Socio-technical artefacts and urban stories of energy: neon and lighting politics in Hong Kong

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This paper explores change in energy demand through an engagement with the co-evolution of urban development and technological transitions in the city of Hong Kong.

The paper builds upon the framework of urban energy landscapes, to understand the spatial and temporal patterns of urban energy systems as emerging from the coevolution of socio-ecological flows, spatial patterns of energy use and socio-technical artefacts. Change in urban energy landscapes can be studied through an engagement with socio-technical artefacts and how they mutate, both materially but also, in terms of how they are conceived through a city's history. In this way, changes in energy demand can be studied in relation to specific socio-technical artefacts which characterize a city's history during a particular period of time. Socio-technical artefacts can then be studied as a compendium of backward linkages (related to how the artefact is conceived, made and taken to a particular location of use) and forward linkages (related to how the artefact is actually used, reconceived and eventually discarded). This methodology can be applied at different scales, from examining a specific artefact to rethinking the trajectory of a particular technology in a given city.

In relation to the workshop theme of changes in energy demand, this paper will adopt the later methodological approach tracking the evolution of demand for lighting and political change in Hong Kong. It will thus focus on neon lighting, both as a symbol of the city's identity and as a means to understand how lighting demands have shifted in relation to this type of lighting. After its development in the aftermath of the Second World War, neon lighting came to symbolize a prosperous Hong Kong in the 1960s and 1970s. While Hong Kong became a 'sea of neon lights' which represented the city's business prowess and firm beliefs in free markets, neon was looked at with disdain in neighbor communist China, for example, in film productions that casted neon as a symbol of capitalist decadence. The return of Hong Kong to the PRC in the late 1990s was also accompanied by the dismissal of neon in Hong Kong. The raise of LED lighting technologies (favored by businesses because they are cheap and adaptable) and the increasing concern about safety of neon signs has threatened the continuity of the neon industry and puts a question mark over its future. Neon, however, continues to be celebrated by young movements that display nostalgia for the lost city as a means to protest against gentrification and authoritarianism.

Keywords: dwelling, urban energy landscape, change, coevolution

Introduction

In the DEMAND discussion paper sets the theme of change for this workshop. But what is change, in the first place, remains obscure. The discussion paper cites Heraclitus (p. 2) as the great philosopher of antiquity who described a world in constant flux. Textbooks often contrast Heraclitus with the work of other pre-Socratic philosopher, Parmenides. While Heraclitus saw a world in constant change, Parmenides described a static world in which change was impossible. Both statements appear to be counterintuitive, and yet, both are somehow integrated in many common sense approaches to understand the world out there, from the continuous transformations that seem to constantly overrun knowledge to the tendency towards obduracy of both technological and material infrastructures. So, while being mutually exclusive, both approaches to understand the world as always and never changing, emerge as complementary truths.

In the discussion paper there is a leaning towards Heraclitus', rather than Parmenides' vision, in the sense that there is a recognition of change as an obvious fact of life. This is however elaborated by establishing change as something relative, which emerges in relation to periods of stability. There is a timely ordering of those periods, in which there is a distinction between activity and actual significance change (Schatzki, 2002; as cited and interpreted in the workshop's discussion paper). The discussion paper turns to Bourdieu (1990) to argue that diagnosing change depends on "understanding what a stable structure is like in the first place" (p. 4). The question is left here as the interest turns towards the questions and methods that would enable understanding such structures.

What is left unsolved is that change and permanence remain embedded in social life, in the same way as structure and agency remain related to specific practices. There is no sequential development of periods of stability and change because both occur simultaneously. In Hegel's thought change (as time) is an explanatory variable of the dialectics of human life not in the sense that conflicts generate change but rather, that time make absolute truths impossible (like in the famous example of the reading of the clock being already false when the reading is made). This is a historicist perspective in which change emerges in relation to a continuous of previous circumstances. In my work of environmental governance and contradiction I have found this notion useful as a means to think of how decision and action links to change. However, there are limitations to what a historicist perspective can address. For example, a historicist view of change privileges human experiences, overlooks material constraints and limits, and overall may not necessary capture the dynamics of socio-technical change.

Hegel's contradiction can be read in relation to Bataille (1985)'s notion of excess. Within his notion of restrictive economy, Bataille does not find issue simply with attempts to reduce the world to knowledge but to attempts to control and contain the material world. The result is, for Bataille, excess: the uncontrollable feral nature of material that defies any attempt at organize it and domesticate it (Bataille, 1991). Bataille's notion of excess echoes in Graham Harman critique of Actor Network Theory, in which he emphasises the unexpected in the material, the emergence of things, their 'reserve' that can never be anticipated. Graham builds upon Heidegger to examine truth as emerging from humans' engagements with things, from constructing and making. Truth about objects emerges not by detached observation but by a continuous interaction with objects which enables accessing immediate, revealed truths. Thus objects are ready-to-hand in the sense that we engaging with them and use them without needing to scrutinised in an explicit way. The nature of that close relationship, between the action and the object, is determined by a particular history (throwness, in Heidegger's terminology) but equally has many potentialities which are not yet expressed within the actual, experiential present. This three-fold understanding of time supports the formulation of strategies to understand the engagement between people and objects without

entirely rejecting a historicist model of thinking about change. Change thus relates to experiences at a given moment, but these experiences cannot be understood without reference to the particular timeline that has generated and the set of potentialities that emerge in relation to that particular object.

Adopting such a conception of time is challenging because it does not allow for an analysis that relies on conceptualisation of a linear succession of events; but on the other hand it also engages with the issue that change and permanence may be simultaneously possible. Both change and permanence manifest depending on the precise reading, at a given moment, of both the historical past and the future possibilities. These are always partial readings, but readings that engage with a complex notion of time and why change is (or not) possible.

Infrastructure landscapes refer to the arrangements of things and objects that explains social processes and their relation to resource and spatial uses. Notions of landscape are often invoked when there is a need to grapple with contradictory wholes. As Ingold (2000) and other scholars have already pointed out, landscapes are indissolubly linked to notions of time. Ingold also took inspiration from Heidegger to develop an understanding of landscapes of dwelling as 'taskscapes', as places in which both human and ecological performances are imbricated (Ingold, 1993). In landscapes of dwelling objects are ready to hand. All landscape beings, from the rock to the human, operate without seemingly needing a profound reflection on what is happening. Ingold famously analysed a paradigmatic example of landscape in a painting, the Harversters of Pieter Bruegel[1], to emphasise that mountains, fields, corn, humans, trees, paths, they are all with each other, noticing each other not as something to look at, but as something to work with. All those objects disappear from view when they serve their use, as activities focus on their use and ultimately value. Yet, they progressively change the landscape and their space.

Infrastructure landscapes can thus be thought of as an arrangement of things, in Harman's sense. Turning to an urban context as a place where the relationship between infrastructure and social practices is a requirement for their continuation is a means emphasise the close relationship between memory, experience and future possibilities. Gandy's (2005,2008, 2011) notion of urban infrastructure landscape, for example, questions infrastructure as merely material conducts, while taking seriously their material properties as constitutive of urban life. Infrastructure objects become ready-to-hand through use, no doubt visible but not necessarily seen[2].

In this paper I aim to develop the notion of urban infrastructure landscape in relation to an understanding of change and permanency. To do so, there is a need first to provide a conceptualisation of the processes of change in which societies and ecosystems are embedded in socio-technical landscapes, through an engagement with ideas of coevolution. I use this coevolutionary approach to landscape as a point of departure to think how the three-fold notion of time emerging from Heidegger analyses could inspire a methodology for the study of urban energy landscapes. Then I move to apply this methodology in Hong Kong, trying to discern what changes in lighting technologies have meant for the city.

Coevolution, landscapes and artefacts

Coevolution is a concept that explains the uniqueness of the landscape perspective. It refers to processes of interaction between evolving human and biophysical systems that account for the changes in both systems (Norgaard and Kallis 2011). Coevolution occurs when change over time in

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[1] Available at the Metropolitan Museum of Art: http://metmuseum.org/toah/works-of-art/19.164
[2] As the invisibility of infrastructures is one of the most recurrent myths in infrastructure studies.

seemingly separated systems (human and biophysical) leads to a mutual response (Weisz 2011). In an urban setting, coevolution refers to the coupling of social systems with particular configurations of the built environment that enable resource transformation. Coevolution challenges traditional understandings of energy because it breaks assumptions about the causal mechanisms that mediate ecologies, technology and society. For example, many studies in urban morphology research accept Owens' two directional assumptions about the influence of the availability of energy resources on spatial structure and about the influence of spatial structure on energy requirements (Owens 1986). However, a coevolutionary perspective suspends assumptions about the causal directionality between two systems, i.e. one causing the other. Instead, coevolution presupposes mutual influence between social practices, technology and the built environment, and the ecosystems that sustain them (Brand 2005). Co-evolution emphasises systemic change that emerges from the variation between individuals within the system but there is no assumption of progress in that change (Fracchia and Lewontin 1999, Weisz 2011). Thus, co-evolution does not imply any teleological explanation about the organisation of social, technologies and ecological systems. Instead, coevolutionary analyses look at the interconnected string of historical factors and events that explains the contemporary situation.

The sequence of states that over time leads to the current state of urban energy systems can be thought of as an urban trajectory. In terms of how people use energy, for example, this trajectory can be thought of as a 'chain of experiential needs' through which multiple elements of the urban energy system become interconnected (Brand 2008). Think for example of a city in a developing country, such as Maputo (Mozambique) where the development of the energy system has been closely tied to the regulatory mechanisms and local beliefs that prevent low income households living in reed houses from connecting to the electricity network. As people met their energy needs using solid fuels, these have been embedded both in relation to local livelihoods and cooking practices that are choreographed within a given architecture (cooking takes place in the courtyard to prevent indoor pollution). The states that constitute a given trajectory are embedded in broader contexts, or pathways, that help articulate future visions. Pathways refer to a wide diversity of imagined urban futures that emerge from critical junctures- or path bifurcations- and that are likely to shape the direction of travel and close off alternative destinations (Rydin, Turcu et al. 2013, Hodson, Burrai et al. forthcoming). Pathways emphasise future possibilities and alternative courses of action (e.g.O'Neill, Kriegler et al. , Rydin, Turcu et al. 2012, Marletto 2014, Turnheim, Berkhout et al. 2015). Pathways are thus linked to multiple and competing values that shape change trajectories (Leach, Scoones et al. 2010).

Trajectories emphasise the course or direction of change: they explicitly refer to the process of walking a single path. Path dependence occurs when contingent historical events trigger a sequence of events following a relatively deterministic pattern or inertia, that is, the present conjuncture depends on decisions taken in the past (Mahoney 2000). When socio-ecological and socio-technical systems follow a coevolutionary trajectory they may trigger a self-reinforcing sequence of events that may condition future change opportunities. For example, the discovery of large fossil fuel reserves may lead to the development of institutions, economic interests, lifestyles and technological developments that curtail the possibilities to develop renewable technologies and, over decades, makes any development alternative unthinkable (for examples see: Castán Broto 2013, Corvellec, Zapata Campos et al. 2013). With the development of infrastructures, institutions and social habits moving away from fossil fuels may prove an impossible enterprise, which is described as carbon lock-in (Unruh 2000). In urban areas, carbon lock-in is a key aspect of the obduracy or resistance to change of cities and urban regions, which is experienced as an obstacle for the planners and city managers that see themselves as bringing spatial transformations (Hodson

2008). Obduracy can be explained as a relational property that develops as different elements become intertwined through coevolution (Hommels 2005, Hommels 2005, Beauregard 2015). Thinking of urban obduracy is akin to thinking of what is possible, recognising how future opportunities are constrained by a specific urban change trajectory of urban change (Kirkman 2009). In this way, coevolution highlights the mutual reinforcement between human and biophysical systems in urban areas.

In this view, energy transitions emerge as embedded in a series of life interactions and experiences, with reference to the ecological transformations that depend on situated politics and embedded in particular cultures which have coevolved with the built environment. These relationships are mediated by certain socio-technological artefacts in which different energy histories are inscribed. These artefacts are assembled in energy landscapes. The focus on energy landscapes is a strategy to capture how energy is embedded in particular socio-technical assemblages and simultaneously reveal the contradictions on our dependence from energy. The study of energy landscapes reveals, first, the heterogeneity of socio-technical relations around energy infrastructure and, second, how these manifest in specific urban context. Research tools are needed to investigate energy landscapes on one hand, and context-based understanding of energy landscapes on the other.

The problem of studying urban energy landscapes is to map simultaneously multiple interactions between multiple social, ecological and technological elements. Hence, the methodological hypothesis is that there are particular infrastructure artefacts that define an urban energy landscape, or at least, that provide a window of observation into it. Think, for example, of the double decker bus in London. Urban energy landscapes, in particular, will be defined by particular objects that both mediate flows of energy resources, while at the same time configure spatial possibilities to accommodate certain social practices which depend on energy.

In an urban energy landscape, socio-technical artefacts are objects that, being 'ready to hand', help people to dwell in the landscape and build it through multitude of routine interactions (Graham and Thrift, 2007). Socio-technical artefacts are the bulbs we turn on and the transformer we walk by in our way to the market; the cook stove where urban dwellers burn charcoal and the solar lamp that lit up a remote village in India for the first time. These objects embody particular energy histories, and, in an urban energy landscape, they may represent the city and its relationship with energy more widely. Adopting a perspective focused on urban infrastructure landscapes, however, which emphasises objects within a spatial context, a key issue is that rather than thinking of artefacts as meeting a particular function, the artefact is part of a landscape were multiple functions are possible. While the function at present is configured by its history, it is also shaped by the multiple possibilities that open up so that an object is shaped not but one single by multiple functions. In particular, there is a difficult discursive movement in terms of functions. The example that is most often associated to Heidegger's ready-to-hand idea is the hammer: as I hammer a nail to the wall, the hammer itself becomes invisible in my hand, because my focus is on the task at hand. I need to adopt a reflective perspective to make myself aware of the materiality of the hammer. However, that ready-to-handness changes continuously: if I am a hammer designer, the hammer may be ultimate goal and hence, here awareness is needed to examine the use of the design software I am using, or the chisel I am using to finalise the hammer. The hammer itself is never ready-to-hand without some form of historicity that contextualise it in a particular situation, but it is never overdetermined because it has many potentialities.

These artefacts link the dual aspect of the energy landscape as being constantly changing while remaining constant. Following this, the methodological strategy in this paper is to adopt a threefold notion of time inspired by Heidegger which focus on the 'thing', the object, as constitutive of the

energy landscape. Socio-technical artefacts can then be studied as a compendium of backward linkages (related to how the artefact is conceived, made and taken to a particular location of use) and forward linkages (related to how the artefact is actually used, reconceived and eventually discarded). Backward linkages relate to an object history: the separate set of connections that have brought it to a particular configuration. Forward linkages relate to its future potentialities and the multiple ways in which the object can be re-appropriated and reimagined it.

The urban energy landscape of Hong Kong

Hong Kong, the 'Fragrant Harbour', is a unique city in many ways. One thing that characterises Hong Kong is its history, shaped both by the Chinese culture and the influence of 155 years of British rule. In 1997, with the transference of Hong Kong to the People's Republic of China, it became China's first 'special administrative region', Hong Kong SAR. Hong Kong's coastal location, its political status and its dynamic local economy have made the city into a global node of trade and finance. Geographically, Hong Kong is shaped by Victoria Harbour which separates the original colonial settlement of Hong Kong Island- today's finance centre- from the mainland Chinese district of Kowloon, other Hong Kong islands and the New Territories. Hong Kong's energy system is marked by is dependence from imported fossil fuels and by the structure of the housing system. Two socio-technical artefacts help describing the urban energy landscape in Hong Kong: neon signs and individual air conditioning units.

Fossil fuel flows and spatial patterns of energy use in Hong Kong

Hong Kong's energy system is characterised by its dependence from important fossil fuels. Two century-old companies, the HongKong Electric Company (HEK) Ltd and CPL Power Hong Kong (CPL) Ltd, supply electricity to Hong Kong, mainly from power plants that burn coal or gas. Both companies import fuels (coal from Indonesia and gas from Oman and Australia) and CPL imports nuclear energy from mainland China. At the moment, Hong Kong policy makers are interested in reducing the dependence from coal. However, experiments with renewables, such as the 800kW Wind Turbine in Lamma Island, have added to the general view that renewable power generation is not possible. The alternatives considered are fuel switching from coal to natural gas or increasing purchases from power grids in mainland china.

The operation of both HEK and CPL is regulated by 10-year Scheme of Control Agreements (SCAs), due to expire in 2018. SCAs determine the rate of return for shareholders as a fixed percentage of average net fixed assets. This mechanism is thought to guarantee investments for a reliable and secure electricity supply at reasonable prices. However, Civic Exchange, Hong Kong's major think tank on urban sustainability, has warned that SCAs discourage investments in energy efficiency and has led to environmentally sub-optimal decisions (Leverett and Exchange, 2007).

In terms of the spatial use of energy, Hong Kong, is a superb example of a compact city. In the words of one local policy maker, the city became low carbon "by accident", especially because of the population pressure on land has pushed up land prices. Simultaneously, the government has long had a programme for public housing which, due to popular pressures, focused as much on building public transport links as on building houses. Nevertheless energy consumption is quite high.[3] Electricity amounts for 54% of energy use, while oil and coal products amount for 29% and town gas and LPG 17%. Most of the oil and coal (89%) is used in transport. In contrast, most of the electricity (93%) and the town gas and LPG (67%) are used in the residential and commercial sectors- the built environment. The consumption of energy in these sectors is very high, despite the relatively good

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[3] Hong Kong Energy End Use Data Available at: http://www.emsd.gov.hk/emsd/eng/pee/edata.shtml

spatial configuration of the city with high rise towers and mixed land use. Electricity consumption per capita, for example, is 5.955 kWh/capita, more than double the average in mainland China, which is even more astonishing when considering the small size of the industrial sector in Hong Kong (responsible for only 5% of the total energy use). This indicates that increases in energy consumption are driven powerfully by consumption. Energy intensity has decreased as GDP has grown from 2002 to 2012, again showing the powerful link between energy use and the economy.

In Hong Kong, like in other cities, there are energy-dependent socio-technical artefacts that define the city, its politics and spatial relations, and hence, the urban energy landscape. Neon signs and billboards are one key example of a socio-technical artefact that characterises socio-energetic relations in Hong Kong, particularly within the commercial sector. For those of us who only know Hong Kong as tourists or occasional visitors, Hong Kong is a city of neon.

Neon Lights in Hong Kong's Urban Energy Landscapes

Sammy's Kitchen Neon Sign (Photo by Christopher Dewolf; used here without permission)

Sammy's Kitchen is for many a 'Hong Kong Institution', serving steaks since the 1970s. The cow billboard- aiming to suggest both prosperity and a characteristic western feel- was built in 1978. Sammy wanted an Angus cow on it: "The cow is an Angus cattle. It's not just any old cow. I drew the outline myself. I knew the Angus is fat and has shorter legs."[4] The legend goes that the designer found that was not aesthetically appealing (because 'it looked like a dog') and produced instead a slenderer rendition of Sammy's vision. The striking image was not just a means to advertise the restaurant, but also a tool for orientation. Visitors could easily find the restaurant (and even the area where it is located) by being directed towards the cow sign. For many, the cow was a vital part of Hong Kong's urban heritage. The sign was taken down by the Buildings Department in August 2015. The Hong Kong government has declared a war on illegal, risky and unsafe street furniture and it is planning to take down the neon signs. The giant cow was soon identified as being a risk, perhaps because many government officials are thought to frequent the establishment. However, it took a few years to take it down both because of the complexity of the job as well as existing road building works. The restaurant owners have already plans for a new sign, though. This time the sign will be made with LED lights. The cow billboard will now join a select group of neon signs to be curated by

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[4] Sammy Yip interviewed by Andrea Lo in 2013 for HK Magazine (http://hk-magazine.com/article/inside-hk/interviews/11099/sammy-yip)

the newly created West Kowloon Cultural District's M+ Museum, to celebrate Hong Kong's culture and its neon heritage.

The cow sign in Sammy's Kitchen represents a micro-version of the overall dynamics of lighting technology in Hong Kong. In the period that followed the Second World War, neon signs substituted traditional oil lamps and banners that shopkeepers used to advertise their shops. During the 1950s, 60s and 70s the 'sea of neon lights' in Kowloon trading streets such as Nathan Road became a symbol of growth and prosperity. Neon lights were adopted as a symbol of prosperity and any kind of trade adopted it. Neon became a common feature of the city's experience as much as part of the identity of the city which was projected externally. In contrast, communist-sanctioned cultural products in mainland China used neon signs in cities such as Shanghai as symbols of consumerism and decadence (Braester, 2005). In Hong Kong, neon has been celebrated by the vendors and business man that adopted it and enable its proliferation, by the customers that were attracted by it, by the tourists who send back home pictures of the sea of lights and by all those who attached the name of Hong Kong indelibly to neon.

The signs are varies and in many colors. Neon is reproduced in unique ways across the city. Factors that differentiate neon billboards are:

- The size: some signs represent a conscious efforts to create a striking effect; others simply take neon as the default technology for lighting and use it in a modest way.
- The iconography: not just the literal cow that opens the door to a steakhouse, but also the rooster that symbolises secret Mah Jong parlours, the different symbolism that announce sexual services or Kung-Fu studios and the cocky designs for foot massage, dentists, counselling or a bakery.
- Typography: neon is often associated with the importance that some people attached to their name, which emerges as a means to perform identity under a sanitised colonial establishment.
- The 'virtuosity' of the calligraphy, including the use of a double rather than a single line.
- The colors: the variety of colors is also possible because of the difficulties that neon poses in achieving consistency of color. Moreover, because neon is a tube the concentration of light also varies. While red is a color frequently used, because of its association with good fortune in Chinese culture, other colors may be use to cause impact (such as in nightclubs using the color of the Emperor, yellow, to suggest the quality of treatment).
- The flickering effect and the buzzing sounds that accompany neon lighting.

Some of these variations are related to the materiality of neon, but others are related to the way neon is made. In particular, extravagant designs were possible because of the growth of the neon industry. Being an artisanal industry, its development required real enthusiasm by customers like Sammy, who were willing to make a significant investment in a neon billboard. Simultaneously, however, each neon sign maybe considered an independent craft- even a piece of art- where different ideas could be tested.

Neon also proliferated in cities elsewhere in the world, from Las Vegas to Berlin (Ribbat, 2013) but why in most locations neon became a symbol of seediness and risqué, in Hong Kong it has long been associated with prosperity and a celebratory form of exhibitionism. As neon signs proliferated in the urban landscape, it became impossible to separate Hong Kong from the sea of neon. A museum curator in Hong Kong, who collects the signs explains why this could have been like that:

"I think part of that is to do also with the density of Hong Kong. Hong Kong is a city that you tend to see only from a far distance or close up. There's really no middle ground, right, because of its density. Because of that, when you're on the streets, you know, you're just completely surrounded by, by the street signage. And as a result, you know, again it's become entirely inextricable from the city's identity, so much so that you think of it [as representing the city]"[5]

For example a symptom of the linkages between neon and the city is also their representation in Hong Kong's cinema, most notably in Won Kar-Wai movies whose aesthetics and photography relies on 'liquid atmospherics' which immediately evoke Hong Kong and can only be produced with the use of neon (Brunette, 2005). However, despite its past importance, the era of neon in Hong Kong seems to have passed its heyday.

Light Emitting Diodes (LED) lighting were already developed in the 1960s but commercial applications only took off at the turn of the millennia. Shop keepers like LED because it consumes less electricity while providing more intensity of light. Compared with the traditional craft of neon signs, LED signs can be produced in a relatively inexpensive way, and shop keepers can choose from a range of designs available. The main difference between LED and neon is that the former privileges the dots over the more intuitive line in neon signs. Unlike neon, LED lights are relatively homogeneous in terms of designs and colors. LED lighting offers possibilities that neon never open up, such as giant signs over whole building facades, with dynamic effects. They also allow for complex designs and are free from irreparable mistakes providing a clear light without flickering and buzzing. Since the late 2000s LED signs have appeared in the streets of Hong Kong, often replacing neon signs. Business owners have found them cheaper (both in terms of installation and use) and more versatile.

Simultaneously, the government of Hong Kong has added neon billboards to its list of potential safety risks. The government of Hong Kong is famously risk-averse. Neon billboards (such as Sammy's cow) have been deemed illegal and unsafe, and the government is not following a bid to remove them. Removal is however not a trivial matter, as most neon billboards are located in densely populated areas with constant traffic of cars and pedestrians which makes it very difficult to display a large scale removal operation. Thus, neon signs have not been subject to a large-scale removal operation. However, neon signs may require care and maintenance. Maintaining them may be increasingly expensive, as craft masters are rapidly disappearing. Faced with a deteriorated neon signs and the dictate of the government, business owners who are not already convinced by LED may nevertheless adopt the new technology to avoid future headaches. So as LED lights proliferate, neon billboards seem to recede. Both cover the same lighting demand, but in different ways as the liquid atmospherics of Hong Kong become replaces by a clean beams of LED light. And yet, neon is not entirely disappearing.

Embedded with a sense of nostalgia, neon signs have gained new significance: they have come to represent a disappearing past. An anonymous informant explains that in the contexts of Hong Kong's return to China "*one of the responses among this younger generation is to … reassert this notion of a local Hong Kong identity, as opposed and differentiated with mainland China… this fear of Hong Kong becoming … 'just another Chinese city'… that has produced a general sense of nostalgia, that again has been very, very pronounced among young people.*"[6] This has led to cultural manifestations which put neon at their centre in demonstrating the uniqueness of the Hong Kong identity. If during

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[5] Interview, Kowloon, April 2015
[6] Interview, Kowloon, April 2015

the 1960s, 70s and 80s neon was a means to display the local names and customs[7] of the Chinese living under the rule of London, in the post-integration context it constitutes a means to differentiate local culture from that of mainland China. Against the portrayals of neon-based decadence, Hong Kong's neon billboards are celebrated as heritage. Heritage in Hong Kong is notably implicated in multiple urban struggles from the privatisation of public space, state-led urban renewals and regional economic integration (Barber, 2013).

For example, the Blue House in Wan Chain, Hong Kong Island, a few of the remaining buildings from the nineteenth century and a bastion against gentrification, organised in the Spring of 2015 an exhibition that celebrated local signs, in which neon lighting played a key role. Here neon represented a bastion of resistance of traditional Chinese culture against capital-led regeneration. The Kowloon Cultural Centre organised in 2014 an online neon exhibition that requested the submission of pictures and its organizers were overwhelmed by the number of submissions.[8] Neon lights reveal a contradiction between this nostalgia and the aspirations to become a modern world city, with a display of the latest lighting technologies.

But this new portrait of neon lights as unique Hong Kong's heritage is leasing a new life to neon lights and opening up the spaces of possibility. As symbols of culture become isolated and collected in museums and activists spaces. Neon craftsmen become artists whose work is exhibited (something hardly imaginable in the case of mass-produced LED lights). Yet, there is a sense that this heritage is liked to its presence in the street and there are visible manifestations to keep neon alive not because of its role in lighting and advertising, but because of its role in preserving the city identity.

Take for example the fishing village of Lei Yue Mun which Hong Kong tourist board describes as "a slice of old Hong Kong alive and well in the modern metropolis". Lei Yue Mun is advertised from far away by gigantic neon billboards at the other side of a crowded embankment. Once inside the village, neon guides you across the famous fish restaurants and away from the poorer households that lay in the back of the village. As explained by an interviewee (See above) Hong Kong is only visible from far or from close. In Lei Yue Mun neon billboards are designed to address both scales. The signs conceal Lei Yue Mun conversion from mining village to seafood paradise in the 1970s, though. In the context of the ongoing waterfront development, including reclamation and high profile mega-projects, and the constant demands for space endemic in the island the billboards of Lei Yue Mun seemingly defied attempts to change them.

In sum, the relevance of a very specific technology in Hong Kong, neon lights, is clearly shaped by a history of urban development in which neon lights have been central, first symbolising prosperity against the economic models of communist China; later as performing identity in a colonise city. In America, suburbanisation led to a decline of urban centres which accelerated the dismissal of neon in key cities such as Chicago or Ney York (Braester, 2005). In Hong Kong, the neon sea of light grew together with a process of densification of the central areas of the city. The history of neon thus shapes its significance in the contemporary urban context. Simultaneously, however, neon opens up new possibilities in terms of how it can be appropriated in a new political context and appears to gain new forms of significance which need to be apprehended to explain Hong Kong's contemporary energy landscape.

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[7] Interview, Wan Chai, April 2015
[8] Exhibition available here: http://www.neonsigns.hk/?lang=en

Emerging thoughts

When we look into urban energy landscapes the central question is how urban citizens live with energy and the kind of dependences that have emerged from the coevolution of urban and energy systems. Understanding urban energy landscapes requires looking simultaneously at the ecological resource flows that sustain the city and how the built environment shapes local energy practices. In Hong Kong, for example, the local energy system is shaped by its dependence from fossil fuels and by the highly dense spatial configurations of the city.

Looking at the cultural histories of specific artefacts facilitates a direct engagement with both energy flows and spatial patterns of energy use. In Hong Kong, neon signs shape its streets. Air conditioning units shape the built environment and how it is experienced. Both artefacts also influence cultural understandings of the city and they may even be used as political symbols. This connections help understand the significance of energy in this particular city and the obduracy of particular energy models in relation to cultural and social understandings of urban infrastructure.

The change of function may call for new artefacts and objects, for new configurations of systems of provision. The social need remains, what changes is how it is fulfilled. However, in cities, for certain significant objects, they remain an indissoluble part of the landscape. What changes is their function and significance, rather than they responded to an unfulfilled need. The secondary functions of the object become important. The lighting demand have not changed but neon has grown outdated. LED lights outperform neon in meeting commercial lighting needs. But neon has not disappeared. As an emblematic symbol of the city, neon has come to perform different functions. Now is examined as art, mobilised as a political tool, and maintained as heritage. Neon is constitutive of the energy landscape in Hong Kong both because it acquires significance through its history but also, because it opens up the way to future possibilities in which such significance can be redefined.

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