1985; Uzzi 1996; Uzzi 1999; Zucker 1986), which, in transactive memory research, has been found to significantly impact the development of resource directories (Palazzolo 2005; Yuan et al 2005). Additional support is provided by findings that interpersonal trust, familiarity and degree of prior interaction promote the development of transactive memory systems (Akgun et al 2005). Professional linkages further enhance knowledge of expertise location through professional information repositories with search and retrieval properties (Yuan et al 2007).

A further mechanism through which institutional thickness influences collaboration is through collaborative context encompassing collaborative routines, values supporting collaboration and cooperative goals. The resources of another party are only valuable if they are perceived to be accessible, that is available for application to a given problem or situation (Borgatti & Cross 2003). Collaboration partner choices are never based on pure rationality or full information (March et al

1958 [1993]), and decisions surrounding such choices are influenced by the perceived ease with which resources can be accessed and exchanged (Cohen & March 1972). Collaborative routines and cooperative goals reduce uncertainty regarding partner choices and motivations, and enhance perceived access to valued resources.

Collaborative routines and cooperative goals also enhance capacity to co-ordinate the exchange of complementary resources by creating an environment in which economic partnerships and associated shared goals overshadow independent member goals, and encourage co-operation, reciprocity and sharing (Ahuja 2000; Capello 2002; Capello & Faggian 2005; Cooke & Morgan 1998; Walker et al 1997). Institutional thickness has been linked to the development of formal collaborative routines and facilitates the further development of informal collaborative networks, both of which have a prominent role in the resource sharing and collaboration patterns (Allen et al 2007). The perception of cooperative goals has been linked to shared valued outcomes stemming from the direction of formal institutions and embeddedness in social networks (Keeble, Lawson, Moore and Wilkinson, 1999).

Finally, institutional thickness facilitates knowledge sharing through the development of institutional proximity. Institutional proximity is defined as the extent to which organisations share the same informal and formal cognitive, normative and regulatory frameworks (Zukin & DiMaggio 1990). Institutional proximity and institutional thickness can be differentiated with reference to the level of analysis. Institutional proximity refers to an inter-organisational, dyadic factor which depicts the extent to which firms are more or less similar in their perspectives, approaches and policies. Institutional thickness describes a regional or cluster-level phenomenon and depicts the extent to which firms are embedded in a system of extra-organisational institutions.

These components of institutional thickness together with an explanation of how they contribute to cluster based knowledge transfer are explained in table 1.

Factor	**Description**	**Relationship to Institutional Thickness**	**Relationship to Collaboration**
Reciprocal Altruism	The perception of mutual benefit accruing through acts ostensibly benefiting another	Dense web of formal and informal institutions reinforces the perception of shared valued outcomes and reduces the risk of non-reciprocation through	Reciprocal altruism motivates collaboration under circumstances in which greater immediate net cost is offset by

	party.	monitoring of behaviour and maintenance of behavioural standards.	presumed reciprocation.
Knowledge of Resource Location	The awareness of resource sources, their value and location.	Frequency and intensity of interaction builds knowledge of resource distribution patterns.	Knowledge of the location of valued resources expedites the identification of collaborative partners, and enhances cognition-based trust.
Collaborative Context	The existence of collaborative routines, values supporting collaboration, and cooperative goals.	Embeddness in informal (social) networks builds collaborative routines and the perception of cooperative goals. Cultural preconditions to collaboration enhanced by institutional agents.	Collaborative context reduces uncertainty regarding partner motivations and enhances perceived access to valued resources.
Institutional Proximity	The extent to which organisations share the same institutional arrangements including norms, routines and policies.	Dense institutional environment facilitates the development of shared norms. Formal institutions exert pressure towards shared policies and procedures.	Institutional proximity reduces the likelihood of cultural clashes and conflict, and enhances predictability.

Table 1: Factors Affecting Collaboration in Clusters

Research into institutional proximity suggests that although organisations in a cluster may have various distinct cultures, they tend to converge on an industrial 'recipe' (Inkpen & Tsang 2005), and clustered firms in the same type of business experience pressure to adopt similar policies and perspectives (Bhagat et al 2002). A key effect of similar or shared beliefs, values and policies is the enhancement of collaboration and knowledge sharing by minimising the likelihood of cultural conflicts between involved parties (Knoben & Oerlermans 2006). Institutional proximity is linked to collaboration through common norms and routines which allow organisations to interpret actions without explicit instruction (Kirat & Lung 1999). As noted by Helmsing (2001), firms will share resources when an interactional logic is shared across cluster members that stems from the belief that collaboration has valuable outcomes for individual cluster organisations.

Research in institutional economics indicates that a dense network of both formal institutions and informal institutions facilitates the development of shared or similar values and routines across

organisations (Giuliani 2007) and also that formal institutions can reinforce adherence to such values through the threat of sanctions (Boschma 2005b).

Institutional Thickness and the Value Adding Web

Brown et al. (2007) suggest adopting the resource-based view of the firm (e.g., Peteraf 1993, Collis and Montgomery 1997) for the purpose of understanding and rationalising clusters. According to this view the cluster is a series of value adding webs (VAW) that exist at different levels. Within a cluster there are three types of actors:

a. horizontal actors – these belong to the substantive industry present within the cluster – in the case of wine it is the grape growers and the wine producers

b. vertical actors – these perform upstream and downstream activities for the horizontal actors – in the case of wine it includes horticulturalists, vignerons, transport companies, bottlers, marketing firms, restaurants, wholesalers etc

c. lateral actors – these are facilitators – they provide infrastructure and support for the cluster – this could include educational and training facilities, specialist advice, communications, roads

The aim of the value added web approach is to develop a concept that allows for the analysis of resources on selected cluster levels. Three resource categories which are critical to cluster performance and competitiveness are differentiated:

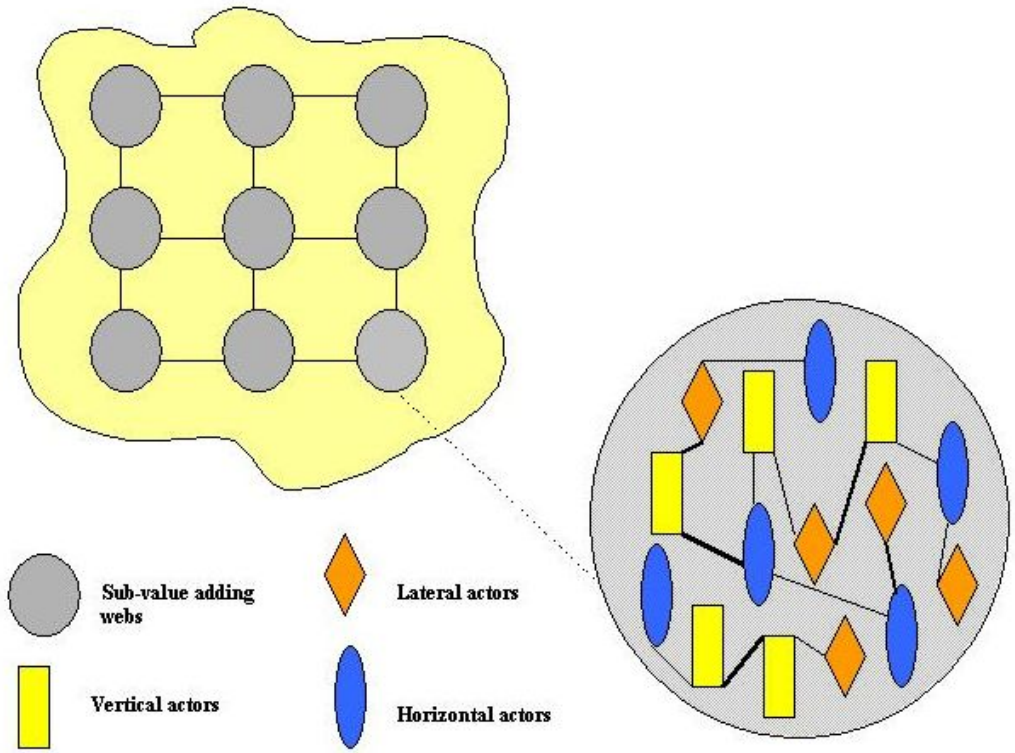
(1) C*ontext-specific resources* such as regional resources that characterise the VAW location regarding the type of area (e.g., rural or urban) or the existence of natural resources (e.g., minerals or the climate). In this category of resources industry-related resources can also be identified that reflect sectoral attractiveness and structural conditions to influence value creation opportunities such as innovation-driven competition between cluster members. Further, social and cultural characteristics "can shape economic activity in the same way that factor endowments, such as mineral resources, navigable waterways, and climate do…" (Cortright 2002: 15). Since social, cultural or legal specificities may affect value creation, institutional resources such as legal regulations or cultural specificities are also included in the analysis. Value creation may be understood in terms of created rents. Brown et al. (2007 and 2008) introduce *contextual rents* to include the embeddedness of cluster actors in a certain context into the cluster analysis.

(2) *Web-specific resources* are rooted in joint activities and the quality and strength of the underlying relationships of cluster members and lead to relational rents (Dyer and Singh, 1998; Lavie, 2006). When investigating the VAW around a certain actor it is therefore necessary to understand the interdependencies between the focal actor and the related actors.

(3) *Firm-specific resources* as the traditional core of the resource-based view of the firm are differentiated into tangible (e.g., machinery), intangible (e.g., brand name) and human resources (e.g., technical experts) and their scarcity leads to Ricardian rents.

Figure 1 illustrates a cluster as a value adding web that can be segmented into sub cluster value-adding webs. There are value adding webs around individual firms and a series of value adding webs that are located within the cluster. The value adding activity can take place within the firm, within the locality (the region) and within the cluster.

Figure1: The cluster as value adding web



Source: Brown et al, 2007.

When a cluster is seen as a value adding web the single firms do not only generate their own value adding activities, but they also add value to the whole cluster. Because every firm is influencing value creation and the overall competitiveness of the cluster it becomes obvious why it is important to think about the single firm when talking about clusters. Competitive advantage does not only

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result from firm specific competencies, but also from the ability to organise the whole value creation process within the cluster. Here institutional thickness of the cluster is important in terms of understanding the dynamics of value adding activity within a cluster; that is, understanding why the value adding activity of a cluster is greater than the value adding activities of the individual firms within the cluster. Where there is reciprocal exchange of information, trust and embedded networks that facilitate knowledge exchange then a cluster has rationality in terms of why individual firms would operate in proximity with one another and why horizontal actors would engage in co-operative activities.

We can examine each of the components of institutional thickness and discuss how each of these factors strengthens value adding activity within the cluster web:

a. reciprocal altruism. Firms are willing to exchange information and to possibly collaborate. This is more so the case where there is not only a shared product where the firms are ostensible competitors but where there is a shared regionality about the product, for example, where the product is perceived to have regional distinctiveness that attracts customers to all firms located within the cluster. In this case firms will strive to share and to co-operate in order to protect the regional brand. This regionality and regional brand may be facilitated through regional trade associations, chambers of commerce or by commercial requirements built into contracts between horizontal and vertical actors.

b. Knowledge of resource location. In the context of a cluster this comes about through daily transactions and through reciprocal altruism. Knowledge can be acquired through commercial means or through formal and informal networks. In a cluster there are more opportunities for accessing such knowledge via normal commercial transactions, through social networks or via specialist lateral actors such as consultants, educational institutions and trade associations.

c. collaborative context. A functioning cluster will have formal and informal networks that facilitate collaboration. This can range from informal discussion through social networking and information exchange between vertical and lateral actors through to formal forms of collaboration such as exist with educational institutions, through trade shows or through regional promotional activity.

d. institutional proximity. Once again in a cluster it is likely that there will be shared value systems and an acceptance of formal or informal governance mechanisms. Actors not only understand

routines they are also likely to understand the routines that surround the production of the core product.

Illustrating Institutional Thickness in a Wine Cluster

Here we take one horizontal actor in the Hunter Valley wine cluster. This hypothetical actor grows a variety of grapes and produces a Shiraz and a Semillon wine under its own label: WWW – Waratah Wonderful Wines. The wine cluster has over 100 producers. There is a supporting growers' association and there are lateral actors that include educational institutions and agricultural agencies.

Table 2 demonstrates the dimensions of institutional thickness that contribute to value adding activities of WWW and for the wine cluster. It draws on the contextual and descriptive overview of the Hunter Wine cluster outlined in the paper by Henderson et al (2009). Furthermore, the table demonstrates how clustering strengthens and develops institutional thickness.

Table 2 Elements of Institutional Thickness in the Hunter Wine Cluster

Institutional Thickness	**Conditions Present in the Hunter Valley Relevant to WWW**
Reciprocal Altruism	Extensive network of formal and informal networks strengthen shared values and facilitate sharing and trust. Social networks such as regular Friday evening, informal gatherings at a local restaurant/bar; formal occasions such as wine tastings and regional wine shows; the growers association – the Hunter Valley Vineyard Association; a shared regional identity in terms of a "regional brand". Important voice role played by key established wine makers (eg Tyrells) in developing reciprocity and sharing information.
Knowledge of Resources	Strengthened by local transactions with vertical and horizontal actors; through formal and informal networks (as above); through support of lateral actors – local TAFE at Kurri Kurri, Department of Agriculture.
Collaborative Context	Seasonal routines are embedded into the production process. In

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	turn this forces collaboration and sharing of resources at strategic times of the year such as labour and equipment. In an industry that is based on agriculture seasonal production systems enforce routines, facilitate sharing and assists learning. This is reinforced by vertical actors who are contracted into the production process such as professional viticulturalists and wine makers. They gather, interpret and disseminate information across vineyards.
Institutional Proximity	Many of the above factors contribute to a close institutional proximity. There are similar norms and routines followed, resource sharing is common and knowledge can be accessed from all tiers of actors located within the region. The extent to which organisations share the same institutional arrangements including norms, routines and policies

In the Hunter Valley wine cluster there is considerable institutional thickness. All elements that contribute to institutional thickness are present. These conditions are not recent but have been a pervasive characteristic of the Hunter Valley wine cluster (see Henderson et al, 2009). These conditions in turn can contribute to value adding activities of the individual actor, enhance the context specific resources and contribute to the value adding activity of the cluster web as a whole. However, we are not suggesting that all wine clusters replicate these characteristics or that all actors in the wine cluster experience the same conditions as WWW do in the Hunter Wine Cluster. Indeed, Guiliani and Bell's (2005) work on the Colchuagua Valley wine cluster in Chile highlighted the differences across wine producers in terms of their access to knowledge and to their ability to process and absorb such knowledge.

Implications and Discussion

Our review supports the existence of at least four mechanisms through which institutional thickness may influence collaboration in clustered firms. Institutional thickness may operate to facilitate the development of inter-organisational trust, provide a context supporting reciprocal altruism, build knowledge of resource location, and facilitate access to knowledge. We have synthesised this research into a tabular framework which depicts the impact of institutional thickness through four factors (see Table 1). We then discussed the important function of institutional thickness in

contributing to the value adding activities within an industry cluster. We then illustrated this by referring to conditions that are present within the Hunter Valley wine cluster that contribute to institutional thickness.

This review is a first step in the development of our understanding of the causal mechanisms through which institutional thickness enhances collaboration in clustered firms. As such, this research responds to calls to investigate how clustered firms derive value from proximity. Investigating the mechanisms also provides a powerful explanation for the situations in which clusters do not enhance collaboration, and therefore responds to recent calls to account for the failure of organisations to reap value from proximity and provides explanation for the inconsistent results in previous research into institutional thickness. By specifying the mediating pathways through which the institutional environment potentially affects collaboration, our research stimulates questions relating to the role of moderating circumstances that impede the development or utility of such pathways. Moderating variables have long been acknowledged as powerful explanations accounting for inconsistent relationships. In turn we discuss how institutional thickness is an important rationale and outcome of clustering and in turn contributes to value adding activities within the cluster.

Future research should be targeted to generating empirical support for this framework, through, for example more systematic case study analysis aimed at generating evidence of the role of the different mechanisms through which institutional thickness influence collaboration. Such research should also seek to explore both the extent to which institutional environments influence cluster dynamics including knowledge of resource location, collaborative and shared values, and the perception of reciprocity, as well as the effect of these factors on collaboration. The objective of such case analysis would be to transfer the theoretical concepts outlined in the previous sections to concrete examples and to explore the extent to which collaboration is linked to the influence of different institutional arrangements. This empirical research is required to gauge the extent to which the mechanisms investigated in this review provide robust explanations for the influence of institutions on collaborative interaction in clusters. We presented an exploratory discussion of the mechanisms of institutional thickness that are present within the Hunter Valley wine cluster.

This paper was written in an effort to integrate research on institutions, collaboration and clusters as discussed in the existing literature. It is expected that empirical investigation will confirm and/or modify the present model, and thus, it is intended as a catalyst and beginning for future research.

The utilisation of this model will ensure that such future research includes consideration of institutional thickness and the mechanisms through which it potentially affects collaboration in clusters.

In conclusion, the current review provides a new perspective on collaboration between clustered firms, which can usefully inform future policy and research endeavours. In developing this model, we have integrated a range of theoretical accounts of collaboration and its antecedents, and highlighted a new direction for future research. By proposing and arguing a series of intermediary actions between institutional thickness and collaboration, this paper explicates the complex organisational and inter-organisational dynamics on which collaboration is dependent.

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