Delft University of Technology

"Reading the Dirty, Thick, and Open"
Two Theoretical Understandings of Digital Maps and Our Position as Reader

AR2AT031 Architecture Theory Thesis_ Final Submission_ Semester II_ Spring 2022_Q.3
Submitted on, 14th April, 2022

Author:	**Kevin S.F. LAI**
	5491142
Supervisor:	**Andrej Radman**
Title:	**"Reading the Dirty, Thick, and Open"**
	Two Theoretical Understandings of Digital Maps and Our Position as Reader

Abstract
This thesis aims to revisit the conventions of digital mapping, by undergoing the theoretical endeavour to understand digital mapping beyond the convenient dichotomy, and find our position as readers. Two theoretical lenses are borrowed from the field of anthropology and art history, first being the "thick description" from Clifford Geertz, and latter being the "open work" concept from Umberto Eco. The thesis concludes by emphasizing the significance of the role of the "reader" in digital mapping, for the greater public as well as the discipline of architecture could then reclaim our agency in the flood of data with a shared "digital literacy".

Introduction

"… in the Empire, the Cartographer's act achieved such a degree of perfection that the Map of a single Province occupied an entire city, and the Map of the Empire, an entire Province. In time, these vast Maps were no longer sufficient. The Guild of Cartographers created a Map of the Empire, which perfectly coincided with the Empire itself. But Succeeding Generations, with diminished interest in the Study of Cartography, believed that this immense Map was of no use, and not Impiously, they abandoned it to the inclemency of the Sun and of numerous winters. In the Deserts of the West ruined Fragments of the Map survive, inhabited by Animals and Beggars; in all the Country there is no other Relic of the Geographical Disciplines."

⸺ *from Viajes de Varones Prudentes, Suárez Miranda, book IV, chap. XIV, Lérida, 1658. Quoted by Jorge Luis Borges, Historia universal de la infamia "Etcetera," Buenos Aires, 1935*

While there is no Guild of Cartographers who masterfully created the map of the size of the Empire, the vastness described and promised in this short story still captivates succeeding readers. Notably, Umberto Eco discussed the possibility, or rather, the impossibility of the 1:1 map if it were to be created.[1] Imagining the feasibility of such an *immense map* might be an exhilarating exercise, but perhaps the more captivating, or productive, discussion is on the brief, yet arguably the most important transition, when the *immense map* was believed to be *"of no use"* and subsequently left abandoned. To what goal the *immense map* is of no use? If the *Vastness* is the reason for failure of a map, how do we explain the contemporary obsession with the *"Big-"* everything? It seems obvious here the analogy of *Vastness* is exhausting, for the *Vastness* in the Map of the Empire is one of "space", whereas that in the contemporary digital maps is one of "information". Before we come quick to discard this analogy, we could return to this image in our

---

[1] Umberto Eco (translated by William Weaver), 1982, *"On the Impossibility of Drawing a Map of the Empire on a Scale of 1 to 1". How to Travel with a Salmon & Other Essays*, (1994 edition, first published 1992), Houghton Mifflin

head, an experience most, if not all, our contemporaries share— our first encounter with the Google Earth.

On the computer display, the programme opens, and materializing in front of our eyes is an image of the entire Earth, seen from a vantage point somewhere in the outer-space, a perspective once only available to the astronauts. Then, as we move our cursors across the dashboard, the Earth follows. Still overwhelmed by the excitement and desperately trying to locate ourselves on the map, we click onto a specific coordinate, and the map zooms in: oceans, continents, cities, districts, street, building. It is the same excitement in the Power of Ten, when we first realized the different scales of viewing our world, only now we are in control of where to look, or to "zoom".[2]

If we return to the fictional imagery of the 1:1 Map, do we not feel the same excitement of encountering the *Vastness*? And one replies: *We have already made the Map of the Empire! We have already made the 1:1 Map!* If there is any pride or positivism in this proclamation, there is also a sense of uneasiness and alarm in this rhetoric. Digital mapping is not without problems, same as any maps in the pre-computer history. Therefore, contrary to the generic image of the digital being C*lean, Precise, Orderly*, it is the goal of this paper to advocate a reading of digital maps as *Dirty, Thick,* and *Open.*
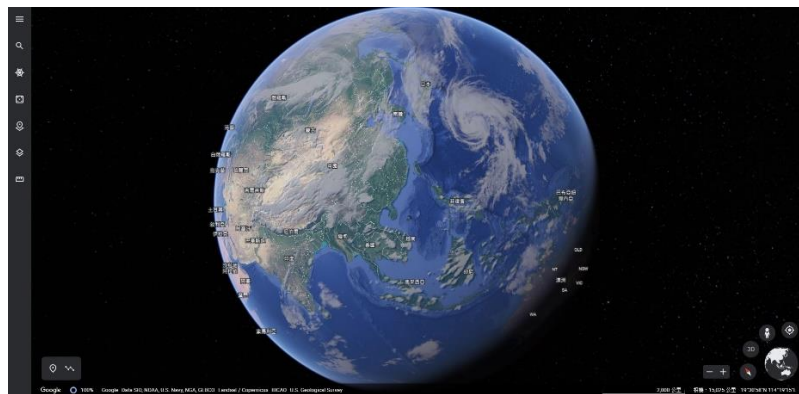

Image: *Screen-capture of Google Earth by the author, extracted on 14th April, 2022*

Maps are never innocent. As the age-old reminder goes, mapping as a science has been revisited, reviewed, redirected in the brief history of our civilization. As the cartographic science developed, the previously believed truthfulness of maps as representation of our reality came under scrutiny, and theorists such as Denis Wood have collectively reviewed the maps not as a neutral representation, but a product of the author's subjectiveness.[3] Maps are the cultural product reflecting the power at play, e.g. a documentation of indigenous land by the colonial power offers legitimacy to the "colonizing" to claim the land. Other than this *Power Problem*, there is also the *Accuracy Problem* inherent in the maps being a graphic projection of the world, "*as it is impossible to make a sheet of paper rest smoothly on a sphere, so it is impossible to make a correct map on a*

---

[2] In *HyperCities, Thick Mapping in the Digital Humanities*, it is argued that "Zoomabiliy" is considered a way of investigating space on maps, that is further enabled by digital mapping tools. There is no longer any particular scale to be privileged, but the ability to operate across scales. Found in Todd Presner, 2014, "The Humanities in the Digital Humanities", p.54-55. *HyperCities, Thick Mapping in the Digital Humanities*, Harvard University Press

[3] Denis Wood, 2010, *Rethinking The Power of Maps,* The Guilford Press

sheet of paper." [4] It was in response to this questioning, that the Surrealists in the Modernist time decided to problematize our relationship with maps as an accepted truth. They drew up a world map where the sizes of continents and nations are reallotted in relation to their significance to the Surrealist Project. This intended confusion again proves that mapping is not immediate representation of reality, but *"a wild proliferation of alternative ones, of possible worlds each one as faulty and fantastic as the next..."[5]* More than a projection of lines and nodes on a two-dimensional space, that begins to figure into meaningful forms and allow interpretations, the mapping hands should never be out of the picture. The gesturing of the mapping hands leaves invisible traces on the maps, which if we look closely, we will see the maps are in fact "dirty". The dirty marks, left behind by the different power and material agency in the map-making, are meaningful to discern and read into, as the many theorists before did. It is only by taking into account the *Dirty,* we are able to see maps as problematic constituents, that are possible to be taken apart and examined in terms of relations. Now, a field of problems about mapping is established, but they are all concerned with the *mimetic* reading of maps. As Latour reminded us, *"... because of the advent of digital navigation (Cartwright and Hunter, 1999; Fabrikant, 2000), a very different interpretation of the mapping enterprise can be introduced that allows a mimetic use of maps to be distinguished from a navigational one."[6]* There is an alternative way of "navigational" reading of maps, which is no longer concerned with the maps as a representation of a "virtual image" of reality, but concerned with the maps as a dashboard for the reader to navigate between data sets. Also, following the same Latourian perspective on technology, there is no longer a distinction of *"digital Vs analogue"*, or *"digital Vs paper"*. Rather, they are distinguished as *BC (before computers) & AC (after computers)* along the same chain of effects. The digital mapping discussed in this paper therefore is concerned with the AC maps, which can be meaningfully described in terms of its *Vastness*, that is conceptually broken down into *Thickness* and *Openness*, borrowing theoretical resources from the Anthropologists' *"thick description"* and the art historians' *"open work".* It is the ambition of this paper to understand what digital mapping is, beyond the convenient dichotomy of *"digital"* to *"analogue"* or *"paper"*. With this refreshed understanding, we would then be able to position ourselves, for the masse, as *Readers*, and for the architectural discipline, as *Authors*, of digital mapping.

Image: Surrealist Map of the World, 1929. From a special issue on Variétés, entitled "Le Surréalisme en 1929"

---

[4] J.A. Steers, 1965*, An Introduction to the Study of Map Projections*, 14th Edition,. London University of London Press

[5] Tom McCarthy, 2014, *"Introduction", Mapping It Out – An Alternative Atlas of Contemporary Cartographies,* edited by Hans Ulrich Obrist, Thames & Hudson Ltd

[6] Bruno Latour, Valérie November, Eduardo Camacho-Hübner, 2009, *"Entering a risky territory: space in the age of digital navigation", Environment and Plannin D: Society and Space* 2010, volume 28, p 581-599

On *Thickness*

"You think you own whatever land you land on
The Earth is just a dead thing you can claim
But I know every rock and tree and creature
Has a life, has a spirit, has a name

You think the only people who are people
Are the people who look and think like you
But if you walk the footsteps of a stranger
You'll learn things you never knew, you never knew"

— *"Colors of the Wind"*[7]

In any scenario, for the observers to observe, there is a power relationship established between the *"observer"* and the *"observed"*. The asymmetrical power relationship is particularly salient in the discipline of Anthropology in its colonial origin, when, in hindsight, the observers would often have made non-informed observations, and even attempted to offer premature explanations. The concept of *"thick description"* was first coined by philosopher Gilbert Ryle, then re-popularized by anthropologist Clifford Geertz. It requires the observer to identify the context in which the observed event situates, and subsequently proceeds with an analytical approach in relation to the material, the cultural, the structural etc. that goes beyond the superficial observations. The subject, or the event, is therefore "thickly" described. Whilst the reception of Geertz's interpretive method of ethnography remains controversial, especially concerning his allegedly "distractive" style of writing, the term *"thick description"* stuck around and got adopted by different disciplines subsequently.[8] In the case of digital mapping, the notion of *Thickness* was adopted in the HyperCities project as a method of capturing the complexity of urban reality, which is made possible by the very computation power of digital maps, to work around the framework of digital humanities. Here, *Thickness* is three-dimensional, more than the vertical superimposition of information (which is a second notion of "thickness" to be discussed later), but a "web-like" interwoven complexity of contexts. When a map is constructed with this "thickness", it allows one to read every rock, and tree, and creature, in correspondence to the life, spirit and name of them.

For us to see this "thickness" as fundamental to digital mapping, we need to first enter the specificity of it as a new experience: not as a map, but a navigation dashboard.

Following Latour's proposal of a navigational reading of maps, digital maps (AC) should first be understood differently from paper maps (BC). In our contemporary use of digital maps, they are usually mediated through a computer display, and printing out is optional. If we decide to make a printout, it is only a *"frozen image"* that is taken out from a tiny fraction of a *"computerized databank"*.[9] Our experience of engaging with the digital maps are no longer limited to a physical copy bounded within the paper space, but we are logging into a databank that can be updated in real-time. The complexities across the temporal scale can then be easily represented (think different time-stamped images on Google Map) and the delay between the actual world and the

---

[7] *"Colors of the Wind"* is written by composer Alan Menken and lyricist Stephen Schwartz for Walt Disney Pictures' *Pocahontas* (1995).

[8] Paul A Robinson, 1983, "*From Suttee To Baseball To Cockfighting"*, The New York Times, digitalized and extracted from
https://www.nytimes.com/1983/09/25/books/from-suttee-to-baseball-to-cockfighting.html?pagewanted=all

[9] Bruno Latour, Valérie November, Eduardo Camacho-Hübner, 2009, *"Entering a risky territory: space in the age of digital navigation", Environment and Plannin D: Society and Space* 2010, volume 28, p 581-599

mapping representation can be significantly reduced to almost negligible. This is the affordance of the digital technology for *Thickness* to be captured.

In terms of the nature of data, digital mapping affords the map reader to zoom in and out across images of different resolution (as in the previous example of Google Earth) and switch between cartography to photography, 2D to 3D, in simply a click. As long as the data is compatible with the mapping format, however heterogeneous it might be, the digital maps can display such a *Thickness* of information simultaneously, while a BC map could only represent in separate printed layers. There have been attempts to represent this heterogeneous *Thickness* in BC maps in our architectural history. Aldo Rossi's *Analogous City* was one effort in the 60s in exploring new descriptive methods of city that offer a critical comment on the excessive reductionism of zoning-based urban-planning.[10] Collapsed onto one paper space, Rossi's map has the more prominent effect of rhetoric and metaphors, than displaying a more "neutral" set of information.
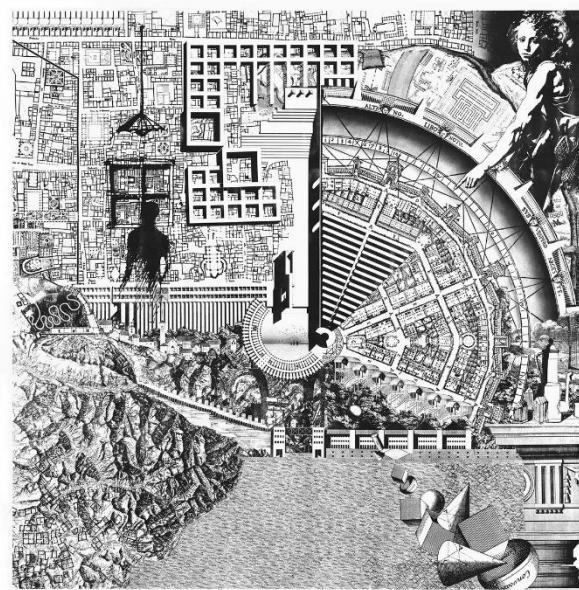

Image: *Analogous City*,

Aldo Rossi, Eraldo Consolascio, Bruno Reichlin, and Fabio Reinhart for the Venice Biennale of Architecture in 1976.

The *"Layers"* in this regard offers the second notion of *Thickness*, that is a vertical accumulation of different information that is distilled from the complexity of an urban environment. Despite the critical views in the 60s from Italian scholars such as Aldo Rossi, Franco Manucuso, Giancarlo De Carlo and Bernardo Secchi alike, the practice of mapping urban complexities in layers has been popularized, notably with the OMA's New Seoul International Airport design and Colin Rowe's "collage city". How this second notion of *Thickness* differs in digital mapping is the magnitude of such *Thickness* and the computational power in digital technologies. In the example of the GIS system, shape files of spatial data in the API format can be easily exported and imported through the digital interface. The spatial data would not be contaminated at each transaction, and theoretically, infinite copies are possible. With built-in computational tools, the digital map is its own interpreter and author. One can easily measure and count on the same interface without the aid of auxiliary tools such as rulers or compass for BC maps. Therefore, it is precisely the

---

[10] Marialessandra Secchi, Marco Voltini, 2020, "They Do It with Layers – How Design by Layers is Killing Urban Complexity", OASE 107, The Drawing in Landscape Design and Urbanism, OASE foundation

computation power embedded in digital mapping that affords to make meaning out of the immense magnitude of layers of information.

With digital mapping, the experience of *"looking at a map"* is transformed into *"logging onto some navigational platform"*.[11] We no longer work with a fixed, finished piece of physical map, but with a dynamic, unfinished bank of data. Here, we might be able to draw an analogy to Brecht's epic theatre, where social/ spatial processes are staged in a particular fashion and mediated by artistic/ theatrical methods, with the intention to set audience into motion. Everyone is therefore *"productively disposed",* and asked to navigate proactively in a turbulent sea of contradictions.[12] If digital mapping is a dashboard for one to connect to the dynamic world of data, is it not also a theatre too? The metaphor might sound tiring here, but if we look further into the conception of Brecht's epic theatre, in relation to the notion of "*Open Work*" proposed by Umberto Eco, we can see another productive attribute of digital maps- the *Openness* of it.

Image: *Scenography of "The Exception and the Rule" written by Bertolt Brecht,*

a production by Alice Theatre Laboratory on 19-21June, 2020, HongKong

---

[11] Bruno Latour, Valérie November, Eduardo Camacho-Hübner, 2009, *"Entering a risky territory: space in the age of digital navigation", Environment and Plannin D: Society and Space* 2010, volume 28, p 581-599

[12] Bertolt Brecht, 1949, "Kleines Organon fur das Theater (A Short Organum for the Theatre)", translated by John Willett, *Brecht on Theatre- The Development of An Aesthetic*, Hill & Wang, New York

On *Openness*

"Our revels now are ended. These our actors,
As I foretold you, were all spirits and
Are melted into air, into thin air:
And, like the baseless fabric of this vision,
The cloud-capp'd towers, the gorgeous palaces,
The solemn temples, the great globe itself,
Yea, all which it inherit, shall dissolve
And, like this insubstantial pageant faded,
Leave not a rack behind. We are such stuff
As dreams are made on, and our little life
Is rounded with a sleep."

—"The Tempest", William Shakespeare[13]

In "The Role of the Reader", Umberto Eco famously advocated an understanding of a work of art as an *"Open Text"*.[14] He drew upon examples of experimental music-making by his contemporaries to illustrate a new definition of an *open* work of art, that no longer stresses on the readers' multiple *open* interpretations afforded by the authors' *closed* and *finished* work, but an *open* work should promise the interpreters, the performers, and the addressee in their own reading to collaborate on the work itself with the authors, and that the work is *unfinished*. This dialectic is equally true in the mapping activity, particularly digital mapping. The emergence and success of Wikipedia, a collaborative knowledge community that allows public members to edit and supplement information on the virtual encyclopedia, also then inspired a mapping counterpart, the OpenStreetMap, which relies on on-the-ground input from public members to collaborate. When the promise for a democratic and decentralization society by the Internet seems to have failed (with the emergence of data monopoly from information giants such as Google and Facaebook), the OpenStreetMap project seems to have safeguarded the promise of open data.

Yet, the *Openness* from Eco's proposal is different from that of the OpenStreetMap. The *Openness* here lies not in the open access of the mapping data to public audience; the *Openness* is enshrined in the very nature of the digital map as never finished, that it is always in the making. If we can regard the hyperlink domain as the being of the digital map itself, as long as the domain is unchanged, the digital map (A) is still (A), but not (B),(C), or (D). When the spatial information is updated on digital map (A), at most, we can recognize that (A) has become (A'). The digital map is in versions, constantly replacing the old with the new input. Inherently, a digital map is always a *"work in movement",* because it does not contain the same materiality of paper maps that have an immediate physical presence, but exists and is contained in a series of 0s and 1s which are accessible and mutable if one allows.[15] As Eco quoting the music-writer Pousseur, it is *"the field of possibilities"* that a work of art, or in this case, digital map, is.[16] The mutability, or *"updatability"* of digital mapping therefore, offers invitation to the readers to make the work together with the authors. This constitutes the first notion of *Openness.*

---

[13] "The Tempest" is the last play written by Shakespeare, which tells the story of an exiled Great Magician who masterfully fools and manipulates the visitors to the exiled island. The play is unlike any of Shakespeare's previous works, and is difficult to be classified into comedy or tragedy, but is in an absurd structure that is self-reflective of its own theatricality. It is widely believed that "The Tempest" is Shakespeare's own reflection on his role as a playwright, the masterful "magician" that cooks up illusion to fool the theatre audience. The direct address to the audience by the Magician above is laden with metaphors to theatrical devices, which interestingly has the same effect of alienating audience as in Brecht's works.

[14] Umberto Eco, 1979, "The Poetics of the Open Work", The Role of the Reader – Explorations in the Semiotics of Texts, Indiana University Press
[15] Ibid., p. 56
[16] Ibid., p. 58

Latour would have warned against the art historian perspective of reading maps, which often regards maps as representation of a specific territory. However, the concept of *Openness* devised by Umberto Eco remains productive in destabilizing the reading activity of a digital map. *Open* reading of a work of art (digital map) is encouraged, but only made possible if the author has proposed possibilities with specific directions. It is not determined nor limited by the author, however, as one can resort to "A*mbiguity"* as a method to maintain an open reading in directed possibilities. By keeping *Ambiguity* in the work, which Eco used the literature work of Kafka to illustrate, interpretations become inexhaustible, and the reader could be able to constantly challenge values and dogmas embedded in, or surrounding the work. In order to achieve this effect of "ambiguity", one can resort to "rhetoric", as it is evident in Bertolt Brecht's plays, that *"appear to elicit free and arbitrary response on the part of the audience. Yet they are also rhetorically constructed in such a way as to elicit a reaction oriented toward, and ultimately anticipating, a Marxist dialectic logic as the basis for the whole field of possible responses."[17]*

In Brecht's theatre, actors are not embodying their character by being them, but by acting them. *Gest,* as Brecht coined this self-awareness of acting, is coupled by the non-realistic scenography, which creates the *Alienating Effect* on the audience who can then engage in the social problems acted out on stage.[18] Drawing this parallel of digital mapping to the *"epic theatre"* conceived by Brecht with an emphasis to *alienate* audience, we begin to see the possibility of digital mapping empowering the masse by confusing them, or in Brecht's words, to leave them *"productively disposed".*[19] Indeed, if one has watched one of Brecht's plays, one would find the theatrical work more as a constant internal questioning than a simple entertainment (although Brecht would argue that pleasure remains the goal of the *"epic theatre"*). The work of art is *open* in the same sense that a debate is *open*. Solution is anticipated, but would be originating from the collective mind of the audience.[20] Here, *Openness* speaks of an optimism for democratic participation in the work. Having acknowledged that maps are inherently dirty, for a digital map to be *open,* it is to discover the political agency embedded in the work, that it promises negotiation and collaboration.

If one finds the concept too foreign, the set of explorative mapping produced by James Corner would be a proof of concept. In his reflection on the agency of mapping, Corner argues that mapping is a creative activity and therefore should be more than tracing the reality.[21] In practice, the maps on American landscapes operate in graphically unconventional ways: that satellite image is superimposed on the empirical USGS map, with photographic figures collaged in. The map contains a fever-dream quality in it, but it is with this open mapping that readers can participate in the intellectual activity of a map. One may argue, that such a notion of *Openness* is in fact not a potential form for digital map to become, but an attribute inherently anticipated in digital mapping. In Senseable City Lab @MIT, urban scenarios are mapped as point-cloud, vectors, animated figures. Mediated through the browser interface, a curious reader enjoys the freedom to switch between urban realities, pan around the three-dimensional space of the map, click onto the project info, or play a video explaining the background of the digital mapping. The digital map can contain infinitely multiple references via the hyperlink, a device also evident in BC maps

---

[17] Ibid., p. 62

[18] Bertolt Brecht, 1949, "Kleines Organon fur das Theater (A Short Organum for the Theatre)", translated by John Willett, *Brecht on Theatre- The Development of An Aesthetic*, Hill & Wang, New York
[19] Ibid., p.77

[20] Umberto Eco, 1979, "The Poetics of the Open Work", The Role of the Reader – Explorations in the Semiotics of Texts, Indiana University Press

[21] James Corner, 1999, "The Agency of Mapping: Speculation, Critique and Invention", Mappings, First printed in 1999, 2002 Edition, Reaktion Book Ltd.

through footnotes or legends, but never before as immense as it is in digital maps. The experience is one of logging into a dynamic flux of vectors, which is also visibly reproduced in the digital maps in animation. The capacity to animate objects in digital mapping affords the curious reader to interpret the map in multiple forms, and promises a rhetorical device to make *Ambiguity* apparent, a quality BC maps such as Corner's have been endeavouring to emulate.
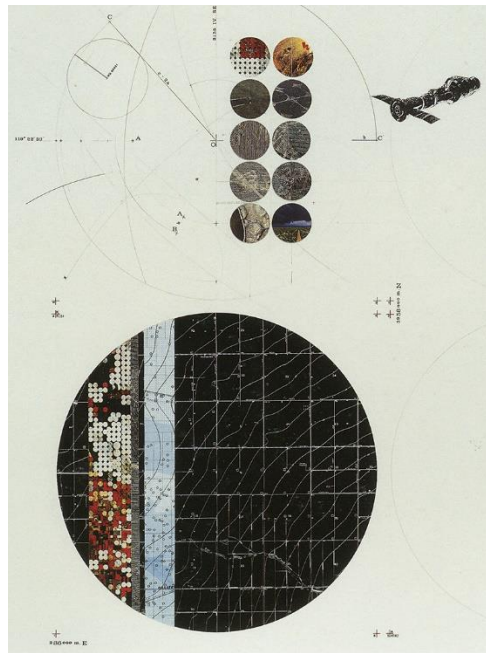

Image: *"Taking Measures Across the American Landscape", by James Corner and aerial photos by Alex McLean*
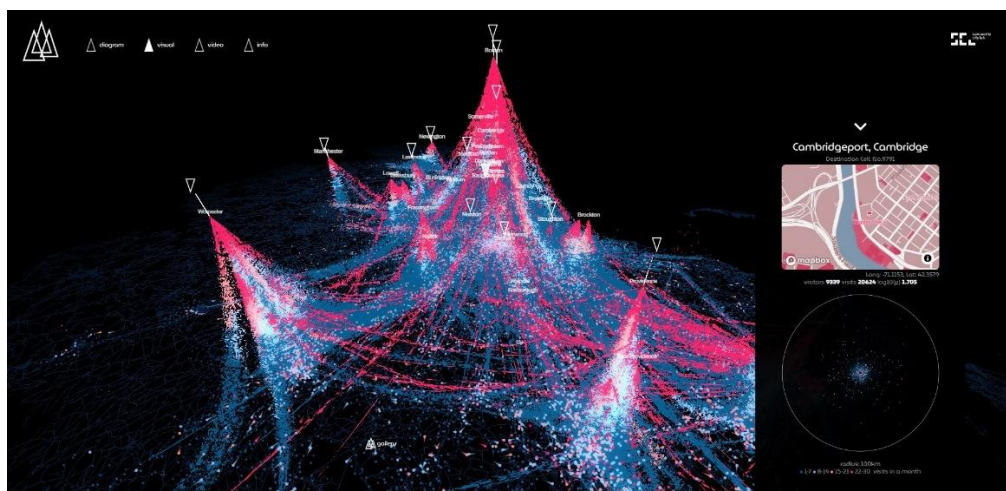

Image: *Screen-capture by Author of Wanderlust Project, Senseable City Lab @MIT*

Conclusion

After wandering around the digital maps, our previous curious reader is left disposed, at best troubled, at worst transfixed, lost, and tempted to relapse into inaction. The enthusiasm surrounding data in the architecture discipline and adjacent fields of design has met equal optimism and hesitance. Advocate for SmartCities has entered the realm of public policy and business, promoted a better informed evidence-based decision-making, but not without concerns as being excessively reductionist in planning our urban environment, and as new problems of surveillance and control. Our curious reader accepts all the above realities, but is left with a sense of powerlessness to engage with them. If the revealing of digital mapping as *Thick* and *Open* in the foregoing chapters has been productive, our curious reader would have come to the conclusion that a closer familiarity with the digital tools would be instrumental to engage with the digital maps after being disposed, that we need to achieve a common *"digital literacy"* in order to invent and operate the digital machines around us.[22] It is to say that, our curious reader would have to acknowledge themselves as a proactive reader, who is aware of the different positions around a digital map. Following Eco's conceptual delineation of positions around a work of art[23]: *the "author", the "interpreter", the "performer", the "reader"*, for our curious reader to reclaim their agency in digital mapping, they would have to, first, be aware of the existence of these positions, and then shift between them and engage differently with the maps. They would be required to constitute their own centre of reference in the field, and acknowledge that there is no privileged point of view, but all are equally meaningful. This is true for the masse to be literate reader of digital maps, and even more true for an architecture person, who has more frequent encounters with the mapping activity. To be able to read is to claim our interpretive power, and find our bearings in the flood of data.

[22] Stavros Kousoulas, Dulmini Perera, 2021, *"Five Points Towards an Architectural In-Formation", All Is In Formation: Architecture, Cybernetics, Ecology*, FOOTPRINT (Delft Architecture Theory Journal, Vol. 15, No. 1

[23] Umberto Eco, 1979, "The Poetics of the Open Work", The Role of the Reader – Explorations in the Semiotics of Texts, Indiana University Press

Bibliography

1. Bertolt Brecht, 1949, "Kleines Organon fur das Theater (A Short Organum for the Theatre)", translated by John Willett, *Brecht on Theatre- The Development of An Aesthetic*, Hill & Wang, New York

2. Bruno Latour, Valérie November, Eduardo Camacho-Hübner, 2009, *"Entering a risky territory: space in the age of digital navigation", Environment and Plannin D: Society and Space* 2010, volume 28, p 581-599

3. Denis Wood, 2010, *Rethinking The Power of Maps,* The Guilford Press

4. J.A. Steers, 1965*, An Introduction to the Study of Map Projections*, 14th Edition,. London University of London Press

5. James Corner, 1999, "The Agency of Mapping: Speculation, Critique and Invention", Mappings, edited by Denis Cosgrove, First printed in 1999, 2002 Edition, Reaktion Book Ltd.

6. Marialessandra Secchi, Marco Voltini, 2020, "They Do It with Layers – How Design by Layers is Killing Urban Complexity", OASE 107, The Drawing in Landscape Design and Urbanism, OASE foundation

7. Paul A Robinson, 1983, "*From Suttee To Baseball To Cockfighting"*, The New York Times, digitalized and extracted from https://www.nytimes.com/1983/09/25/books/from-suttee-to-baseball-to-cockfighting.html?pagewanted=all

8. Stavros Kousoulas, Dulmini Perera, 2021, *"Five Points Towards an Architectural In-Formation", All Is In Formation: Architecture, Cybernetics, Ecology*, FOOTPRINT (Delft Architecture Theory Journal, Vol. 15, No. 1

9. Todd Presner, David Shepard, Yoh Kawano, 2014, *HyperCities, Thick Mapping in the Digital Humanities*, Harvard University Press

10. Tom McCarthy, edited by Hans Ulrich Obrist, 2014, *Mapping It Out – An Alternative Atlas of Contemporary Cartographies,* edited by Hans Ulrich Obrist, Thames & Hudson Ltd

11. Umberto Eco, 1979, "The Poetics of the Open Work", The Role of the Reader – Explorations in the Semiotics of Texts, Indiana University Press

12. Umberto Eco (translated by William Weaver), 1982, *"On the Impossibility of Drawing a Map of the Empire on a Scale of 1 to 1". How to Travel with a Salmon & Other Essays*, (1994 edition, first published 1992), Houghton Mifflin