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To cite this article: Milana A. Korotka (2015) Proximity factors influencing academics' decisions to cooperate with industrial organizations, *Regional Studies, Regional Science*, 2:1, 415-423, DOI: [10.1080/21681376.2015.1065758](https://doi.org/10.1080/21681376.2015.1065758)

To link to this article: <http://dx.doi.org/10.1080/21681376.2015.1065758>



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Published online: 29 Jul 2015.



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Proximity factors influencing academics' decisions to cooperate with industrial organizations

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(Received 17 June 2014; accepted 18 June 2015)

Stakeholders within regional innovative systems tend to emphasize universities' roles as territorial actors and encourage them to maximize university–industry cooperation inside the region. However, where universities are better connected to external partners, their connections may be more naturally focused out of the region. This article assesses the role of proximity in academics' decisions to collaborate with business partners, and the circumstances under which local partners might be chosen over distant partners. The hypothesis of this study is that proximity may drive stronger university–industry connectivity. Using a case study of five research institutes of the University of Twente in the Netherlands, I argue that geographical proximity is not a prerequisite for a university–industry interaction inside a region, whereas the other types of proximity play a significant role in building local partnerships. This has important implications for improving the connectedness between academics and their industrial partners at the regional level.

Keywords: university–industry relations; regional innovative system; proximity; regional development

Introduction

Universities' territorial role is increasingly coming to the attention of academics, practitioners and policy-makers (Pinheiro, Jones, & Benneworth, 2012), at least partly as a consequence of the fact that university–industry (UI) linkages help support industrial – and hence regional – growth (Chakrabarti & Rice, 2003) in three ways. Firstly, universities enhance regional innovation through their research activities. Secondly, they promote enterprise, business development and growth. Thirdly, universities accumulate and transfer knowledge to industry and develop qualified human resources.

However, research on these linkages has shown mixed results in terms of their more general applicabilities in specific regional contexts. Many regions with a strong scientific base do not necessarily have industry to which it is appropriate to transfer that research (Dosi, Lierena, & Labini, 2006). One main reason that universities face difficulties in developing cooperation with industry is lack of connectivity; Sternberger (2000) argues that proximity is essential to facilitate connectivity between universities and –industry as a precursor for raising universities' regional economic development contributions. This paper seeks to contribute by understanding how proximity might be relevant to connecting universities and industry to drive regional development (D'Este & Perkmann, 2011; Lee, 2000). Proximity is often reduced to physical co-location, and in this paper I want

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to instead ask which kinds of proximity (distinguishing cognitive, organizational, social, institutional and geographical dimensions; following Boschma, 2005) plays the most significant role in academics' decisions to cooperate with industry.

Using a single-case study of a Dutch university this paper asks two research questions.

- What role do different types of proximity play in UI cooperation?
- How does spatial proximity influence academics' decisions to collaborate with differently located partners?

University–industry linkages (UILs) and territory

UILs have recently become popular as an efficient way to enhance regional innovations (Azagra-Caro, 2005). However, regional barriers may hinder connectivity between universities and industrial organizations, and I distinguish here between structural and interactive barriers (Table 1). Structural problems involve interaction being undermined by systemic regional problems, the absence of funding, weak channels of engagement, and poor links between universities and industrial organizations. Interactive barriers emerge where partners lack the characteristics necessary for collaboration, such as different institutional purposes, or appropriate skills for collaboration and partner identification.

There is a certain agreement in the literature that these cooperations' success is shaped by academics' and entrepreneurs' common motivations to interact: universities are more likely to choose partners with common research interests, culture, norms, high research and development (R&D) intensity and openness to cooperative networks (*inter alia* D'Este & Perkmann, 2011; Lam, 2009). Knobens and Oerlemans (2006) and Laursen, Reichstein, and Salter (2011) show proximity has been demonstrated to play a central role in facilitating university interactions by increasing connectivity and smoothing out cooperation problems, suggesting that universities are more likely to cooperate with local partner organizations. This suggests that universities are more motivated to cooperate with local partners as they can more easily build these commonalities and facilitate knowledge transfer activities, and that proximity between academics and entrepreneurs facilitates and strengthens connectivity.

But this seems to be a rather simplistic version of how proximity functions, reducing it to exclusively geographical proximity as being important, and indeed Boschma (2005) highlights five forms of proximity relevant to innovation:

- *Cognitive proximity* relates to effective communication, demanding competencies, novelty of ideas and creativity to maintain effective interaction.

Table 1. Barriers to university–industry cooperation.

Structural barriers (external)	Interactive barriers (internal)
Deficiency of funding resources	Different institutional purposes
Weak challenges of engagement	Deficiency of collaborative skills
Mismatch of firm needs/capacities with knowledge base	Difficulties in identifying partners

Source: Korotka (2012).

- *Organizational proximity* is related to interactive learning, where trust-based networks help overcome uncertainty, coordinate transactions and enable effective knowledge transfer.
- *Social proximity* derives from socially embedded, durable and trust-based relationships between individual actors, reducing risks/uncertainties in cooperative innovation.
- *Institutional proximity* involves sharing similar institutional rules, cultural habits and values between actors, lowering transaction costs, providing a stable basis for interactive learning.
- *Geographical proximity* facilitates inter-actor connectivity by support organizing, coordinating and executing processes in innovative partnership projects.

If, as Oinas and Malecki (2002) contend, inter-actor networks are the most important facilitators of knowledge exchange, this suggests that social, organizational and institutional proximity may also facilitate UI knowledge exchange. Epistemic communities, networks of practice and communities of practice facilitate knowledge transfer at a variety of spatial scales (Benneworth & Dassen, 2011). Conversely, geographical proximity does not automatically facilitate UI relations since as ‘nonlocal clusters open possibilities to work with other clients and suppliers, and to tap – if not to become fully integrated – into different knowledge networks’ (Oinas & Malecki, 2002, p. 120).

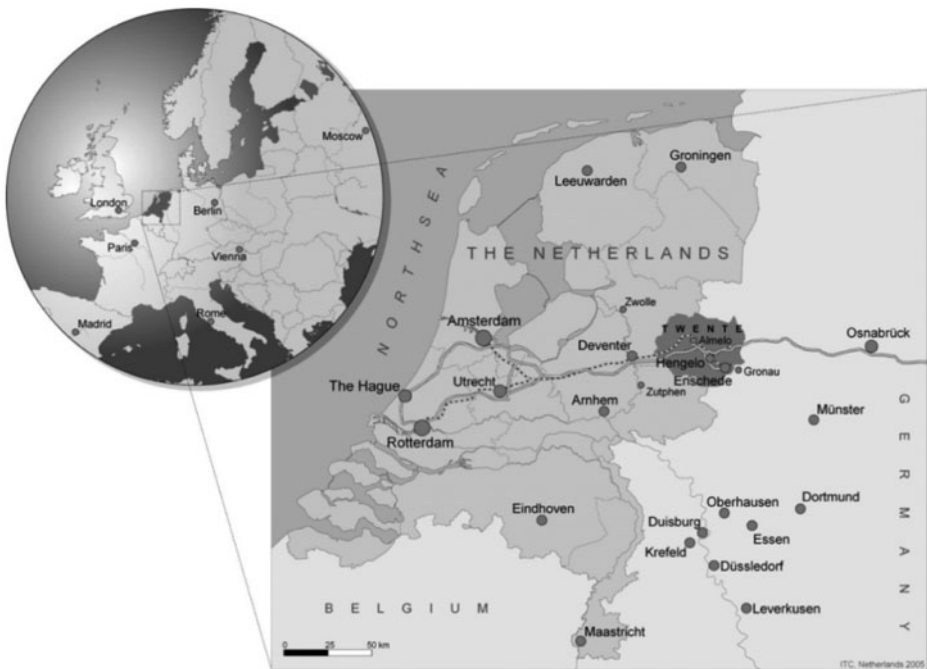


Figure 1. The Twente region.
Source: ITC, University of Twente, Enschede.

The University of Twente's (UT) research institutes

The UT, located in Enschede in the east of the Netherlands (Figure 1), has been active in stimulating entrepreneurship for 30 years, and successfully attracted several large international high-tech businesses to the region. The university campus can be understood as the anchor point for a strong entrepreneurial ecosystem, supported by an innovative partnership between the university, the university of applied science, the province, local authorities in various constellations and other innovative businesses. The university campus has for the last decade been managed as an integrated knowledge space in parallel with the adjacent science park to make university facilities available to locally based companies.

As little analytical literature explores the UT's entrepreneurial activity (Benneworth & Ratinho, 2014), this research explores whether proximity influences UT academics' choices to collaborate with local rather than with distant partners. Data were obtained via a survey of all researchers from five of UT's research institutes¹ regarding their industrial collaboration. The paper reports findings based on 62 respondents (41 men and 21 women, age range = 26–67 years) (Korotka, 2012) on the influence of partner location on partner choice.

Firstly, it was important to find out the facilitators for UI partnership regardless of constraints, and questions measured five dimensions of proximity (cognitive, organizational, social, institutional and geographical) in sentences describing the conditions under which academics choose or declined to cooperate with industrial partners. Respondents were asked to agree or disagree with these statements linked to a particular kind of proximity being important in choosing collaborative partners, arranged in opposing pairs. Questions were formulated to test researchers' attitudes towards different types of proximity, which were not directly mentioned in the questions: frequency of interaction (cognitive), interactive learning and networks (organizational), trust-based relationship (social), shared institutional values (institutional), and working with local industrial partners (geographical).

Proximity and academic–industry relationships

The most striking finding is that 53% of all researchers cooperated with national partners with only 10% reporting the local area as their industrial partners' primary location

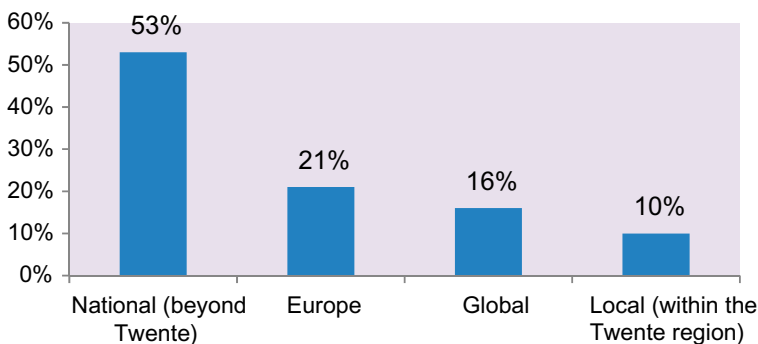


Figure 2. Location of industrial partners (% of respondents).

(Figure 2). More insight is given into this rather surprising finding by considering three further dimensions.

Table 2 presents the pattern of choice of partner by location related to the five dimensions of proximity (cognitive, organizational, social, institutional and geographical). All results of average ratings are positive, implying confirming other studies reporting that multiple kinds of proximity are important to UI collaborations, and although location is important it is not exclusively important. But different kinds of proximity were important for academics in collaborating with firms at different distances. Firstly, for academics considering *social proximity* as the most important dimension of proximity motivating cooperation with local firms. Secondly, academics reported *institutional proximity* as the most significant in cooperation with national industrial partners. Thirdly, *cognitive and social proximity* was equally important in cooperation with European partners. Finally, *institutional proximity* emerged as a primary consideration for interaction with global industrial partners.

To test how important spatial proximity was for academic–industrial cooperation, I surveyed them about five forms of proximity. These five kinds of proximity were coded in questions to test the facilitators for UI partnership (see also Appendix 1). Table 2 shows how the location of an industrial partner is influenced by five kinds of proximity; Figure 3 demonstrates the role of proximity in the UI partnership. As demonstrated, geographical proximity plays the least important role in the UI partnership, while cognitive (frequency of interaction) and organizational (trust-based networks) proximity are the most important considerations as reported by the academics.

Discussion: what facilitates UI cooperation?

The analysis highlights two main messages. Firstly, there are three dimensions of proximity most influential in explaining why academics choose external partners, namely cognitive, social and organizational, regardless of those partners' location. Secondly, the location of industrial partner (geographical proximity) does not play a decisive role in UI relationships. It implies more generally that where there are no interactive and structural barriers to UI cooperation at a regional level, academics would cooperate frequently and effectively with local partners. For example, if there are funds available (no structural barriers) and if a scientist and/or research group have common interests with their industrial partner (no interactive barriers), there is a high likelihood that cooperation might take place. Results show that academics will cooperate with industrial partners located in any area if cooperation is supported by a high level of social, organizational and institutional proximity, implying that geographical proximity is not a prerequisite for effective relationships between university and industry (see also Oinas & Lagendijk, 2005; Ratinho & Henriques, 2011).

Table 2. Location of industrial partner influenced by proximity.

Location proximity	Cognitive	Organizational	Social	Institutional	Geographical
Local	3.8	3.3	4.3	3.7	3.5
National	3.5	3.3	3.8	3.9	3.1
Europe	3.7	3.1	3.7	3.5	3.4
Global	3.3	3.4	3.5	3.9	2.7

Note: Average reported scores from 1 (unimportant) to 5 (very important) are shown.

The evidence suggests that proximity influences the researchers' choice of partner, but not that cooperation with local partner automatically increases proximity. It appears to be important for academics to conduct research independently, to conduct frequent interaction, and to work with firms that share their research culture and values. Although it might seem that local companies can promise a higher level of proximity, results showed that it is not critical for academics to work exclusively with local companies.

Conclusions and implications

When returning to the central questions of the study, the answer to the first question 'What role different types of proximity play in university–industry cooperation?' is that all forms of proximity contribute to the development of an effective network between local and external actors, but not equally. What was examined in this study appropriately represented the attitude of academics towards partnership with business. It confirmed, on the one hand, that cognitive and organizational proximity are equally important for academics (Figure 3); and the idea that social, organizational and institutional proximity can contribute to the development of an effective network between local and external actors (Oinas & Malecki, 2002). It proved, on the other hand, that geographical proximity is not a prerequisite for effective relationships between university and industry (Ratinho & Henriques, 2011). The survey findings showed that different proximity levels see academics choosing to work with national, European and global industrial partners more frequently than with local firms. This, however, does not mean that local firms are unable to be good partners, but shows that other factors undermine effective connectivity between partners at the local scale.

With regard to the second question, 'How does spatial proximity influence academics' decisions to collaborate with local rather than with distant firms?', geographical proximity is not the most important factor in effective UI cooperation, but social, organizational and institutional proximity contribute the most to the development of an effective partnership. The study confirmed that poor links between actors and weak channels of engagement have a significant impact on academics' decisions to cooperate with distant rather than with local industrial partners. This offers important implications

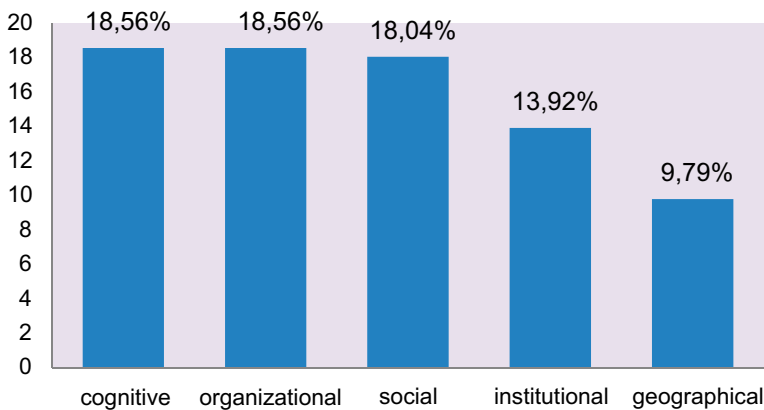


Figure 3. Proximity as facilitator of university–industry cooperation (% of respondents).

for policy-makers on how to improve the connectedness between academics and their industrial partners at the local level and for facilitating regional cluster-building.

There are clear implications here for policy-makers. Firstly is the need for public research projects to consider the ways in which that research can fit with the needs of the region, in particular the kinds of significant economic, social and environmental problems that might form the basis for non-geographical proximity between local partners. Secondly, policy support should consider the ways in which collaborative research forms can be encouraged to build shared understandings (proximities) between academics, local small and medium-sized enterprises, civil society and government. Thirdly, policy should encourage local partners to engage with universities to increase their own interest in research activities. Finally, there is a need not only to involve local partners in these activities, but also to ensure that links are built to external partners with critical missing resources to solve regional needs.

Since this study is not longitudinal, it would be valuable to compare results collected over a longer period of time. Of course, it is always dangerous to make generalizations based on promising findings from a single case study, and it would be also valuable to explore the differences between the proximity attitudes for internationally excellent research against client-driven research in future studies. Furthermore, this study focused on the academics' perspective on UI cooperation, but future research might take the perspective of external partners on UI cooperation. Further research is necessary to extend these findings and to increase the policy and practice lessons for stimulating regional innovative system performance and ultimately regional economic development.

Acknowledgments

The author would like to thank Dr. Paul Benneworth (CHEPS, UT) and three anonymous reviewers for their valuable feedback. The author also gratefully acknowledges the support from RSRS in facilitating Early Career publications and providing a financial support.

Disclosure statement

No potential conflict of interest was reported by the author.

Note

1. Nanotechnology, telematics and information technology, biomedical technology and technical medicine, innovation and governance studies, and geo-information science/earth observation.

References

- Azagra-Caro, J. (2005). *The regional dimension of university–industry interaction*. Knowledge and Regional Economic Development. Open Conference 2005, June 9, 10, 11th, Barcelona, Spain.
- Benneworth, P., & Dassen, A. (2011). *Strengthening global-local connectivity in regional innovation strategies: Implications for regional innovation policy*. OECD Regional Development Working Papers, 2011/01, OECD Publishing. doi: [10.1787/5k9c6d80nns4-en](https://doi.org/10.1787/5k9c6d80nns4-en)
- Benneworth, P. S., & Ratinho, T. (2014). Back to the future of high technology fantasies? Reframing the role of knowledge parks and science cities in innovation-based economic development. *Environment and Planning C*, 32, 784–808.
- Boschma, R. (2005). Proximity and innovation: A critical assessment. *Regional Studies*, 39, 61–74.

- Chakrabarti, A. K., & Rice, M. (2003). *Changing roles of universities in developing entrepreneurial regions: The case of Finland and the US*. MIT IPC Working Paper Series, IPC-03-003.
- D'Este, P., & Perkmann, M. (2011). Why do academics engage with industry? The entrepreneurial university and individual motivations. *Journal of Technological Transfer*, 36, 316–339.
- Dosi, G., Lierena, P., & Labini, M. S. (2006). Science –technology–industry links and the ‘European Paradox’: Some notes on the dynamics of scientific and technological research in Europe. In E. H. Lorenz & B.-A. Lundvall (Eds.), *How Europe's economies learn: Coordinating competing models* (pp. 203–234). Oxford, UK: Oxford University Press.
- Knoben, J. L., & Oerlemans, A. G. (2006). *Proximity and inter-organizational collaboration: A literature review*. *Journal of Management Reviews policy and practice*. London: Edward Elgar.
- Korotka, M. A. (2012). *Proximity factors influencing academics' decisions to co-operate with industry – A case study of the University of Twente's research institutes* (Unpublished M. Sc. Thesis). Retrieved September 20, 2012, from <http://essay.utwente.nl/62013/>
- Lam, A. (2009). From ‘ivory tower traditionalist’ to entrepreneurial scientists? Academic Scientists in fuzzy university–industry. *Social Studies of Science*, 2, 307–340.
- Laursen, K. M., Reichstein, T., & Salter, A. (2011). Exploring the effect of geographical proximity and university quality on university–industry collaboration in the United Kingdom. *Regional Studies*, 45, 507–523.
- Lee, Y. S. (2000). The sustainability of university–industry research collaboration: An empirical assessment. *Journal of Technology Transfer*, 25, 111–133.
- Oinas, P., & Lagendijk, A. (2005). Towards understanding proximity, distance and diversity in economic interaction and local development. In: *Proximity, distance and diversity, issues on economic interaction and local development*, Ashgate, 307–332.
- Lagendijk, A., & Oinas, P. (2005). Towards Understanding proximity, distance and diversity in economic interaction and local development. In: A. Lagendijk & P. Oinas. *Proximity, distance and diversity, issues on economic interaction and local development* (pp. 307–332). Aldershot: Ashgate Economic Geography Series.
- Oinas, P., & Malecki, E. J. (2002). The evolution of technologies in time and space: From national and regional to spatial innovation systems. *International Regional Science Review*, 25, 102–131.
- Pinheiro, R., Jones, G. C., & Benneworth, P. S. (2012). Setting the stage for the discussion and analysis. In R. Pinheiro, G. C. Jones, & P. S. Benneworth (Eds.), *Universities and regional development: A critical assessment of tensions and challenges* (pp. 9–32). London: Routledge.
- Ratinho, T., & Henriques, E. (2011). The role of science parks and business incubators in converging countries: Evidence from Portugal. *Technovation*, 30, 278–290.
- Sternberg, R. (2000). Innovation networks and regional development—Evidence from the European Regional Innovation Survey (ERIS): Theoretical concepts, methodological approach, empirical basis and introduction to the theme issue. *European Planning Studies*, 8, 389–407.

Appendix 1: Role of proximity in university–industry cooperation (average rating)

Question: Considering your most important activities within UBI (university-business interaction), cooperation with industry ...		Average rating
1.	... frequent communication with industrial partners helps me to conduct innovative projects more effectively (cognitive)	3.5
2.	... more frequent interaction allows me to conduct innovative projects more independently ^a	3.1
3.	... interacting through informal networks help to control innovative projects more effectively (organizational)	3.3
4.	... communication through informal networks gives more flexibility in my research ^a	2.7
5.	... working with industrial partners I trust helps to raise an effectiveness of innovative project (social)	3.8
6.	... I prefer to work with different partners to maintain my independence ^a	2.8
7.	... I prefer working with industrial partners with shared culture and values (institutional)	3.8
8.	... I will work with any industrial partner if it leads to quality publications or patents ^a	2.8
9.	... working with local partners helps to organise and coordinate innovative projects more effectively (geographical)	3.1
10.	... I will work with local firms only to acquire high-quality research grants ^a	3.8

Note: ^aFor negatively phrased statements the rating was reversed, so that higher was always negative (disagree).