

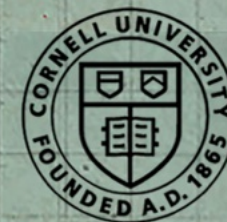


ARCHITECTURE OF SOCIAL LEARNING & KNOWING:

USING SOCIAL LEARNING-KNOWING
PERSPECTIVES AND DESIGN THINKING
TO FRAME AND CREATE CHANGE IN
A WORKPLACE REDESIGN PROJECT

- > Dr Amin Mojtahedi HGA Architects & Engineers
- > Paula Verboomen HGA Architects & Engineers
- > Dr Brian Schermer SARUP, University of Wisconsin-Milwaukee
- > Dr So-Yeon Yoon College of Human Ecology, Cornell University

HGA



Background

There is a consensus among many theorists and practitioners from the fields of architecture, learning, and organizations that the ability to orchestrate learning and knowledge practices in the workplace creates potential for new and valuable ideas to emerge. However, due to the changing nature of the learning and knowing landscape in the knowledge economy (Birgeneau, 2005; Christensen et al., 2011; Chan et al., 2007; Thomas & Brown, 2011; Rickes, 2009; Brown & Adler, 2008; Wenger et al., 2002; Powell & Snellman, 2004; Madanipour et al., 2014), the role of the physical space pertaining to learning and knowing practices needs to be reexamined.

To do so, and to make theories of learning and knowledge relevant to the physical space, this research study (1) used a strand of theories and perspectives emerged in the past 30 years that frames learning and knowing as social and situated processes as opposed to strictly cognitive functions; and (2) complemented the aforementioned theories and perspectives with architects' (Duffy, 2005; Wilkinson, 2016; Hertzberger, 2012) and environmental design researchers' (Waxman et al., 2012; Cranz et al., 1997; Toker and Gray, 2008; Beker, 2008) normative views and empirical findings about the physicality of places that are supportive of learning and knowing practices.

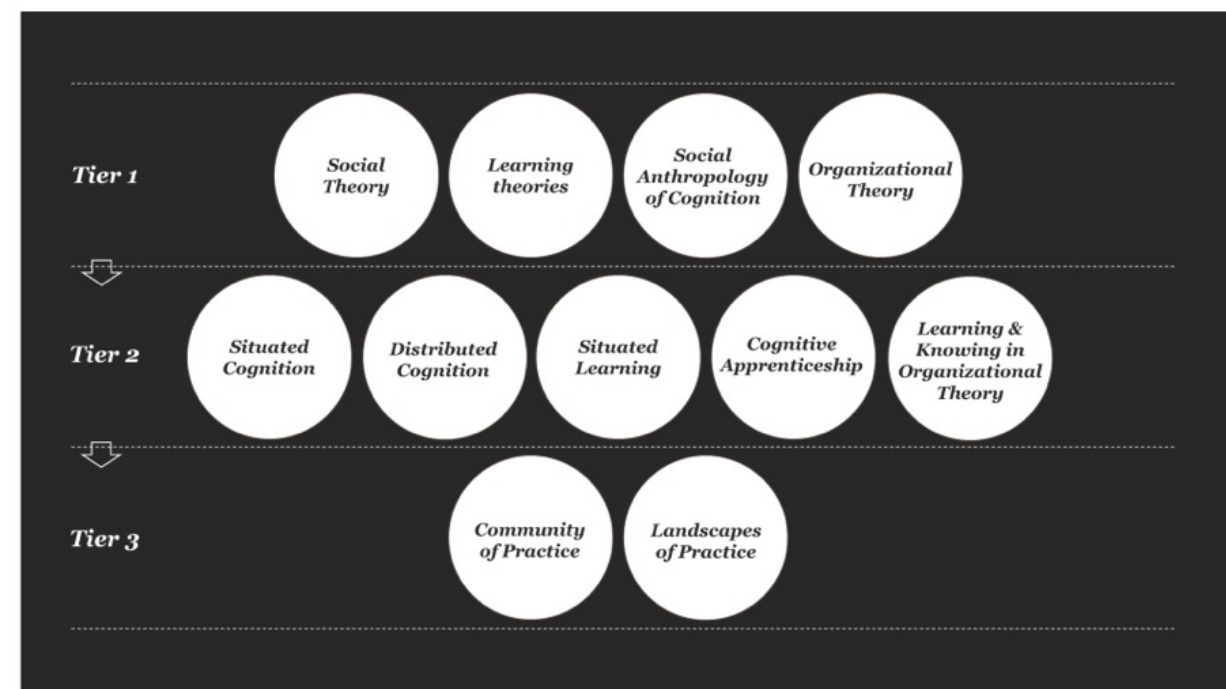


Figure [1] Social theories of learning and knowing



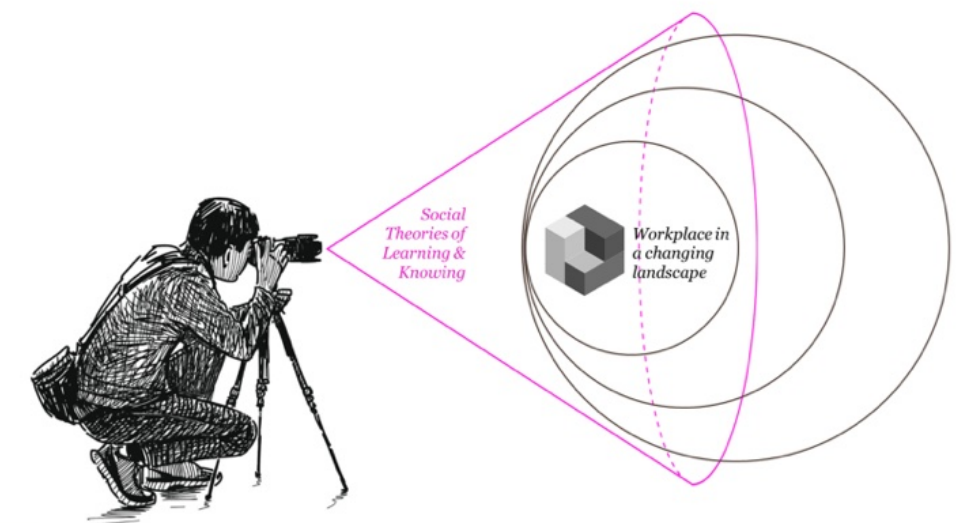
According to the literature

Learning and knowledge are valuable assets through which organizations can gain a competitive advantage [1].



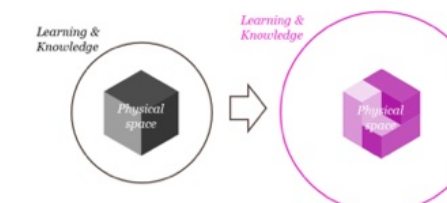
According to the theory

Orchestrating learning/knowing practices within/among various social units of an org creates potential for new ideas [2].



Problem and opportunity statement

Landscape of learning and knowing is changing. What does it mean to the physical space, and more specifically, workplace? We explore this problem through the lens of social theories of learning and knowing.



Hypothesis

We can improve learning/knowledge practices through physical space and the process of its making.

[1] Davenport & Prusak (1998); Nonaka & Takeuchi (1995); Pfeffer & Sutton (1999); Wenger (2016); Cardona, Lugo & Gonzalez (2012)
 [2] Du Plessis (2007); Adams and Lamont (2003); Cardinal et al. (2001); Darroch and McNaughton (2002); Pyke (2002); Shani et al. (2003)

Research Questions

In this project, we started with two main curiosities: (a) what is the architectural expression of organizations' learning and knowing practices? And (b) can we impact these practices through physical space? To answer the first question, we reviewed the literature from two vantage points (social learning and knowing theories as well as those of architects and environmental design research) to learn about intersections between the physical space and learning-knowing processes. This effort included the understanding of learning and knowing in the context of organizations, exploring social theories of learning and knowing, and reviewing empirical and normative views about learning and knowledge practices in the realm of architecture and environmental design research.

Framing the nature of learning and knowing processes as constructed in social practice (Berger & Luckmann, 1966; Lave, 1988), often tacit (Polanyi, 1967), enacted (Weick, 1979), distributed across time as well as social and material space (Hutchins, 1994), situated in authentic social and physical contexts (Brown et al., 1989), starting at the individual level and translates to the organizational level (Senge, 1990; Nonaka, 1991), cultivated in organizations (Wenger et al., 2002), material as well as mental and social (Lotour, 1987), resilient, but provisional and developing (Unger, 1987), and developed through participation within communities of practice^[3] (Lave & Wenger, 1991) changed the way this project approached the second question. Considering that these qualities emphasize the social, procedural, and emergent nature of learning and knowing, a more accurate research question to ask was: Can we impact boundary mechanisms, as practices or artifacts that can be the source of continuity across various social unites in an organization (Wenger, 1998), through 'physical space' and the process of 'making the physical space'?

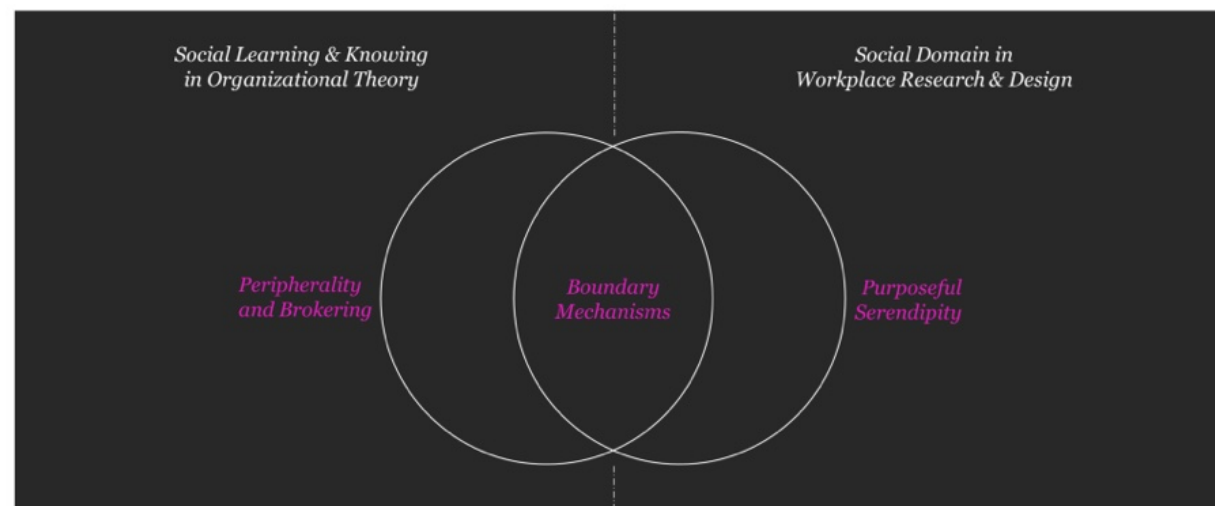


Figure [2] Boundary mechanism as the bridging concept between the two realms of theory and practice

[3] Communities of practice are formed by people who engage in a process of collective learning in a shared domain of human endeavor (Wenger and Trayner, 2015)

Method

Answering the new and improved research question requires a methodology that can help the organization to navigate through change in its physical space as well as its learning and knowing practices. Moreover, there is a need for a method of capturing and recording the aforementioned change for the purpose of engaging participants in the process of making sense of the change.

Therefore, this project proposes 'architecture of social learning and knowing' as a trinary solution comprised of: (1) Design thinking (Tonkinwise, 2010; Liedtka and Ogilvie, 2011; Rodgers, 2013; Brown, 2008) methodology as a form of action research (Lewin, 1946; Boog, 2003; Weisman, 1983), rooted in the neo-pragmatic philosophy (Rorty, 1983, 1999), for cultivating sustainable change in an organization's learning and knowledge practices or producing new ones from scratch; (2) a toolset that combines people-space analytics (Mojtahedi et al., 2016), ethnographic research methods, and ethnographic thick description (Geertz, 1973) to not only map and record the change in users' work practices, but also encourage their engagement as a way of generating insights; and (3) a theoretical lens inspired by social theories of learning and knowing for framing and understanding the change in the organization.

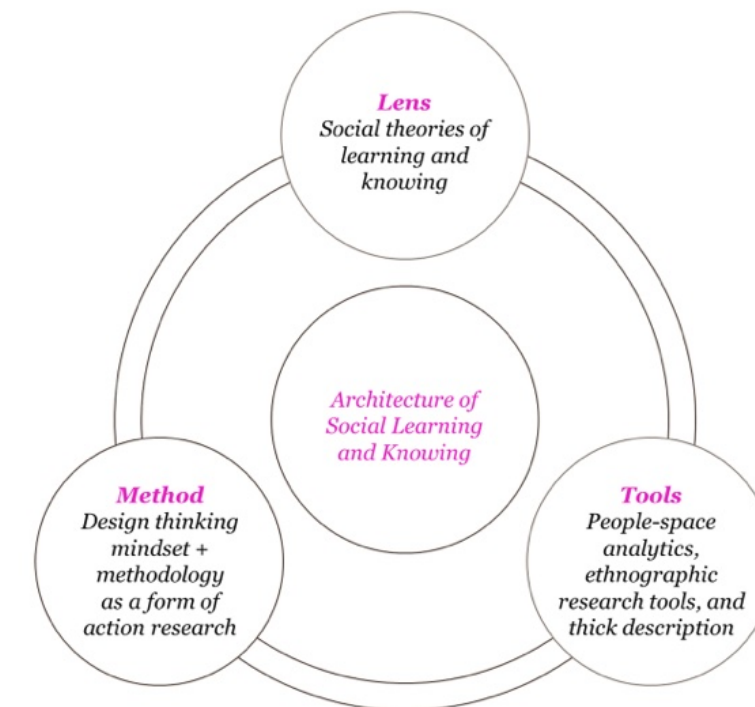


Figure [3] Architecture of social learning and knowing as a trinary solution for impacting boundary mechanisms

Setting and Participants

This study was conducted in the Milwaukee office of HGA Architects & Engineers where the redesign of the workplace was framed as an opportunity to rethink the way work happens. Participation in different steps of the process varied between 19 to 63 individuals based on the type of activity throughout the research process. Participation in the inspiration and ideation phases was voluntary and open to all employees in the office. Over 60 people participated in each of these steps. Participation in phase three and four was also voluntary for the group of employees whose workstations were in the area where the mock-up was later installed. The reason behind this decision was to compare the results rendered by people-space analytics before and after installing the mock-up.

Findings

This study was conducted in the Milwaukee office of a national architecture firm where the redesign of the workplace was framed as an opportunity to rethink the way work happens. A total of 63 people participated in different phases of a design thinking process to re-imagine their workplace of the future. During the earlier phases of the process, a series of empathy-building exercises and workshops were conducted to generate insights for participatory ideation. After studying the options generated during ideation, a full-scale prototype or mock-up of the new workplace was designed and built in an area as large as 8000 sqf inside the office. Using a combination of sensor-network technology and location tracking, participants' social networks and spatial behavior were mapped

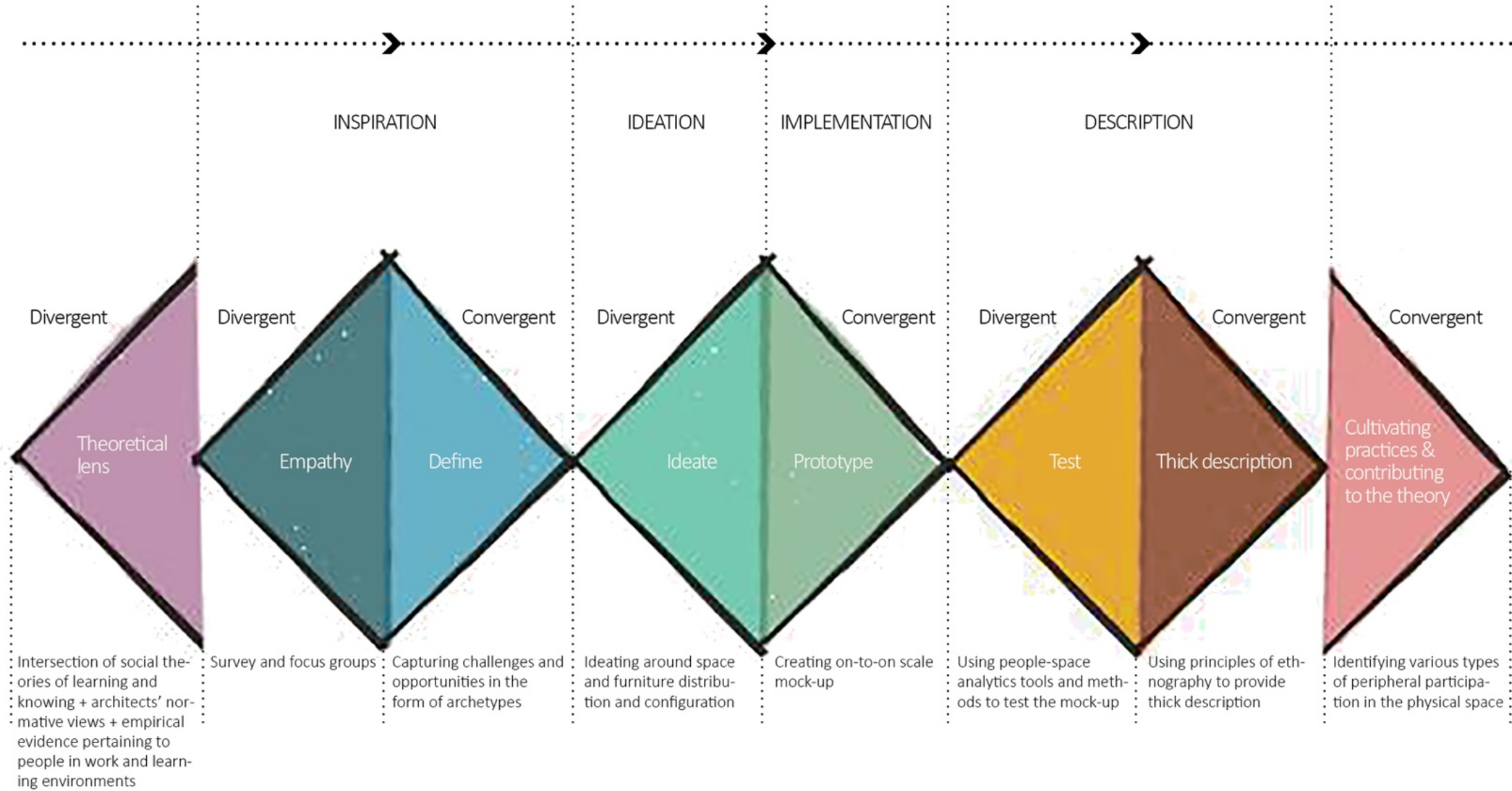
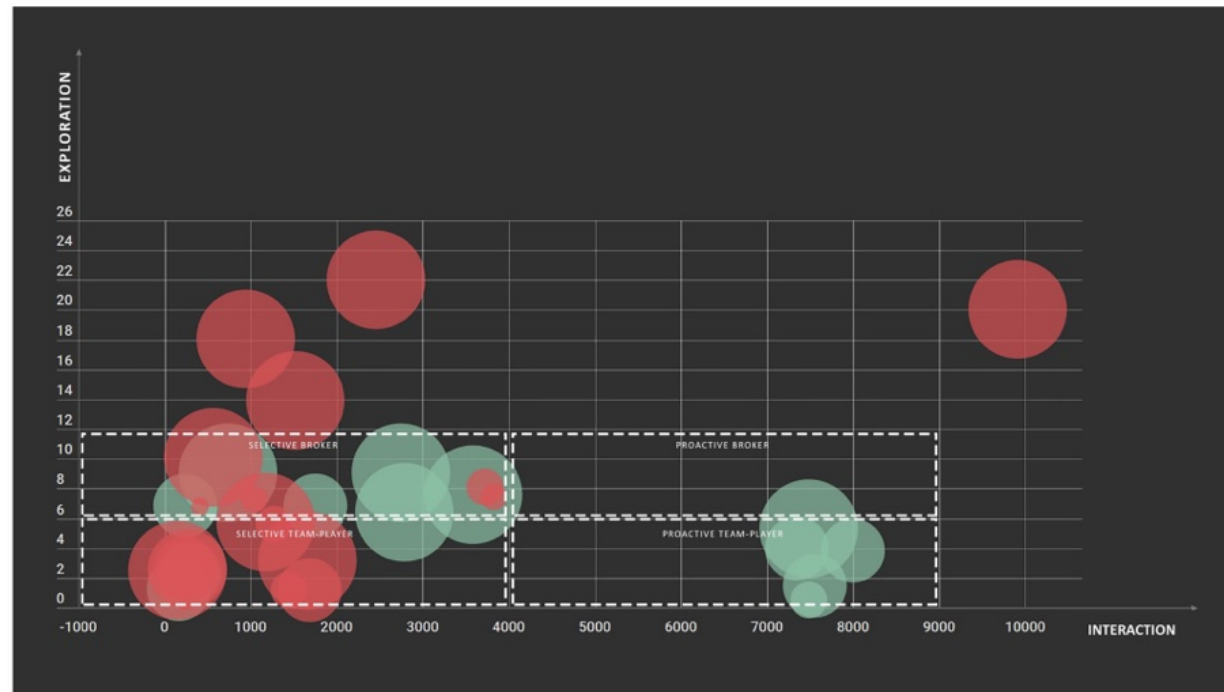


Figure [4] Architecture of social learning and knowing of the organization developed through a variation of design thinking as a process

before and after installing the mock-up to study the potential change in the quantity and quality of the organization's boundary mechanisms. Results from the mapping study showed a significant increase in the employees' brokering behavior and space utilization as well as change in certain groups of users' spatial behavior after installing the mock-up.



Figures [5, 6] Collaboration (up) and space utilization (down) in pre-mockup (green) compared with post-mockup (red)

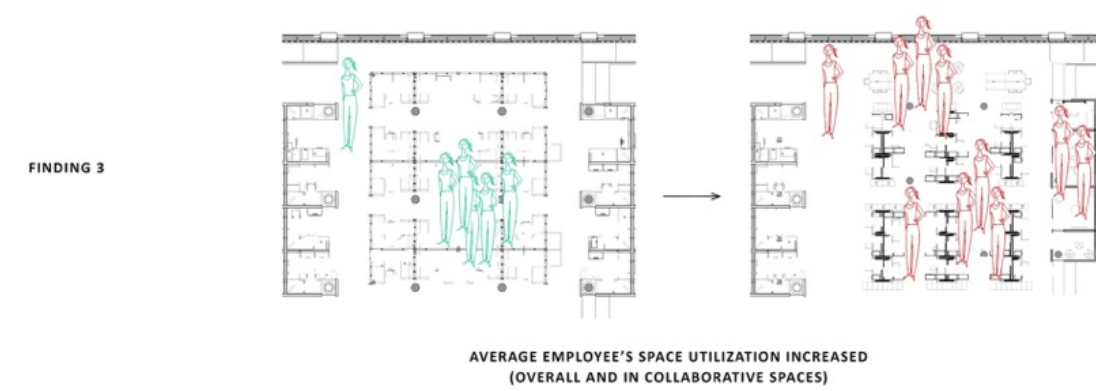
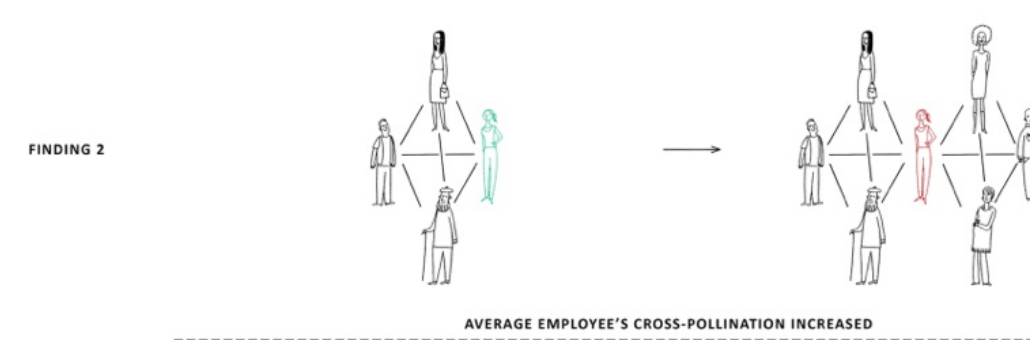
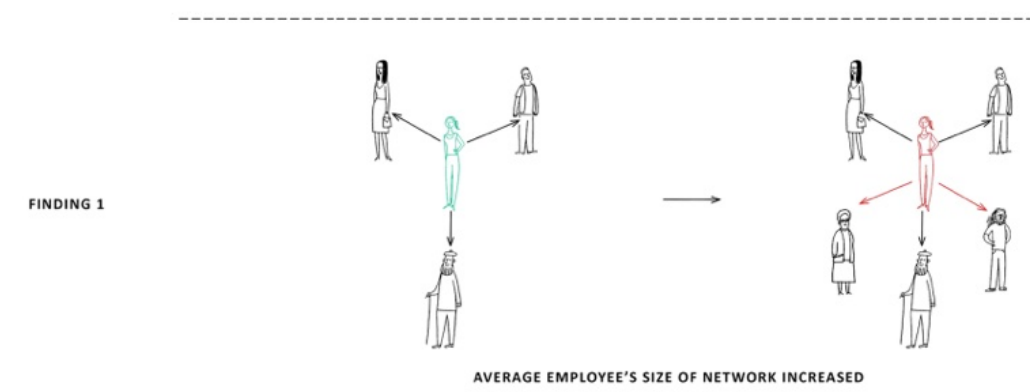
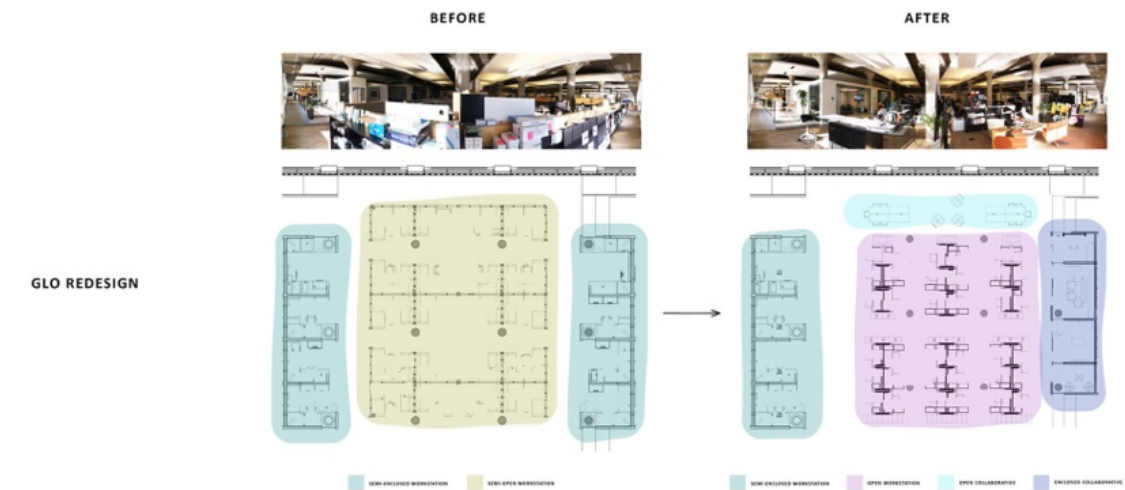
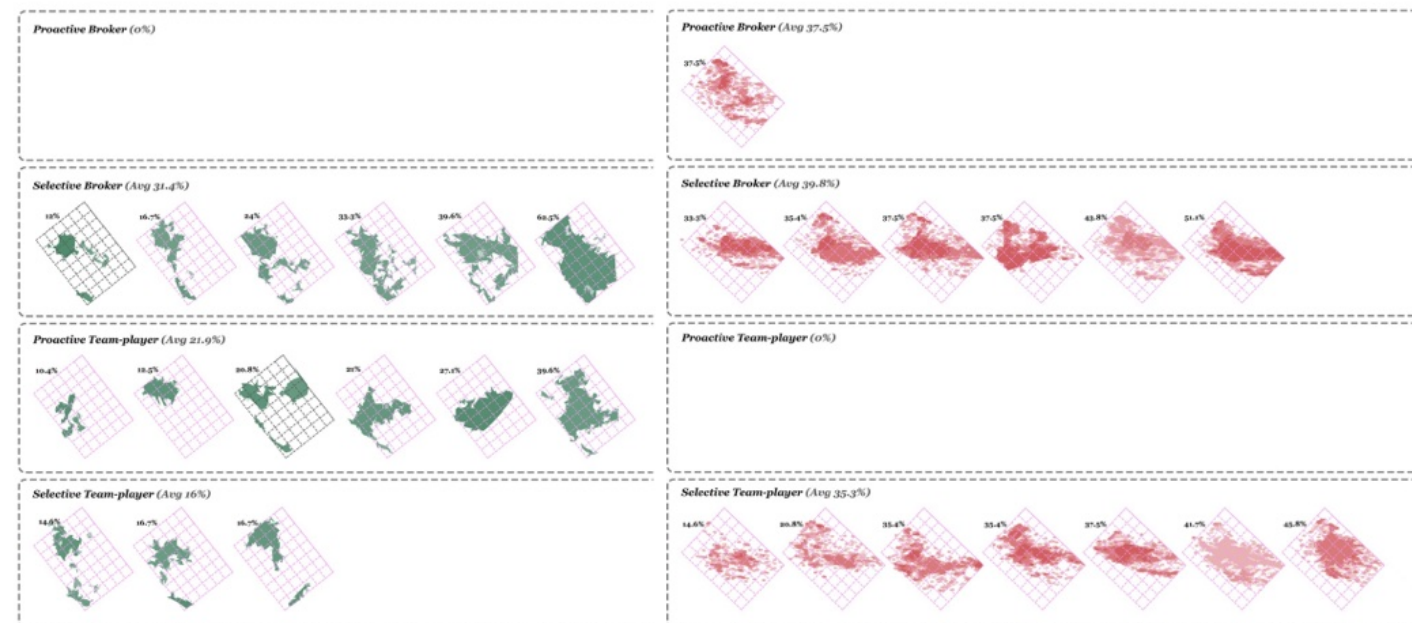


Figure [7] Summary of the mapping study from pre-mockup to post-mockup

These results were then shared and discussed with a smaller group of participants to make sense of the changes captured during the mapping study. Eventually, the thick description revealed the emergence of four types of peripheral participation [4] as different forms of boundary mechanisms.

The first set of findings showed that workplace redesign project had had an impact on participants' types of interactions and not the quantity of their interactions. In other words, after installing the mock-up, the quantity of interactions did not increase, yet more people manifested brokering behavior.

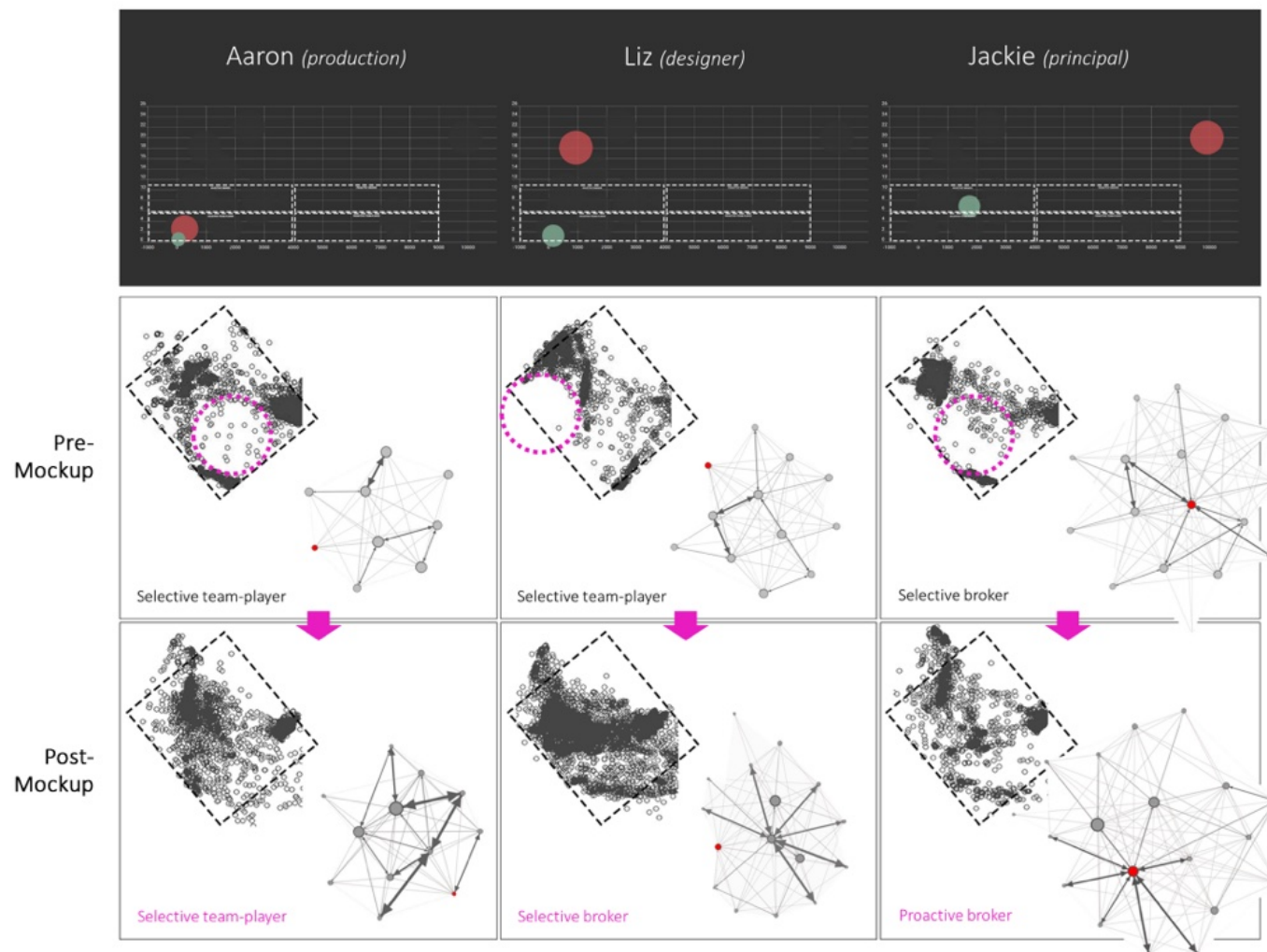


Figure [8] Making sense of the mapping results through one-to-one interviews with a smaller group of participants

[4] Peripheral participation is the participation of members at the periphery of the community of practice to gain knowledge, expertise, and mastery as they become more competent or move towards the center of the community (Lave & Wenger, 1991; Wenger, 1998).

The second set of findings indicated that in cultivating new learning and knowledge practices, the impact of making-process preceded the impact of product. The study showed that some new learning and knowing practices were often negotiated and created during the participatory and emancipatory process of 'making' the physical space. It was during this phase that users were empowered to challenge existing practices and were equipped to imagine different ways of conducting work.

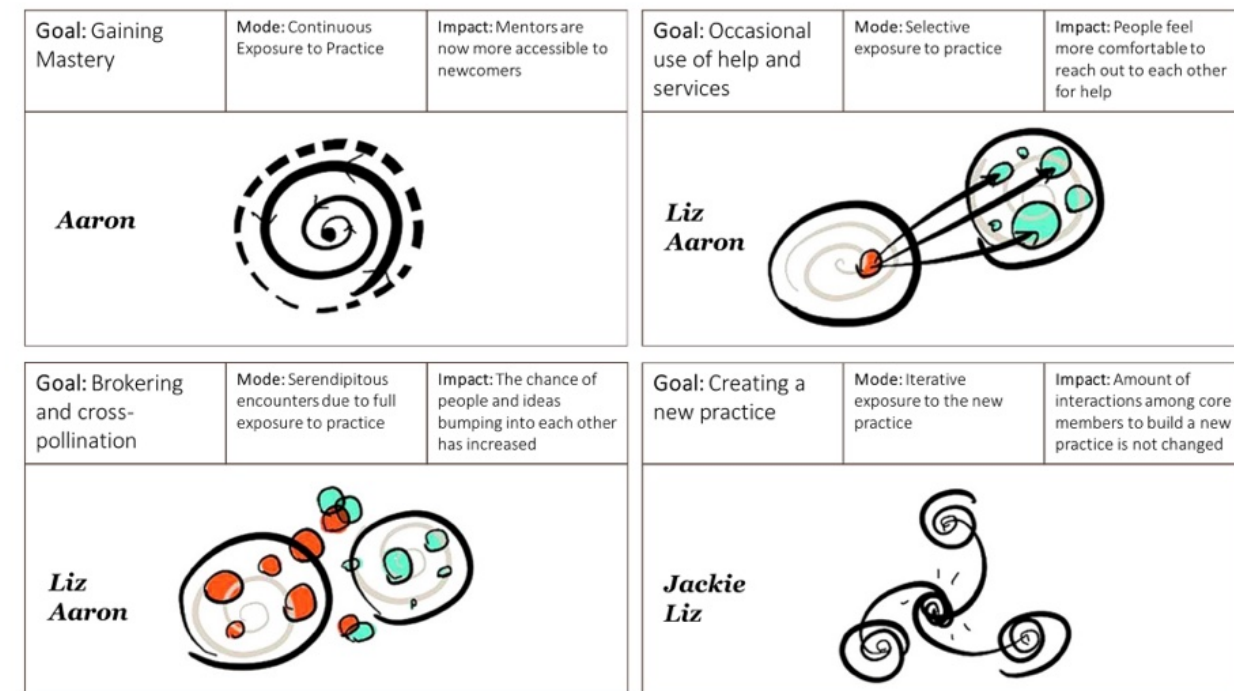


Figure [9] Four types of peripheral participation as different forms of boundary mechanisms and the impact of the new workplace on them

Conclusion

The process of making change in the physical space of a workplace could be an opportunity for the organization to become proactive about creating new knowledge strategies that can help it gain a competitive advantage. Such process, however, is both a methodology and a mindset which employs various ways of knowing, uses participatory approaches, focuses on developing practical and local knowledge, draws inspirations from real human problems, and heavily relies on iteration in 'building' the solution. The result is complementing the network view with the community view in understanding and enabling workplace important outcomes.

Acknowledgements

We are grateful to our colleagues at HGA Architects & Engineers who participated in the study. We would also like to show our gratitude to Brent Peterson, Scott Lindvall, and Jane Dederling who provided insights and expertise that greatly assisted this project.

References

- ☒ Berger, P. L. and Luckmann, T. (1966). *The social construction of reality: a treatise in the sociology of knowledge*. NY: Anchor Books.
- ☒ Birgeneau, R. (2005). The role of the university and basic research in the new economy. In G. Jones, P. Mccarney & M. Skolnik (Eds.) *Creating Knowledge, Strengthening Nations*. 167-195. Toronto: University of Toronto Press.
- ☒ Brown J. S and Adler P. (2008). Minds on fire: Open education, the long tail, and learning 2.0, Educause review.
- ☒ Brown J. S., Collins A. and Duguid P. (1989) Situated cognition and the culture of learning, *Educational Researcher*, 18(1), 32-42.
- ☒ Chan J. K., Beckman S. L. and Lawrence P. G. (2007). Workplace design: A new managerial imperative, 49 (2), 6-22.
- ☒ Christensen et al. (2011) *Disrupting class: How disruptive innovation will change the way the world learns*, McGraw-Hill.
- ☒ Davenport, T. H. and Prusak, L. (1998). *Working knowledge: How organizations manage what they know*, Harvard Business School Press, Boston.
- ☒ Duffy, F. (2008). *Work and the city*. London: Black Dog Publishing Limited.
- ☒ Geertz, C. (1973). *The interpretation of cultures*. New York: Basic Books.
- ☒ Hertzberger, H. and de Swaan, A. (2009). *The schools of Herman Hertzberger*. Rotterdam: 010 Publishers.
- ☒ Hutchins E. (1995). How a cockpit remembers its speeds, 19 (3), 265–288.
- ☒ Lave, J. (1988). *Cognition in Practice: Mind, mathematics, and culture in everyday life*. Cambridge, UK: Cambridge University Press.
- ☒ Lave, J. and Wenger, E. (1991). *Situated learning: legitimate peripheral participation*. Cambridge: Cambridge University Press.
- Lewin, K. (1946) Action research and minority problems, in G.W. Lewin (Ed.) *Resolving Social Conflicts*. New York: Harper & Row (1948).
- ☒ Liedtka J. and Ogilvie T. (2011). *Designing for growth: A design thinking tool kit for managers*, Columbia University Press.
- ☒ Madanipour, A., Knierbein, S. and Degros, A. (2014). *Public space and the challenges of urban transformation in Europe*. New York and London: Routledge.
- ☒ Mojtahedi, A., Yoon, S.-Y, Hosseini, T. A., Martinez, D. H. D. *Imaginative Data: Case Study of Work Dynamics*. Proceedings of 2017 AIA/ACSA Intersections Symposium, April, FL.
- ☒ Nonaka, I. and Takeuchi, H. (1995). *The knowledge-creating company*. New York: Oxford University Press.
- ☒ Pfeffer, J. 1. and Sutton, R. I. (1999). The smart-talk trap. *Harvard Business Review*. 77(3):134-42, 211.
- ☒ Powel, W. W. and Snellman, K. (2004). The knowledge economy. *Annual Review of Sociology*, 30, 199-220.
- ☒ Rickes, P. C. (2009). Make way for millennials: how today's students are shaping higher education space. *Planning for Higher Education*, 37(2), 7–17.
- ☒ Rodgers, P. (2013). Articulating design thinking. *Design Studies*. 34 (4). 433-514.
- ☒ Thomas, D. and Brown, J. S. (2011). *A new culture of learning: cultivating the imagination for a world of constant change*. Kentucky: CreateSpace Independent Publishing Platform.
- ☒ Toker, U. and Gray, D. O. (2008). Innovation spaces: Workspace planning and innovation in US university research centers. *Research Policy*, 37(2), 309-329.
- ☒ Tonkinwise, C. (2010). A taste for practices: Unrepressing style in design thinking, DTRS 8 Proceedings of the 8th Design Thinking Research Symposium. 381-391. DAB Documents, Sydney Australia.
- ☒ Weisman, G. D. (1983). Environmental programming and action research. *Environment and Behavior*, 15, 381-408.
- ☒ Wenger, E., McDermott, R. and Snyder, W. M. (2002). *Cultivating communities of practice: a guide to managing knowledge*. Massachusetts: Harvard Business School Press.
- ☒ Wenger, E. (1998). *Communities of practice: learning, meaning, and identity*. Cambridge: Cambridge University Press.
- ☒ Wenger, E. (2000). Communities of practice and social learning systems. *Organization*, 7 (2), 225-246.
- ☒ Wenger, E. (2000). Communities of practice: the key to knowledge strategy. In E. L. Lesser, M. A. Fontaine & J. A. Slusher (Eds.), *Knowledge and communities*. 3-20. New York: Routledge.
- ☒ Wenger-Trayner, E. & Wenger-Trayner, B. (2015) Learning in landscapes of practice: a framework. In E. Wenger-Trayner, M. Fenton-O'Creevy, S. Hutchinson, C. Kubiak & B. Wenger-Trayner (Eds.), *Learning in landscapes of practice: boundaries, identity, and knowledgeability in practice-based learning*. New York: Routledge.
- ☒ Wilkinson, C. (2015). *Designing the theater of work*. Retrieved from <http://99u.com/videos/52099/clive-wilkinson-designing-the-theater-of-work>