Platform Urbanism: Planning towards Hyper-Personalisation

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Abstract—Platform economy is a peer-to-peer model of distributing resources facilitated by community-based digital platforms. In recent years, digital platforms are rapidly reconfiguring the public realm using hyper-personalisation techniques. This paper aims at investigating how urban planning can leapfrog into the digital age to help relieve the rising tension of the global issue of labour flow; it discusses the means to transfer techniques of hyper-personalisation into urban planning for plasticity using platform technologies. This research first denotes the limitations of the current system of urban residency, where the system maintains itself on the circulation of documents, which are data on paper. Then, this paper tabulates how some of the institutions around the world, both public and private, digitise data, and streamline communications between a network of systems and citizens using platform technologies. Subsequently, this paper proposes ways in which hyper-personalisation can be utilised to form a digital planning platform. Finally, this paper concludes by reviewing how the proposed strategy may help to open up new ways of thinking about how we affiliate ourselves with cities.

Keywords—Platform urbanism, hyper-personalisation, urban residency, digital data.

I. INTRODUCTION

IN the history of architecture, there is a legacy of customisation, which is the request initiated by a client to design a building that suits an individual task. Personalisation is a design mechanism working in the opposite direction - it is the individuation actively tailored by designers based on the client's history. Urban planning has progressively become a profession of personalisation that distributes resources tailored to citizens' individual needs [1]. For instance, the Sidewalk Lab offers personalised city experience through the CommonSpace app - a regional digital platform that facilitates convenience, accessibility and immediacy to citizens to optimise urban planning. According to the Sidewalk Lab, its digital platform helps public space managers collect reliable data on how people use public spaces, enabling these spaces to better respond to changing community needs [2]. The Sidewalk Lab positions its citizens as users of the system and urban planning as a profession of system design with a focus on personalisation.

Personalisation actively provides options to users based on their history before users are aware of their needs. As users are being presented with a simulation of themselves on a daily basis, personalisation informs their urban routine and decision

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making. This helps digital platforms to adapt to fluctuations in market demand preemptively by facilitating a certain degree of influence on users' decisions [3]. Hyper-personalisation takes this one step further by using digital data to deliver product recommendations to users in real-time, which facilitates plasticity in planning at shorter time scales [4]. Hyper-personalisation accommodates the needs of the prevailing shift in global demographic, where a growing population of independent professionals are constantly migrating and seeking flexibility in the public realm. Nonetheless, the growth in migration flow creates politics of spaces that increase urban tension and contributes to public's decisions such as Brexit. This paper studies digital platforms and their hyper-personalisation techniques to examine ways to help relieve the rising socio-economic tension of the global labour flow.

A. Background

Part of the rising urban tension is contributed by the speculative economy of urbanism, which takes place in many rapidly expanding cities like London, New York and Hong Kong [5]. Speculative urbanism is an economic phenomenon of rapid investments in the real estate sector with the hope that they will become more valuable in the near future. It brings successive economic growth to cities by accumulating liquid capitals into concrete form, but has contributed to the accelerated rise of real estate prices and immense social tension, which have often been disguised as sole effects of migration flows caused by a worldwide mobile population of labours. In the UK, this has contributed to Brexit, where its people challenge foreign labour policies; in the US, a 1044 km long wall has been built to hinder migration flow from its neighbouring country; in Hong Kong, citizens discriminate against the mobile population from mainland China, which they consider as the main reason for inflation and rising competition. In Hong Kong, this cultural antagonism has escalated to urban events such as collective bullying or physically abusing individual Chinese people who live in the city, and increased difficulties in decision making for both policymakers and the mobile population.

In the case of Hong Kong, where 35% of the workforce are local university graduates and more than 50% of the economy depend solely on business, finance, and commerce sectors, the city is populated with a high percentage of managerial-professionals in a monotonous environment [6] [7]. This builds up heavy competition within the same pool, and careers outside these industries render almost unsustainable. For many commercial metropolises that heavily depend on banking and virtual trading, urban residency is less about the physicality

but to enjoy the convenience of the system.

B. Residency and Digitisation

The ideology of residency is the condition that under certain circumstances, with which the local polity considers beneficial to its system, the city hosts foreign populations, permanent or temporary, to participate as a user of the city. The current model of residency application requires documents that prove the applicant's identity, credibility, financial capability, health, and the ability to comprehend locality (e.g. language proficiency, etc.), which authenticates the applicant's eligibility to participate in the city's activities. With a registry of these personal data, the authority makes a decision with consideration to the city's political, economic, and other current capacities. Presently, this matchmaking system of the city's and applicant's profiles is at random (subject to individual judgment or preference); thus, the operational time and costs for bureaucracy is high. Let's imagine a scenario where a Chinese professional is applying for an academic position in Germany, he/she will have to hand in a similar stack of paper documents at least three times (to the university, the German government, and the state's bank to open a blocked account); he/she will have to line up and register for residency at least twice (i.e. in the German embassy in China and the registration office in Germany), which sometimes take up to a few hours once (there have been conventions of paying someone 200 euros to line up in your place at 5am in Germany) [8]; he/she will have to keep the physical stack of registry papers for the years to come; etc..

The digital space can optimise administrative operations immensely by offering a common digital registry. Applicants will only need to submit all documents once to set up a digital profile (which represent their identity) and a digital portfolio (which represents their credibility). The digital registry can be interconnected to other institutional archives (e.g. publishings for academic papers, universities for academic experiences etc.) for actuality authentication within a single operation. The same digital registry can be used for microsimulations of actors' interactions within the city to deliver predictive models that assist policymakers, designers, and the mobile population in decision making. It can also facilitate a new form of residency that is not limited to the binary rigidity of 'yes or no', but personalised to the needs of the city and its applicants. The tourism industry runs on a similar mechanism: by limiting applicant's civic rights to a place, applicants are given visas (which are essentially papers backed by a registry) that grants them access to tourism benefits.

II. CURRENT MODEL OF PLATFORM URBANISM AND PERSONALISATION

A. National-Scale: e-Estonia

Estonia expanded on personalised residency idea with its e-Residency program - a transnational digital registry that operates identity authentication with digital signatures. Although the e-Residency is neither a travel document nor a domicile permit, it binds you to virtual rights and responsibilities within the country's business sector. The Estonian government rebranded itself as a startup, its e-Residency as a beta platform, and its citizens as users. The city becomes a service where a network of governmental systems talk to each other and promises convenience using commodified technologies - with your digital device, you can pay your tax within any 15-mins bus ride. Estonia, which has a population of 1.3 millions, is aiming at a kickstarter stretch goal of 10 million residents by 2025. Using platform econometrics and computation as regulatory actors, such programs accumulate data and tax revenues from users' participations, and offer city services personalised to each resident's needs. With the same sets of digital profile and portfolio authenticated by the platform, users will also be able to conduct banking services and access international payment service providers, extending the platform mechanism to the economical components of the city.

B. Micro-Scale: DCEP

Money represents a standardised unit of value used as a medium of exchange for the purposes of accounting, which is essentially a registry of capital transactions - a database of credit profiles and portfolios. China's project DCEP (digital currency/electronic payment) streamlines the nation's accounting system using hash technology to provide a means of secure encryption to all digital transactions. Since the operational cost of digital transactions is near zero, micro-scale payments are made available. [9] DCEP has the potential to tackle inherent problems of using papers as representative of money (e.g. high operational costs, counterfeiting, miscounting, etc.). At the point of transaction, DCEP simultaneously accounts and archives the respective consumption and capital data, which constitute a comprehensive database on all transactions and provide exemplary materials for microsimulations. This is ideal for weighing the effects of very particular economic provisions on micro-units of transactions within a city. Let's take the value-added tax (VAT) policy as an example, its simulation requires a panel of individual tax returns and consumption data, which are not usually packaged together in the current system. Presently, urban planning institutions solve this problem by collecting consumption data through household surveys, then manually execute a matching procedure with administrative tax data to deliver an approximate model. The current system takes double the time and resources to collect consumption and tax data separately, the data itself are often incomprehensive and inaccurate to tell who and when consumed what resources. Platform urbanism, such as DCEP, simplifies such operations and delivers a coherent expanded microsimulation with all data packaged at the point of transaction to help assess assumptions on VAT reforms within a single operation. This idea can be further expanded where the system not only offers tax services, but options of tax services based on users' digital profiles to enforce plasticity on planning by taking on an active role to recommend and preempt urban trends - hyper-personalisation.

C. Planetary-Scale: C40

Hyper-personalisation techniques can be extended beyond the human scale to the city. The notable example of the C40 is a city-to-city platform that facilitates a ground for 40 metropolises to share data and knowledge to plan towards climate change. C40 thinks about cities as entities that use legal mechanisms to act out urban design and attributes an indexical planning ideology, where cities become measurable and comparable according to their digital profiles and portfolios. The C40 member cities collaboratively gather data to conceive a comprehensive carbon inventory, which forms the basis of a predictive model that provisions the design of smart cities. The constituent units of this planetary-scale database are individual citizens, the granularity of such micro-units help deliver climate action policies that are personalised to each of the member cities. Along these lines, smart city research becomes analogical to platform urbanism, where the knowledge in user behavioural patterns influences urban transformations and exercises soft sovereignty. C40 facilitates direct communication and data sharing between business sectors across different cities to personalise carbon strategies. This sector-specific networking system is a planetary-scale platform that sees the world as a constellation of cities - a shift from the geopolitical division of nation states to city-states.

D. City-Scale: WeWork

Private digital platforms that are involved in real estate employ personalisation techniques to optimise space and events. For instance, WeWork uses platform technologies and personalisation techniques to create and manage the largest shared workspaces with over 4 million square metres in total around the world. WeWork achieved its success by tailoring spaces and events according to predictions on users' needs. WeWork engineered an app, which collects users' data and preferences for user modelling. The collected data form a digital inventory, which can be used to predict behavioural patterns and provide users with further recommendations on weekly space vacancy and socialising events. Meanwhile, the WeWork app works as in interface to offer help to its users in a number of ways. First, it helps to solve business problems: users can post their business questions and the platform will match the queries with users who can help. Second, it helps to find new customers: users can add business service to their profile and the platform will notify them of new opportunities. Third, it acts as a social search engine, to which users can use to inquire for matching users, services, and events (i.e. product demos, conferences, happy hours, etc.) within the WeWork network. Fourth, it helps to bridge communication between users: users can interact with each other on public posts or send private direct messages on the app. Fifth, it helps to automate reservations for conference rooms and workspaces across a network of WeWork locations around the globe, and offers discount with WeWork collaborators (e.g. healthcare, gym, payroll, etc.). Most importantly, it helps to communicate with WeWork (i.e. see the latest update from the WeWork branch managers, submit requests and complaints, etc.).

Instead of having a forever changing architecture, WeWork incorporated a combination of free and open plan to accommodate a forever changing social network, search engine and weekly event schedule. WeWork is essentially a real estate company that utilises platform econometrics (a quantification metric that indexes social, economic and temporal parameters as its referencing system) and a digital inventory (a user database) to design hyper-personalisation strategies that engage user participation, and relieve the physical demand and tension of space sharing.

III. THE PROPOSAL: HYPER-PERSONALISED PLATFORM URBANISM

Expanding on the ideology of the C40 and e-Estonia, the idea of a platform urbanism is to constellate a network of cities to bring convenience to its users (both local and foreign citizens) through hyper-personalisation. It suggests to offer interconnected governmental digital platforms that: 1) provide convenient means to local citizens in accessing city services to undercut time and operational costs; 2) provide alternative means to a worldwide mobile population in accessing the benefits of foreign city services; 3) provide elasticity to policies and urban planning; 4) preserve the complexity of data in its collection to conceive a digital registry that helps to regulate both information and capital transactions; 5) contribute data to consistently update microsimulations of cities to assess impacts of urban planning strategies; 6) provide personalised predictive modelling to residency applicants that forecast their opportunities in cities; 7) helps citizens and applicants to keep and update portfolios of performance for the convenience of future applications; 8) distribute information on local context to prepare applicants for the new environment and buffer cultural misinterpretation.

Let's suppose an artist A from Tokyo is considering applying for an artist visa in Tacoma. A will first set up a digital profile with her personal information, digital signature, and biometric information (e.g. fingerprints, etc.), after which the platform will inform him/her on eligibility. A will then need to contribute data on his/her daily career routines and preferences to set up a digital portfolio, from which the platform will make suggestions on A's opportunities in Tacoma (e.g. the best place for A to trade his/her artworks, target earnings relative to A's expense routines, etc.) based on his/her history. The portfolio will also help the authority to understand and evaluate the applicant better for decision making purposes. On the other hand, A's voluntary data provides information on Tokyo's art scenes; this provides opportunities for the platform's member cities to collaboratively gather and share information on the sustainability of the art industry (which is one of the biggest social concerns for many speculative cities like Hong Kong). Shall A's application be rejected, he/she can continue to update his/her portfolio to receive suggestions by the platform on alternative means to access Tacoma's civic services (e.g. convenient authentication to other applications, digitally sign documents when trading artworks; opportunities to join art festivals in Tacoma; etc.) that suit A's needs. A can make a rating each time she accesses these services (i.e. micro-

information transaction, which is more effective than traditional social survey in preventing accessibility issues, lack of personalisation, and fatigue answers). This would allow Tokyo artist A to establish an artist's reputation in America and make artworks in Hong Kong to serve clients in Europe.

IX. CONCLUSION

In our information age, platform urbanism helps to promote socio-economic interflows between cities by encouraging communication. It is a mechanism to leverage between centralised governance and a distributive approach within urbanism using the digital space of platform econometrics. It learns from the media industry on ways to design for a soft governance that impacts our built environment. Drawing on existing geopolitical models (i.e. the C40, e-Estonia, and DCEP), it responds to the global phenomena of precarious domicile by thinking of residency as a form of affiliation with cities that is location independent. Platform urbanism facilitates access to city services across borders, stimulating exchanges between cities while juggling to alleviate tensions of physical demands. This platform infrastructure tries to turn the parasitism of private digital platforms into an act of sharing that empowers the distribution of resources and spaces personalised to individuals' needs.

Platform Urbanism offers to render a user in his/her multiple facets simultaneously, for example, the user as a human (i.e. gender, age), a citizen (i.e. criminal history, tax record), a bank account holder (i.e. profile of money transaction), and even alternative value criterions like social values (i.e. social credit system)... all within a single operation. Along these lines, your data becomes your credit, which offers more comprehensive representations of agents within predictive modelling. Furthermore, platform urbanism is a plausible response to the much protested reductive system of capitalistic values as it has the capacity to reconfigure parameters within our value metrics (e.g. to include alternative value criterions in our econometrics, like social values).

Platform Urbanism sees a constellation of cities as a network of interconnected information transaction systems that implements an entire communication process - an urbanOS (operating systems) that exercise power through a stack of protocols. The cloudier side of this story is the world of Cambridge Analytica, which has not been a topic of discussion for the length of this paper, but this does not undermine its relevance to such topics. Nonetheless, this act of modularisation of cities, policies, users, and other agents simplify design and evaluation: the bottom protocol deals with interactions between governmental systems while the top level is the interface, which provides services that directly support user applications. This system of thinking is not only useful in understanding contemporary geopolitics and the effects of planetary-scale computation [10], but in the design for a contemporary system of communication devices that adapts to the rapid transformation of our socio-economic landscape and urban geography. The cloudier side of this story is the world of Cambridge Analytica, which has not been a topic of discussion for the length of this paper; but this does not undermine the relevance of such topics and shall act as a subtext to the design of any information systems.

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