

Re-Mapping the City^{*}

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^{*} The title is inspired from a similarly titled section of the book *The Art of City Making* by Charles Landry

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Abstract

Mapping techniques and geo-visualizations for a city is typically built upon a static cartographic representation of the city; a flat representation of streets and important landmarks. This article tries to explore how the city, along with its burgeoning mobile device infrastructure, can be tapped as a learning agent to advance existing mapping techniques and in turn help design the city better. Mobile devices allow people to create and share localized experiences in different urban spaces of the city which in turn result in the creation of multiple layers of information that could highlight hitherto unknown facets of the city.

A Primer

A map is an image that represents graphically the position of elements in the real world. But many 'real' elements of the world are invisible (Landry, 2006, p. 46). This article attempts to juxtapose two scenarios; the first being that of mobile devices being designed around the city's infrastructure and the second being a scenario in which the city could be built 'better' around the ecosystem of mobile devices. These new devices allow people to create localized experiences in different urban spaces of the city, and results in a layer of information that can be overlaid on a cartographic representation of the city. This new layer of dynamic intelligent information can spur us to rethink our current modes of cartographic representations like static maps, and move on to more meaningful and informative representations of the city.

The City & its spaces

"The street is a place defined by urban planning but transformed into a space through the act of walking."[†]

Flat maps of the city use streets and certain geographical topology as anchors to place important landmarks. As people traverse through different parts of the city, they define, create and manipulate urban spaces – spaces which could be *growing* or *stressful* or *calming* or even *dangerous*. Every single individual plays an active role in perceiving the world around him, and creates a corresponding *image* of different parts of the city. As Kevin Lynch notes in his seminal work *Image of the City* – “*Environmental images are the result of a two-way process between the observer and his environment. The environment suggests distinctions and relations, and the observer - with great adaptability and in the light of his own purposes – selects, organizes, and endows with meaning what he sees*” (Lynch, 1960). Placing this in today’s context, one realizes that there are tools for the observer to augment his cognition. These devices that people carry along with them play a crucial role in defining urban spaces. Activities & tasks performed on these devices at certain locations gives rise to new contextual information about that location, *at* that location. Spread over many areas of a city, these locations that were initially just a labeled location on a static map, turn into massive annotated and informative spaces that are inter- & intra-connected.

Building the Massive Annotated Space

Numerous tools exist today which allow people to capture multiple perspectives of a location, transcribe their own construction of the image (as described by Lynch) and then share it with other people through the booming infrastructure of social networks. For instance, the mobile phone in its many different forms is a vital tool which helps to gather, manage and process contextual information (Nokia, January 2009). Juan Freire of MediaLab-Prado, by trade a marine biologist, draws an analogy between the ocean teeming with life and the city that grows & evolves constantly. He terms this active layer of life common to both as a *skin*, and in the case of the city, he calls it a *Digital Skin* layered over tarmac and concrete (Freire, 2008).

[†] Michel de Certeau – *The Practice of Everyday Life*, 1984

➤ **The Foundation**

If one looks deeper into how this Digital Skin is formed, and what it is built upon, Alison Sant's concern with the foundation starts to emerge. She describes in her article *Redefining the*



Basemap (Sant, 2006) – “Although many collaborative mapping projects undermine their own base maps by layering them with collectively defined concepts of space; including participants’ emotions, itineraries and memories, these annotations are inextricably linked to the predefined foundations of the map they overlay.” The problem this poses is that a large majority of the Digital Skin is based upon the 20th century conventional base map that in Sant’s words “is an expression of a singular notion of urban space – one that favors the street over the route, the static over the temporal, and the formal over the subjective.” In many ways, this foundation is like an infrastructure the way Star

envisions it to be – invisible and embedded that it is never questioned until it breaks at some point of time (Star, 1999). There have been deviations from this contemporary foundation style, like the *Here&There* horizonless projection of Manhattan [Fig. 1] (S&W, 2009) or Guy Debord’s *Naked City* in which a mental ordering of the city is formed rather than the base map imposing a structure on the observer/citizen. A more recent deviation from the conventional street map is Armelle Caron’s deconstruction of the Berlin Map[‡] [Fig. 2] (Caron, 2005) into ordered blocks of the city by size & shape, which while losing the functional constraints of streets & intersections, gives rise to a set of alphabets which the citizen can easily identify from the real world.

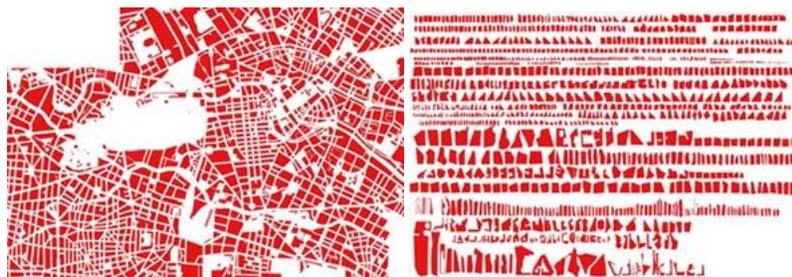


Figure 2

[‡] Caron followed up this work with the map-deconstruction of other cities like Istanbul, Paris, New York & Montpellier. Each of this result in an interesting pattern of parts which when ordered reveals the intrinsic structural difference between elements of different cities.

These examples and many more demonstrate that insightful information *can* be delivered even when the 'grid' is broken.

➤ **The Layers**

The Digital Skin⁵ can comprise of many different layers, each one having different temporal properties and entities that it represents. Each layer is the result of collaborative annotation of spaces done by citizens using mobile devices, or by other dedicated mapping efforts which result in artifacts like interactive visualizations. When the applications that generate these layers are well executed and possess a robust data-set, apart from the insight that is derived from that particular dataset, the layers can themselves start to generate a map that might in some way reflect what a conventional Cartesian-system based map would show.

Layers can depict the paths that different people take in pursuit of work, leaving behind a self-created trail of data items that can then be shared with others. For instance, a person might consistently move from his/her home to the workplace, from the workplace to a coffee-shop nearby when a break is needed, and then to the library and back to home in the night in search of a restorative environment (Aipperspach, Hooker, & Allison, 2008). There are many applications that utilize both location & context information coupled with social networking. With GPS devices and other geo-tagging mechanisms becoming cheaper, annotations for entities ranging from tourist spots to dangerous cracks on roads exist by means of different applications. One such application called *fASK!* (Jagdish, Kantroo, Xu, & Dudiak, 2009), allow users to obtain quick cultural and linguistic translations for entities whose significance or meaning they are unaware of. Translation requests are geo-tagged and sent to a server which then pushes out this request to all the friends of that user on Facebook. Responses are compiled with sender information and saved onto that location so that the next time a person who arrives at roughly that location is informed of this existing node of information which could potentially be useful. Of course all such applications require a certain critical mass – both in terms of users & content - for the layers to be 'thick' enough to actually be informative.

The most significant aspect to be noted here is the level of 'disconnect' that a mobile device has with respect to a conventional street map of a city. The mobile device is subordinate to the cellular tower it is closest to, thus using a different set of anchor points than if a person was walking around the city without any devices to augment his/her creation of the image of the city.

⁵ Juan Freire's concept of Digital Skin is a result of many years of his observation and comparison of marine life and city life. His work in this regard can be tracked at his Spanish blog *Piel Digital*.

New Designs for the City

It is clear from the plethora of map works existing today that the creation and interpretation of city maps tends to happen within isolated disciplines. This combined with the dogged subscription to continue using the conventional Cartesian coordinate map system as the foundation places restrictions on the kind of designs and insight that can be derived from constructive map-making for the city. Landry confirms this in his book stating that “maps stimulate insight when looked at through collective eyes, and we could be more creative about the kind of maps we develop. (Landry, 2006)” Changing the way maps are made, both the foundation and the layers, will give rise to more insight. If the city planners, who also happen to be among the best mappers, use new ways of representing elements of a city, it would be possible to track newer emerging trends that were previously impossible to understand on an urban basis. Layers when combined would start to reveal interdependencies and mutual reliances which could be particularly insightful. In short, this can be viewed as a process where the city can inspire new mapping techniques, which can then be given back to the city in an attempt to design its spaces better.

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Bibliography

- **Aipperspach, R.**, Hooker, B., & Allison, W. (2008). The Heterogenous Home. *UbiComp*. Seoul: ACM.
- **Caron, A.** (2005). *Images - tout bien rangé*. Retrieved 04 25, 2009, from http://www.armellecaron.fr/cms/index.php?page=plans_de_berlin
- **Freire, J.** (2008). Visualizing Urban Spaces' Digital Skin. How? Why? *International Seminar VISUALIZAR'08: DATABASE CITY*. Madrid: Medialab-Prado.
- **Jagdish, D.**, Kantroo, V., Xu, Y., & Dudiak, E. (2009, 04 15). *fASK! Facebook Application*. Retrieved 04 15, 2009, from <http://apps.facebook.com/neobabel>
- **Landry, C.** (2006). *The Art of City Making*.
- **Lynch, K.** (1960). *Image of the City*.
- **Nokia Research** (January 2009). *Location, Context, and Mobile Services*. Nokia.
- **S&W.** (2009, April). *Here & There - a horizonless projection in Manhattan*. Retrieved April 26, 2009, from Schulze & Webb: <http://schulzeandwebb.com/hat/>
- **Sant, A.** (2006). Redefining the Basemap. *Intelligent Agent*, Interactive City section.
- **Star, S. L.** (1999). The Ethnography of Infrastructure. *American Behavioral Scientist* (pp. 377-391). Sage Publications.