

# Beyond Smart & Data-Driven City-Regions?

## Rethinking Stakeholder-Helices Strategies

Regions Magazine. RSA Regional Studies Association (Gail Mulvey & Frank Peck)

Section: Research Notes

Submission: August 2017 (Deadline: 9<sup>th</sup> October 2017)

Resubmission: 15th October 2017

Publication: December 2017

Word count: 1,963 (without references, figure 1 and table 2)

Igor Calzada, University of Oxford, Urban Transformations ESRC  
&  
Paul Cowie, Future Cities Catapult

### **Introduction: Beyond Smart Data-Driven City-Regions?**

This paper is a report on the recent special session of papers presented at the Regional Studies Association (RSA) Annual Conference in Dublin, entitled 'Beyond Smart & Data-Driven City-Regions: Rethinking Stakeholder-Helices Strategies'. The session was a collaboration between the Urban Transformations ESRC programme at the University of Oxford and the Future Cities Catapult.

The focus of the session was to add to the growing literature taking a critical view of the hegemonic smart city discourse. An increasing number of nuanced critiques of a technology-deterministic and hyper-connected understanding of a smart city have emerged (Calzada and Cobo, 2015). This position seeks to ask questions about the power of smartness and who it serves. Likewise it seeks to understand the agents in the smart networks and assemblages that make up the smart city. Ultimately, we should also ask whether another urban governance model is possible, a 'third way' of urban experimentation between state and market (Keith and Calzada, 2017).

Alongside these meta-critiques of the smart city, other academics are exemplifying the underpinning technology and how it is used to structure smart cities. Many smart technologies rely on ubiquitous sensing and wholesale data collection on every aspect of city life. To process this 'big data', algorithms are created to identify patterns and correlations that then determine city policy in domains as diverse as transport, healthcare, education or crime. The way in which data is collected, exploited, and owned should be ethically and politically

challenge by both academics and policymakers to deliver transparent democratic accountability in cities and regions.

Hence, the session emphasised that smart city-regional designs—in the way data is managed—have significant and serious democratic implications for usability and accessibility within the intended community. The assumption behind many smart city-regional projects is that everyone owns a smartphone and knows how to operate it at maximum performance. Consequently, technology audits are necessary to reveal just how flexible, usable, and accessible these mundane technology designs are for different targeted stakeholders. From these daily-life routines of citizens, data-driven smart city-regions need to consider three democratic preconditions, taking into account not only the usability of the technology but also the impact at the community level: First, techno-politics of data has emerged as a prominent topic of debate for urban development insofar as we reconsider the different role of specific stakeholders in the given community (Calzada, 2017b). Second, around the power interdependencies between stakeholders, open innovation and new forms of knowledge are emerging between the helixes, particularly by pointing out the role of universities (Goddard and Kempton, 2016). Third, consequently, despite the so-called public-private-partnership governance scheme and the 'potential' proactive role of universities, other urban partnership schemes should be encouraged and explored in cities and regions by experimenting with the agency rather than with merely the institutional structures.

### **Amidst the Helix Thinking: Triple Helix (TH), Quadruple Helix (QH), and Penta Helix (PH)?**

To assume this challenge, the session used the lens of the Helix Thinking. Helix Thinking examines the stakeholders' pervasive involvement in the development of city-regions. The original Triple Helix model (TH) (Etzkowitz and Leydesdorff, 2000), was structured around university-industry-government relations. Building on the Triple Helix (TH) model of innovation, the Quadruple-Helix also includes the citizen or community that inhabits the smart city-region within the decision making processes. The initial TH model was developed as a way to conceptualise public innovation and the flow of knowledge in open innovation

systems. In those days, it could be seen as an almost 'disruptive' idea. Soon, however, the institutional arrangements that were established in the name of TH became more separated and conventional. Insofar as the inventions were supposed to be generated in what has been called the 'knowledge infrastructure' (by which is usually meant universities), developed through the 'support structure' (usually tax-financed incubators) and finally commercialised in the 'production structure' (private sector as business-as-usual).

However, due to recent projects and initiatives in which techno-political awareness is transforming the conditions and ownership of data itself, another extension and updated version of the Helix Thinking was proposed as the Penta Helix (PH) (Satyam and Calzada, 2017). The PH framework, in contrast to the institutional structuralist TH and QH, is novel in that its contribution includes (social) entrepreneurs, activists, assemblers, or bricoleurs as an additional helix, which emphasizes the active role of citizenships as an agency of systemic, bottom-up and disruptive social innovation. Some cities and regions in Europe are already being self-organised by following what is called 'city-as-a-platform' (Anttiroiko, 2016). In those newly emerged contexts, transformative alliances among the public sector, private sector, academia, and civic society are being fuelled by a fifth helix, formed by connecting the previous four. This fifth helix is the key driver not only to transform and democratise the smart city concept but also to experiment across institutional boundaries in search of the urban commons (Ostrom, 2010).

In this paper, we seek to expand this understanding of the TH, QH, and PH frameworks and broaden its application to include the governance of smart cities. The governance of cities has always focused on the physical elements of the city—its buildings, infrastructure, and green spaces. It has included regulating the flows and networks that allow the city to function. Smart city-regions add an additional layer to this complexity, that of technology and data. Therefore, governance is about not only creating laws and regulations that mediate between the competing claims to the city and its resources but also introducing changes to achieve more democratic communities. As such, it is about mediating between the various institutional structures and social agents existing in the city and their relationship to power, both political and financial power. The Helix Thinking, in its variegated forms, allows these flows and

institutional assemblages, as well as the entrepreneurial networks of citizens, to be interrogated and understood, particularly as they are mediated through sensing technologies and big data algorithms. As it is shown in Table 1, in the following section, we will elaborate comparatively on the three variegated versions of the Helix Thinking throughout the summary of the three papers presented and discussed:

	<b>Rethinking Stakeholders Helixes-Strategies</b>		
	<b>Triple Helix (TH)</b>	<b>Quadruple Helix (QH)</b>	<b>Penta Helix (PH)</b>
<b>Literature</b>	<ul style="list-style-type: none"> <li>• Etzkowitz &amp; Leydesdorff, 2000</li> </ul>	<ul style="list-style-type: none"> <li>• Goddard, 2016</li> </ul>	<ul style="list-style-type: none"> <li>• Ostrom, 2010</li> <li>• Anttiroiko, 2016</li> <li>• Calzada, 2017a and 2017b</li> </ul>
<b>Multi-Stakeholders</b>	<ul style="list-style-type: none"> <li>• Public</li> <li>• Private</li> <li>• Academia</li> </ul>	<ul style="list-style-type: none"> <li>• Public</li> <li>• Private</li> <li>• Academia</li> <li>• Civic Society</li> </ul>	<ul style="list-style-type: none"> <li>• Public</li> <li>• Private</li> <li>• Academia</li> <li>• Assemblers: (Social) Entrepreneurs or/and Activists</li> </ul>
<b>Paradigms</b>	PPP	Civic Universities	Urban Commons
<b>Governance Scheme &amp; Citizenship Response</b>	Invisible Citizenship	Reactive Citizenship	Proactive Citizenship
<b>Techno-Politics of Data</b>	Technocratic Top-Down	Institutionalised Bottom-Up	Emergent & Complex Bottom-Up

Table 1.

*Triple Helix, Quadruple Helix, and Penta Helix frameworks. Table elaborated by Calzada, 2016.*

## The Conference Session Debate

The first paper of the special session considered the role of the university as an anchor institution within the QH. This includes examining both its role as a cultural institution and its physical influence on the built environment of the city. The next paper took a practical view of the QH, focusing on how we understand the wicked problems posed by smart cities and ensure transparency and

legitimacy on the solutions implemented by the city. The final paper explores a variation in the Helix Thinking: It added a fifth helix related to and diluted amidst the previous four helixes of the QH framework.

In the first paper, Goddard advocated the QH framework to describe a partnership convened by universities as key civic institutions with the capacity to contribute to shaping the future development of their cities. He suggested that global knowledge locked up in universities could be mobilized to 'anchor' the university locally in the city by the use of urban foresight methodologies. In essence, this approach challenges the traditional linear models of science and technology push approach to city development through research commercialisation, which have been embraced by governments through support of so-called TH partnerships between the state, universities, and businesses and the creation of urban science parks. Thus, the 'Civic University' was suggested as contrasting the traditional university, insofar as there are strong overlaps between the three domains of teaching, research, and societal engagement and the adoption of a holistic view of city development.

In the next paper, Cowie recognising the large amount of data in cities and regions, noted that in the QH framework includes diverse ways that citizens can actually benefit from recent developments in urban technologies, as well as how such data-driven smart city-regions can enable a collaborative culture of citizen engagement to emerge. Thus, this paper argued that individuals need to be engaged on the issue as citizens by deliberating on the conditions and safeguards, as well as consumers by agreeing or disagreeing to terms of service. It also explored the heterogeneous role of the citizen and their differentiated and complex relationship with the smart city and its technologies. The paper reported on a prototype innovation toolkit<sup>1</sup> which aims to open up the process of designing and delivering smart city projects. Based on aspects of design thinking (*need ref*) and 'public innovation', it seeks to democratize the process of smart city development and move beyond solutions driven by technology and big data. Its open source format allows collaboration between cities and as well as within them.

---

<sup>1</sup> <http://umbrellium.co.uk/initiatives/urban-innovation-toolkit/>

Finally, in the last paper, Calzada after reviewing the evolution from the TH to the QH, highlighted the need to transform smart city practices using the social innovation perspective by presenting the PH framework. This variegated version of the Helix Thinking is suggested given the overly fixed and bureaucratic frameworks, such as those being implemented at present in the H2020-Smart Cities and Communities lighthouse projects funded by the European Commission. In such projects, besides the market creation and competitiveness imperatives, little is left for experimenting among entrepreneurial networks of individuals and/or groups among cities and regions. This could be seen, in essence, as the systemic innovative spark towards tackling the lack of political engagement and democratic representation of the whole Helix governance framework nowadays. The PH framework, thus, is related to and diluted in the other four helixes by claiming the need to expand the understanding of the data-driven smart 'city-as-a-platform' and focusing on the identification of the urban assets as 'urban commons', overcoming the conventional public-private partnership governance model. He provided examples—such as Mondragon (Spain), Kaos Pilot (Denmark) and Team Academy (Finland)—of how some universities are already experimenting, conscious or unconsciously, from the QH to PH by hybridizing their groups of entrepreneurs and activists within the public sphere, private sphere, academia, and civic society (See Figure 1). Ultimately, the PH framework focuses on establishing data-driven smart city-regions as 'ecosystems' of citizens' rather than 'systems' of systems'.

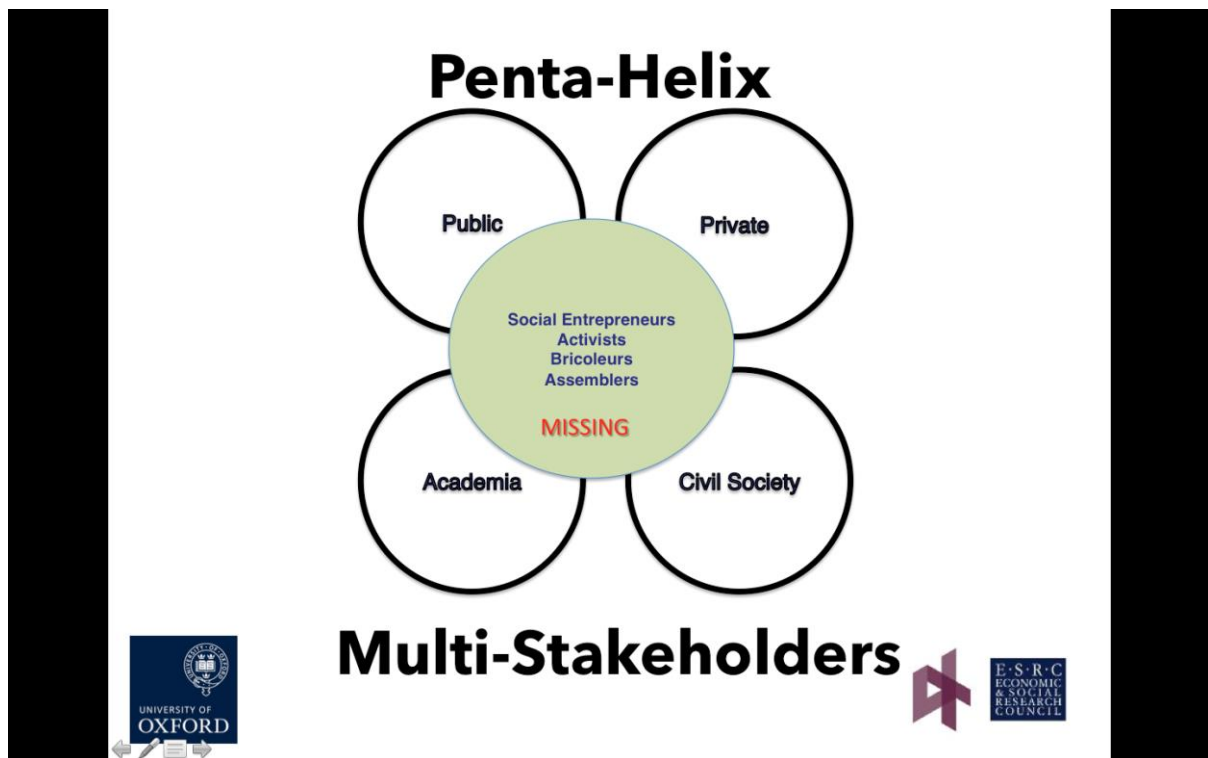


Figure 1. Penta Helix Multi-Stakeholder framework (Calzada, 2017a)

### **Final Remark: Squaring the Circle of the Stakeholder-Helixes Strategies?**

To summarise, while Deakin (2014) considered the TH framework sufficient to ‘cultivate the environmental capacity, ecology and vitality of those spaces which the direct democracy of their participatory governance open up, add value to and construct’, this special session simply reacted to this assumption by inviting the rethinking of an updated version of the Stakeholder-Helixes Strategies. This widening of the domain of Helix Thinking places additional burdens on the theoretical framework which needs to be developed to accommodate them. Despite the approach remaining rather experimental (Calzada, 2017a), we have noted a wide and fruitful terrain to explore and intervene from both the research and policy perspective. This can be achieved by collecting initiatives—not only those ongoing projects related to the QH framework presented in this paper, such as ‘civic universities’, but also those less visible and institutionalised with a high degree of disruptive and transformative potential at the community level. At present, such projects are being emergently cultivated around the PH framework in many communities in Europe and worldwide. As such, in the short-term, squaring the circle of the Stakeholder-Helixes Strategies may imply allowing communities in cities and regions to find their own way to tailor and own a data-driven revolution while empowering their city-regional endogenous governance through assembling stakeholders’ present interests and future visions.



## References

- Anttiroiko, A. V. (2016) *City-As-A-Platform: Towards Citizen-centre Platform Governance*, RSA Winter Conference 2016 on New Pressures on Cities and Regions, London.
- Calzada, I. (2017a) "From Smart Cities to Experimental Cities?", in V. M. Giorgino & Z. D. Walsh (eds.) *Co-Designing Economies in Transition: Radical Approaches in Dialogue with Contemplative Social Sciences*, Palgrave Macmillan, London.
- Calzada, I. (2017b) "The Techno-Politics of Data and Smart Devolution in City-Regions: Comparing Glasgow, Bristol, Barcelona, and Bilbao", *Systems*, Vol. 5 No. 1, pp 1-18.
- Calzada, I. & Cobo, C. (2015) "Unplugging: Deconstructing the Smart City", *Journal of Urban Technology*, Vol. 22 No. 1, pp 23-43.
- Deakin, M. (2014) "Smart cities: the state-of-the-art and governance challenge", *Triple Helix*, Vol. 1 No. 1, pp 1-16.
- Etzkowitz, H. & Leydesdorff, L. (2000) "The dynamics of innovation: from National Systems and 'Mode 2' to a Triple Helix of university–industry–government relations". *Research Policy* Vol. 29, pp 109-123.
- Goddard, J. & Kempton, L. (2016) *The Civic University: Universities in leadership and management of place*. RR2016/01. University of Warwick: Warwick.
- Keith, M. & Calzada, I. (2017) *European Urban Living Labs As Experimental City-to-City-Learning Platforms*. Bridging European Urban Transformations Workshop Series ESRC in Brussels [Online]. Available: <http://www.urbantransformations.ox.ac.uk/blog/2017/european-urban-living-labs-as-experimental-city-to-city-learning-platforms/>
- Ostrom, E. (2010) "Beyond Markets and States: Polycentric Governance of Complex Economic Systems", *Transnational Corporations Review*, Vol. 2 No. 2, pp 1-12.