The Zone of Possibility in Citizen Led 'Hybrid Cities'

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Abstract. The work reported in this position paper explores the development of citizen led 'hybrid cities' in which augmented and social web technologies mediate learning and innovation in what we term the Zone of Possibility. An example of a Hybrid Stokes Croft app is given early on to illustrate key concepts. The notion of a Zone of Possibility has been developed from theory into Design Principles to guide the participative development of smart services in a learning ecosystem. In the third section of this paper we unpack the concept of Zone of Possibility and related Design Principles so that they can act as a guide to future developments for citizen led hybrid cities locally and across the world.

1 Introduction

We are seeing a shift from the top-down vision of 'smart cities', with their attendant focus on 'city-planning' and resources utilization, towards the opening up of data and the possibilities for citizens to be drivers, as well as the target, of urban innovation [1]. Learning is rightly seen as one of the pillars that sustain this innovation where open source applications, integrated augmented reality, extensive social networks and the use of linked open data are just some of the everyday applications that can provide pathways for people to communicate with their private and public worlds [2]. At the Centre for Moving Image Research or CMIR [3] we are exploring the notion of the 'enabled medium sized city' in which we are based, namely Bristol UK, from the perspective of the following questions. How can old urban infrastructures like Bristol incorporate the possibilities of new technologies and attendant new behaviours arising from this potential? How do these technologies affect design, participation, experience and representation in the city? Will new modes of communication and visualization alter the 'culture', 'economy' and 'innovation of agile behaviour' of these places and their peoples? CMIR acts as a hub for the 'old and the new' in terms of creative industries and moving image R&D; however, our work will have implications for other cities and sectors. The work reported in this position paper feeds into some of the foundations for our CMIR agenda and also matches the themes of the workshop on 'Smart Learning Ecosystems in Smart Regions and Cities' [2]; specifically, we explore the development of citizen led 'hybrid cities' in which augmented and social web technologies mediate learning and innovation in what we term the 'Zone of Possibility'.

The term 'hybrid cities' is not new and has been used in a similar context to this paper's research focus by de Almeida [4] who talk about the merging of digital and analogue forms of experience, in particular for art (e.g. augmented realities) and the presence of new actors and forms of interaction in the city. Other related work by

Zilvetti and Brevi [5] investigates how to subvert traditional habits by applying a bottom-up approach to design and allowing citizens to be active in the improvement of urban life (in the context of designing commuter vehicles).

Although we are building on the above work, for us a bigger issue exists and this has been articulated by the inventor of the World-Wide Web Tim Berners-Lee [6] as the challenge of the 'unfilled' potential of the Internet; by introducing the concept of a 'social machine' Berners-Lee envisages that what is needed for the Internet to evolve is a pervasive ecosystems of co-evolving social machines where people and machines (digital tools) work in partnership. Consequently, recent work by the first author [7] with colleagues in the EC funded Learning Layers project (http://learning-layers.eu/) has investigated a major learning oriented research question: how can we reconcile post-Vygotskian theory with the core idea of social machines, the '50-50 partnership' between people and machine? The aim is to reflect an innovative pedagogy, grounded in practice and supported by theory, and enable the fusion of the people, technology and the pedagogy to transform hybrid city ecosystems.

Hybridity in learning has two dimensions [7]. First, a hybrid combination of formal and informal social structures in terms of power and control in an activity system, i.e. the role we adopt or are positioned into in terms of structural relations of the power and control in institutional and cross-institutional settings [see 8, p. 148-178]; put simply it addresses issues for actors in social networks from the perspective of these questions, which are framed by prior modes of cultural-historical behaviour: What are the rules? How do I play the game? Who are the players? Second, hybrid in term of combining physical and digital tools; how cultural-historically developed tools (physical and digital) mediate the individual's relation to the world where the competence to handle such tools is acquired in social settings through guidance from other persons or guidance from digital tools in a "50-50 partnership" [9]. The notion of a Zone of Possibility has been developed from theory into Design Principles to guide the participative development of smart services and tools like the Help Seeking Service/Confer [10] and KnowBrian [11] in an ecosystem for the Learning Layers project. These smart services provide the mediational means for interlinking the hybrid practice of professional learning or the scaffolding of the social exploration by citizens within hybrid cities.

Section 2 below uses an example from a Hybrid Stokes Croft app to illustrate key concepts and motivate discussion. Section 3 unpacks the concept of Zone of Possibility and related Design Principles so that they can act as a guide to future developments for citizen led hybrid cities.

2 Hybrid Stokes Croft app

In CMIR we are creating a Hybrid Stokes Croft (HSC) app. By this we mean the creation of a virtual "Zone of Possibility" superimposed on the real city, where people can become learners and teachers but where co-design foregrounds hybridity as described above. The aim is to promote urban innovation through an open sharing of experience and data, using technology as a tool of participation and communication, but also as a means to alter the 'culture' and 'economy' of the learners' own place and life. The HSC is based on the concepts of Hybrid Social Learning Network described above.

Stokes Croft (Bristol, UK) is a self-designated cultural quarter that has developed through the hard work and persistence of a number of individuals, the city council

(Heritage Lottery) investment, entrepreneurial spirit and the conditions of the wider economy: “The area is a centre of art, music and independent shops in Bristol, with clubs such as the Croft, Lakota and Blue Mountain; the nearby music college BIMM Bristol on King Square; and numerous pieces of graffiti art. The area’s character has given rise to a group of activists and artists calling themselves The People's Republic of Stokes Croft (PRSC), who are seeking to revitalise the area through community action and public art” (Wikipedia, retrieved on 13/07/15).

The Hybrid Stokes Croft app is an online reality layered on top of the offline, real world community of Stokes Croft. As you move around the streets with the HSC app open on your phone, media is triggered that invites viewing, comment and response. The media offers a chance for informal learning. You may consume the media, comment on it or make your own media to develop an argument or propose an idea. There are two modes, walking mode and armchair mode. Armchair mode can be accessed from anywhere on any device. Someone in Athens might be interested in seeing if there is any transferable knowledge in Stokes Croft. Walking mode allows for discovery through the triggering of content based on physical location and time. The app can be set to surprise you, or you can tell it that you want to know something. For example, when walking past the Peoples Republic of Stokes Croft shop, the app triggers a gallery of pottery and poster art and offers case studies about the print and pottery workshops. Passing Rita’s Take Away triggers a set of late night chip-eating selfie videos as well as a video from the owners on how they got the name “the beating heart of Stokes Croft”. Passing the Tesco store triggers a political discussion about the significance of the so called Tesco Riots and the effect of supermarket chains on local grocery stores. Questions are raised from different perspectives and ‘possibilities’ arise to enter the debate. The experience of walking around with the app can be configured to be one of receiving a “ping” every now and then with an offer of content; “Hey, wanna hear my poem?”, or maybe. “Hey, do you want to leave a poem?” (this is the “possibility” of community generate content). You can also configure the app to ping when it sends short bits of content, similar to Instagram or Vine length (15 secs or 6 secs), so that when you are walking around you are not stuck with your head in the phone. Perhaps the content says, “Look up at the tops of the buildings” or “Listen to the sound of the city” or “This is the paving stone where this thing happened”.

3 Zone of Possibility and related Design Principles to guide future developments for citizen led hybrid cities

Design Principles are the projection of kernel theories into the problem domain (in our example above post-Vygotskian theory projected into the HSC app). In [7] we propose Design Principles and are in the process of systematically connecting these to a network of other similar studies which are documented in a NSF funded Design Principles Database (see http://tinyurl.com/yab6s2q); if successful this would provide external validation of our conceptual approach. Design Principles emanate from and connect to theories of learning and instruction, they can be at several levels of specificity and those presented below have benefitted from the iteration around our research framework [7]. The meta-principles shown below in Figure 1 (this was developed for the Learning Layers project) capture abstract ideas represented in a cluster of Pragmatic Principles and can link several principles together.

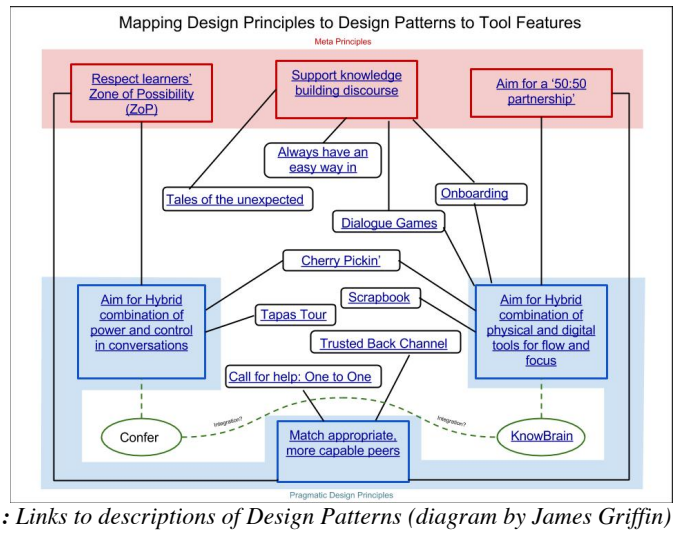

Figure 1: *Links to descriptions of Design Patterns (diagram by James Griffin)*

Pragmatic Principles connect several Specific Principles; Specific Principles give direction to design features in smart services and can link to one feature to several features (not shown in Figure 1 due to space limitations). Our three design meta-principles (top of Figure 1) are: "Respect the Learner's Zone of Possibility (ZoP)", "Support knowledge building discourse" and "Aim for a 50-50 partnership". Our related Pragmatic Principles (bottom in Figure 1) are "Aim for hybrid combination of power and control in conversations" and "Aim for hybrid combination of physical and digital tools". Due to space limitations, we now illustrate our approach with the "Respect the Learner's Zone of Possibility (ZoP)" design meta-principle (in our case this represents a contextualized theory). All the Design Principles (and associated patterns) can be accessed online at this address: https://goo.gl/5B6Qvz; this is shown in Figure 1 and the web page contains live links to online descriptions.

Helping citizens learn from each other in groups (a Zone) calls for orchestrating social supports (via navigation and bridging aids) so that learners can benefit from the ideas of others (Possibility). Citizens engaged in social learning may want to present themselves in the best possible light, i.e. people will position themselves in different ways depending on what they deem as the best way from the perspective of their role or intention in a particular situation. For example, they may not want to expose themselves professionally. Also, members of groups and communities are being positioned by actors in their activity systems. Consequently, we are designing for a Zone of Possibility (ZoP). This means that we as designers need to be aware of potential multiple layers of power relationships when learners ask for or give social support or receive recommendations.

The ZoP sits within a Community of Practice (we are not designing for the latter) and may include one or more Circles of Trust or CoT (we need to be aware of the latter but this is a user owned space; the CoT may be a hybrid of face to face and virtual). What does concern us is that navigation and bridging is needed when moving around a ZoP and when positioning oneself or being positioned within the ZoP. Background theory is as follows. Positioning is viewed in recent Cultural-Historical Activity Theory [8] as being in a systematic relation to the distribution of power and principles of control. Thus social positioning underlies practices of communication and gives rise to the shaping of identity. The implication is that a 'subject' inhabits a

space of possibility, thus a subject would be represented "by a socially structured **Zone of Possibility** rather than a singular point" [8, p. 164, our bold].

The following question arises: how should the Zone of Possibility or ZoP be realized? Seven or eight years ago, with the mass arrival of mobile devices, location based social media was going to be the next big thing. It never happened, or it has happened but as part of the OS of our devices. Google can remind you to buy milk when it knows you are near the store. Broadcastr, the app for tying audio files to locations was given a million dollars and blew a million dollars and now it is gone. FourSquare was going to be huge. It was all about checking in at locations. The 2014 version has removed check in and location sharing entirely. Facebook, meanwhile, continues to grow and of course offers some location based elements, which from 2014 are entirely optional. In the last few years the advertising and retail industries have become excited about iBeacons which can trigger media very precisely in indoor locations such as supermarkets. There is a separate history of heritage trail apps, which are constantly produced for all sorts of locations. There are possibly thousands of these in the UK alone. They are very easy to make and typically deliver media when you arrive at a particular location. Typically these do not offer the user the chance to add media. The proposed Hybrid Stokes Croft app is closer to the Broadcastr model than the heritage trail model. It will deliver media at given locations, but then it has the social elements allowing users to originate media, comment, annotate and respond in a Zone of Possibility. Heritage trails are authoritative, the HSC app is speculative, conditional, partial, incomplete and in this way the local and global community engage in a Zone of Possibility. It invites discussion, comment, rejection, counter-proposition. Two key issues in our co-design and development process are: *Who will contribute? And, how can we build participation?* It has been long agreed that online audiences follow a 1, 9, 90 rule. Ninety percent of your visitors will passively consume the content. Nine percent will comment and one percent will respond with a piece of media. Typically any online community will have just a handful of contributors. We propose the need for a small production team that recruit a half-dozen "instigators," people who have made things happen in the area and can articulate their story thus providing the narrative glue and navigational aids within a user generated ZoP. The production team facilitate the instigators in the creation of content for the app. The instigators can also act as a conduit into the community, recruiting others and promoting the project. This group becomes, in effect, a local editorial team. Getting local businesses on board will be helpful, especially if there is a way of offering incentives to use the app that can be redeemed at local bars and cafes.

4 Conclusions

Other key issues to be explored in future co-design work include the following. *Curation:* whose site is it anyway? And, is there a "like" system to elevate good content? Who removes poor quality content and on what basis? All curation and moderation will have to be ad hoc as it is unlikely there will be an economic basis for anyone to be paid to do this. *Moderation:* who removes offensive material and who deems it offensive? There are rules we can copy from other social media sites, but we would have to make sure that they didn't stifle precisely the kind of debate we want to encourage in terms of hybridity of power and control issues in a ZoP. A passionate defence of Tony Blair's premiership could be deemed as inciting violence. Is this any different to someone promoting shoplifting from Tesco, or arguing that fighting the

police in a riot is a legitimate form of political expression? Getting the tone and practice of moderation right will be key to the success of the project. *Ownership and identity:* Facebook users feel free to express themselves despite Facebook being a faceless corporation with misty rules about ownership of content. The users of our underlying platform will want a sense of ownership. Legal liability, however, will rest with whoever sets it up. Funders will want a clear policy on moderation, grooming, spam, viruses and all the other issues associated with social media. Users and contributors will want to know the motives of whoever set this up. *Partnership:* a project in Stokes Croft will need the buy in of the major local players. *Exit strategy:* is this project finite or open ended? This needs to be established from the start. The outcome of this project will enable possibilities to be realized, content that can be added to, discussed and explored by workers and citizens in our Hybrid City's Zone of Possibility. The HSC app is an exemplar of the theories of the Hybrid Social Learning Network taken all the way into a digital intervention. We firmly believe that by co-designing this HSC app we will provide citizens locally and globally with equity of access to cultural resources in a transformative and hybrid social context.

References

1. International Observatory on Smart City Learning, http://www.mifav.uniroma2.it/inevent/events/sclo/index.php?s=169, accessed 01/06/2015.
2. Workshop on Smart Learning Ecosystems in Smart Regions and Cities, co-located at EC-TEL, Toledo, Spain, Septermber 2015, http://www.mifav.uniroma2.it/inevent/events/scl2015/index.php?s=216, accessed 01/06/2015.
3. Centre for Moving Images Research, Core Research Streams, http://www.cmiresearch.org.uk/core-research-streams.html, accessed 01/06/2015.
4. de Almeida, C. M. (2014). New Sensibilities in the Hybrid City. In Proceedings of The Mediated City Conference, London 01 – 03 April, 2014.
5. Zilvetti, M. & Brevi, F. (2014). Moving in the digital era. Innovative mobility for responsive urban spaces. In Proceedings of The Mediated City Conference, London 01 – 03 April, 2014.
6. Berners-Lee, T. and Fischetti, M. (1999). Weaving the web: The original design and ultimate destiny of the world wide web by its inventor. Harper, San Francisco.
7. Cook, J., Ley, T., Maier, R., Mor, Y., Santos, P., Lex, E., Dennerlein, S., Trattner, C., Holley, D. 2015). Using the Hybrid Social Learning Network to Explore Concepts, Practices, Designs and Smart Services for Networked Professional Learning. International Conference on Smart Learning Environments (ICSLE 2015), 23-25 Sep'15, Sinaia, Romania. Available: https://goo.gl/nAxQNs
8. Daniels, H. (2008). Vygotsky and Research. Routledge, UK.
9. Shadbolt, N., Smith, D. A., Simperl, E., Van Kleek, M., Yang, & Y. Hall, H. (2013). Towards a classification framework for social machines. SOCM2013: Workshop on Theory and Practice of social machines, WWW2013, Rio de Janeiro, Brazil.
10. Kerr, M., Cook, J., and Treasure-Jones, T. (2015). A dynamic co-design approach to developing technology based help-seeking services that enhance informal workplace learning in healthcare. Accepted for eLearning Symposium - Short Communication, AMEE 2015 (Association for Medical Education in Europe). Glasgow.
11. Dennerlein, S., Theiler, D., Marton, P., Santos Rodriguez, P., Cook, J., Lindstaedt, S. and Lex, E. (2015). KnowBrain: An Online Social Knowledge Repository for Informal Workplace Learning. Demo accepted for EC-TEL 2015, Spain.