DIETMAR OFFENHUBER & CARLO RATTI / US READING THE CITY – RECONSIDERING KEVIN LYNCH’S NOTION OF LEGIBILITY IN THE DIGITAL AGE
Despite the volume and quality of his later work, his first book *The Image of the City* is still the single work Kevin Lynch is known for by a wider audience. However, the concepts of *imageability* and *legibility* proved to be enduring concepts that followed Lynch throughout his career, as he kept revisiting them from various angles.

In many aspects, *The Image of the City* was a product of its time, and given the paradigmatic status of the study, it seems impossible to update such a work to accommodate new realities of a digital media and image-saturated world. However, Lynch never seemed too concerned about canonical categorizations like his quintet of Edges, Paths, Nodes, Landmarks, and Districts. It is quite possible that a new version of the *The Image of the City* for the contemporary city, characterized by real-time information, would evolve into something very different, even with the classic concepts of imageability and legibility remaining at the core.

**The Legible City**

*The Image of the City* is based on the hypothesis that the perceived quality of an urban environment is related to the degree to which its inhabitants are able to read its structure and to navigate and make sense of the environment.

Consequently, Lynch defines *imageability* as *that quality in a physical object which gives it a high probability of evoking a strong image in any given observer*. He also introduces the term *legibility*, defined as the perceptual clarity of an urban environment, or *the ease with which its parts can be recognized*. Lynch does not draw a clear distinction between these two terms; he even treats them as synonymous. But implicitly, he refers to legibility as the more immediate perceptual accessibility, whereas imageability seems to have a deeper emotional, personal quality. Both terms clearly describe aesthetic qualities different from beauty, although Lynch considered legibility as a necessary precondition of beauty. He was aware of the contemporary artistic discourse on perception; his collaboration with the visual artist György Kepes from the Center for Advanced Visual Studies at the Massachusetts Institute of Technology (MIT) was formative for the development of the study.

By introducing the concept of legibility and proposing a method for assessing it, Lynch liberated the discourse of urban aesthetics from the murky realm of sentimental values inherent in concepts such as the picturesque or the aura of authenticity — from City Beautiful to the Legible City. He proposed five elements to constitute the syntax of the *The Image of the City*: Paths are the channels of an observer's movement; Edges are articulated linear elements other than paths, for example shores or walls; Districts are sections of the city that have their own character and can be entered; Nodes are strategic points in the city that can be entered, i.e. focal points of activity, often intersections of multiple paths; Landmarks are points of external reference, distinctive features in the city that are commonly used for orientation.

Significantly, the nature of these elements is relational: their main value lies not in the characterization of a specific place, but in their ability to align and integrate different parts of the city in a coherent mental image. Furthermore, Lynch demonstrates that not only utilitarian elements such as streets and paths should be appreciated — also obstacles, barriers, and borders are important for establishing a concise mental image of a place.

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2. Ibid., p. 9
3. Ibid., p. 2
5. Ibid., p. 247
Lynch’s proclaimed goal of the study was to encourage planners to listen more to the inhabitants and their perceptions, but he was disappointed to see that in some way he had achieved the opposite. The scientific and elusive aura of Lynch’s nomenclature of Paths, Edges, Districts, Nodes, and Landmarks was quickly emulated by planners and integrated into their business-as-usual procedures without actually reaching out to inhabitants.7

However, unlike many of his readers and followers who were stuck in the orthodoxy of mannerism, Lynch never understood this quintet as canonical categories; he also proposed alternative categorizations. In his later books, he revisited the concept of legibility from other perspectives. What Time is This Place?8 is dedicated to the legibility of time. Lynch argues that compared to spatial properties, temporal changes are more difficult to perceive. As a result, urban change often bears negative connotations. Lynch calls for change management: successful planning must make change understandable, the history legible, and future changes possible to anticipate. In his last book, Wasting Away, Lynch touched on the moral dimension of legibility, the legibility of consequences of wasteful behavior.9 In Good City Form, he proposed his most comprehensive and holistic update by devising a framework along five different performance dimensions — Vitality, Fit, Access, Control, and Sense — in addition to two meta-dimensions, Efficiency and Justice.10 Under the category Sense, Lynch subsumed his current thinking about the perceptual qualities of cities, which evolved from the very structural view of The Image of the City to a more procedural understanding. The category Sense included the concepts of Congruence — the degree to which the function of a place can be read from its abstract form; Transparency — the degree to which the different activities and functions of a place can be directly perceived; and finally Legibility — now defined as a semiotic quality, i.e. as the degree to which the environment functions as a symbolic communication system.11

Limitations of The Image of the City

When Lynch wrote The Image of the City, cognitivism was the main paradigm in learning theory, and mental representations were of central interest. The superseding paradigm of constructivism is less confident about the existence of universal mental representations and focuses instead on the developmental process of spatial knowledge acquisition. A popular model describes this process as the traversal of three levels of knowledge starting

8 Lynch, K., What Time Is This Place? (Cambridge, Mass.: MIT Press, 1972)
Aluminum Can

Disposed at
1000-1098 1st Ave
Seattle, WA 98104

Traveled
2.5 Miles,
1 Day and 18 Hours

Category
Metals
from declarative (landmark) knowledge, to procedural (route) knowledge, and finally arriving at configurational (survey) knowledge. Lynch was mainly interested in the shared public image, a composite of many individual perceptions. However, individual differences often turn out to be more important than the commonalities.

Lynch was also criticized for overstating the importance of way-finding: »The study may have analyzed the nature of the way-finding image accurately enough. But it only assumed its importance and never demonstrated it. What do people care if they have a vivid image of their locality? And aren’t they delighted by surprise and mystery?« Lynch argued that his assumption was supported by the information collected during the interviews: people prefer legible environments to confusing ones. However, the question remains whether legibility has to be a quality of the built environment or whether other means could provide this function.

The Focus on the Pedestrian Mode

The Image of the City essentially reflects the experience of a pedestrian. From this perspective, other modes of transportation must necessarily result in distortions of the mental image: freeways disassociate drivers from their surroundings; railway lines become impenetrable boundaries erasing whole areas from the mental image; the subway system equally disconnects passengers from the urban fabric.

Although Donald Appleyard and Kevin Lynch addressed this issue later by investigating the mental image based on the perspective of a motorized observer, they were not ready to give up the notion of a consistent and coherent mental map. Robert Venturi and Denise Scott Brown came to a different conclusion, abandoning the notion of a coherent mental image. In their reading of the Las Vegas Strip, they argued: »A driver 30 years ago could maintain a sense of orientation in space. At the simple crossroad a little sign with an arrow confirmed what was obvious. One knew where one was. When the crossroad becomes a cloverleaf, one must turn right to turn left [...]. But the driver has no time to ponder paradoxical subtleties within a dangerous, sinuous maze. He or she relies on signs for guidance — enormous signs in vast spaces at high speeds.«

The media theorist Lev Manovich compares the experience of way-finding in Los Angeles to navigating online space — a city almost made for a technology like the Global Positioning System (GPS): »One drives to particular locations defined strictly by their street addresses rather than by spatial landmarks. A trendy restaurant or club can be found in the middle of nowhere, among the miles of completely unremarkable buildings. The whole city feels like a set of particular points suspended in a vacuum, similar to a bookmark file of Web pages.« Turning (new-)urbanist critiques of L.A. on its head, Manovich embraces the experience of how real and virtual space become meshed together; technology introduces new ways of reading and navigating the environment.

Manovich experiences a hybrid physical/informational space, where physical space is no longer the main source of environmental information. This notion is further developed in Steve Graham’s concept of ›software-sorted geographies‹ and in Martin Dodge’s concept of ›code/space‹, a description of the software-mediated spaces of air travel. Dodge argues that digital media are not just an augmentation, an optional layer over the physical city that we may or may not use. Instead, they become increasingly a constituting factor of physical space, leaving their imprint on the environment: ›real virtuality‹, as Manuel Castells calls it. The ›code/space‹ of air travel includes travel Websites, check-in, security checkpoints, flight decks, air-traffic control, immigration, and customs checkpoints. »In code/space, code dominates the production of space, explicitly mediating sociospatial processes and experience«. The mutual constitution of code and physical space is dyadic so that »if either the code or space fail, the production of space fails«.

The Neglect of Meaning and Media

To keep his research project manageable, Lynch treated the realms of structural legibility and meaning as strictly separated: »Spatial legibility is at least a common base around which groups can cohere and on which they can erect their own meanings«. As he later acknowledged, this neat separation was bound to fail: »The original study set the meaning of places aside and dealt only with their identity and structuring into larger wholes. It did not succeed, of course. Meaning always crept in, in every sketch and comment«.

Most people would agree that the contemporary experience of the city is highly mediated. First of all, film and popular media often shape how the city is perceived and consequently planned. Norman Klein’s account of a public discussion among urban planners is telling: »[...] three out of five leading urban planners hoped L.A. would someday look like the film Blade Runner«.

Lawrence J. Vale illustrated how TV series shape and alter the perceptions of places, and therefore become effective marketing strategies for cities. Furthermore, many contemporary urban environments are carefully programmed and scripted for creating a specific experience and encouraging a specific behavior, as demonstrated by Norman M. Klein’s investigation of ›scripted spaces‹ reaching back to Baroque architecture. To take the shape of the environment as a given and investigate its perception, as Lynch did, is therefore unfortunately no longer an option.

How are Location-based Media Affecting the Way We Navigate and Experience Urban Space?

The Internet of the year 2006 was ubiquitous and placeless. Content was structured by hyperlinks — arbitrary associations between different online resources — and the user navigated the network by traversing these connections. The impact of online

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23 Ibid., p. 202
information on urban place was limited. As Malcolm McCullough reminds us, »If you can do anything, anytime, anyplace, then in a sense you are nowhere.« 29 Five years later, this has changed significantly. Now content is increasingly organized by location and associated with specific geographic coordinates. Geo-referenced information has a significant impact on how information can interact with places in the city. Via smartphones, information is navigated by physical proximity rather than network topology, and therefore directly interferes with way-finding tasks in urban space. 30

A second consequence of this »spatial turn« is less obvious: the biggest challenge for the traditional Internet is the »semantic gap« — natural language content can be indexed, but hardly be interpreted by machines. Geo-referencing makes it easier to infer meaning: by knowing time and location, together with the history of visited places and information about local amenities, it is possible to employ algorithms for making educated guesses about activities and their context. 31 As a result, digital media become more adapted (and possibly more intrusive) to a specific physical context. The use of location-based technology can be expected to have consequences on navigation and way-finding in the city. Studies of GPS usage in Innuit communities have shown that the technology has transformed their traditional knowledge of way-finding based on subtle environmental cues. 32

Current Practices of Location-based Media

The popular idea to connect information with physical places comes under a variety of different labels: »Urban Markup,« 33 »Locative Media,« 34 »Hyperlocal Media,« »Urban Annotation,« or the »Geospatial Web.« These media forms come with a variety of practices, including »Geocaching,« »Placelogging,« »Warchalking,« »Soundwalks,« »Geospatial Storytelling,« or »Alternate Reality Games,« 35 among many others. Should these formats and practices be considered, and what can be their role? Rajesh Kottamasu sees their main potential in the role of constructing an image in a participatory fashion: to »foster place attachment, claim to space and social connections among participants.« 36

Urban Data for Improving Legibility

The Real Time Rome project 37 underlines important qualities of urban form through real-time visualizations, showing the communication behavior of the people using these places based on telecommunication data. These activity patterns make it possible to identify places that are attractive to tourists or locals, places of commuters and

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30 Search engines actively acknowledge this distinction. An Internet search for the term FedEx, when performed on a mobile device, will yield different results compared to a desktop search — i.e. it will report the direction to the closest FedEx office, rather than the Internet homepage of the company.
31 senseable.mit.edu/aida2
34 Tuters, M., »The locative commons: situating location-based media in urban public space«, Electronic Proceedings of the 2004 Futuresonic Conference, Manchester
36 Kottamasu, R., »Placelogging: Mobile Spatial Annotation and Its Potential Use to Urban Planners and Designers« (Massachusetts Institute of Technology, Dept. of Urban Studies and Planning, 2007)
37 senseable.mit.edu/realtimerome
residents, drivers and pedestrians, all with respect to the specific time of the day. If we imagine feeding this information back to the people in public space, the real-time maps provide contextual, implicit information that is relevant for making sense of a place, just like other contextual cues such as the form of the built environment.

Most of the activities that are reflected in the Real Time Rome visualizations leave their imprint on the physical city, as most people have no difficulties to identify places of tourists, commuters, or residents, even when they are not familiar with the environment. However, telecommunication data also reveal another dimension of the city that is not directly accessible to our senses, but still shapes the character of a place. The New York Talk Exchange project is a fitting example. By showing the invisible communication activities between New York and the rest of the world, the project re-asserts the status of New York as a global city — a quality that is deeply ingrained into the mental image of this place. The visualizations also show aspects of this global presence that are less conspicuous, compared to the bright signs of international companies on Times Square. By mapping the destinations of outgoing phone calls in relation to the time of day, the lives of immigrant communities appear on the map: families constantly in communication with their relatives in places such as the Dominican Republic, South-East Asia, or Latin America.

Besides communication data sets, other resources can help us making sense of the urban environment — invisible data traces that result from an ever-increasing range of public and private human activities. A frequently raised concern here is the protection of the individual’s private sphere. Just as public space means experiencing the presence of others as an anonymous crowd rather than private individuals, a similar approach can be used to resolve such concerns. Data can be aggregated into larger spatial units, erasing the traces of individuals and shifting the focus to larger patterns. In this sense, data sets generated by credit card transactions show us the attractiveness of areas through consuming behavior and medical records may hint to potential environmental hazards.

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38 senseable.mit.edu/nyte
39 senseable.mit.edu/bbva
40 senseable.mit.edu/healthinfoscape
Projects such as Trash|Track\(^{41}\) reveal another hidden dimension: the metabolism of the city, its various material streams reflecting the wasting behavior of its inhabitants.

With this abundance of meaningful information about the urban environment, we are ultimately confronted with the activity of reading itself. How can we make this information readable and digestible for people in urban space? During the past 30 years, architects have imagined **new forms of buildings** that incorporate and react to this new space of digital information. Yet, we see relatively little of these attempts materialize. Most people rely on the personalized lens of their smartphones for accessing data sets, despite all problems associated with this modality. As Mark Weiser and John Seely Brown have pointed out, interactive technology in the physical world needs to be ›calm‹, demanding little attention while providing a wealth of contextual cues — urban displays should be unobtrusive and context-sensitive.\(^{42}\) The cockpit of a car is an especially challenging environment in this regard. An exploration into this peripheral mode of information delivery is the AIDA project, relying entirely on ambient modes of information delivery and simple hand gestures for interacting with this information.\(^ {43}\) Finally, recent viewshed or isovist measures tackle urban perception from a purely mathematical angle: by evaluating what can actually be seen from a specific position, these measures allow to distinguish between perceptually more or less privileged locations in the city.\(^ {44}\)

**Conclusion**

Lynch himself had speculated extensively about the potential of new technologies for urban space. He pondered the possibilities of a responsive environment that reacts to and learns from the actions of its inhabitants. Such an environment could either stimulate or calm a certain behavior: »Could a responsive environment be used to induce behavioral change rather than behavioral stability? If it could, would we want it, except as a toy? Would systems of rapid mutual response between man and setting tend to ›blow up‹, to escalate into uncontrollable action?«\(^ {45}\) Among other things, Lynch proposed the idea of ›mutoscopes‹\(^ {46}\) — telescopes installed in public space that allow glimpses into the history of the specific place. This idea resonates in more recent interactive installations such as Art+Com’s *Timescope* project installed at the site of the Berlin Wall.\(^ {47}\)

What would a contemporary version of The Image of the City tell us? We have shown how digital information can provide valuable support for reading the city, making sense of the urban environment. However, a successful and context-sensitive integration of digital media into the urban environment according to perceptual principles remains a challenge. A contemporary *Image of the City* could be a manual about how to reprogram, hack, and deconstruct the meaning of the environment.

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41 senseable.mit.edu/trashtrack
43 senseable.mit.edu/aida2
44 Morello, E., Ratti, C., ›A Digital Image of the City: 3-D Isovists and a Tribute to Kevin Lynch‹, Environment and Planning B (forthcoming)
46 Ibid., p. 189
47 artcom.de/en/projects/project/detail/timescope