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Article

Insights from a Causal Layered Analysis of "Isfahan 2040": A Participatory Foresight Workshop

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Abstract

Today, urban environments face numerous economic, social, and environmental pathologies. In this study, we conducted a backcasting-based participatory foresight workshop about Isfahan 2040. Ethnographic and backcasting data were analyzed using Inayatullah's causal layered analysis to explore mental models and urban imaginaries popular among city planners. The results graphically illustrate the participants' focus on litany and system levels. Accordingly, we recommend that demystification of perpetual growth, development of one-size-only-fits-one solutions, critical investigation of technological utopias and the concept of smart cities, encouragement of non-conformity, contextual sensitivity and strife, inclusion of the voiceless, contesting the ascendency of masculinity and Citadel image and embodiment of futures knowledge into physical artifacts are important for any urban foresight practice in Isfahan and possibly other cities in developing countries.

Keywords

Participatory urban foresight, futures thinking, causal layered analysis

Introduction

Four numbers accentuate the importance of cities and their futures: 2, 50, 75, and 80. Cities occupy two percent of our planet but accommodate 50 percent of the population, consume 75 percent of the total energy consumption and generate 80 percent of carbon emissions (Ratti, 2016). As far as urbanization is concerned, the year 2008 was a turning point, as for the first time in history, more than 50 percent of the population—approximately 3.3 billion people— settled in cities and it has been projected that this will increase to almost 70 percent by 2050 (UN, 2008). Contemporary cities face a wide array of pathologies including air pollution, environmental contamination, population congestion, resource limitation, traffic and mobility challenges, waste management, and health-related issues (OECD, 2012). United Nations (UN, 2016) and European Union (Commission, 2014) have set lofty ambitions to "overcome the challenges of urbanization" (Ahvenniemi et al., 2017). Therefore, it can be argued that cities are left with no other options rather than to seek innovative and sustainable approaches to social, economic, and environmental problems to meet the demands and expectations of the city residents and offer them the highest quality of urban life (Bakıcı et al., 2012).

To address the above-mentioned challenges, cities around the globe have to build visions of their own and galvanize actions to materialize them. One possible approach to achieve this is to use participatory foresight methods. This paper reports the results of a participatory urban foresight workshop about the futures of Isfahan in 2040. Isfahan is the third-largest city in Iran and is a historically significant city. The study was conducted to explore

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mental models and urban imaginaries popular among city planners in Isfahan municipality. We investigated the tapestry of their thinking by using causal layered analysis (CLA) (Inayatullah, 1998); we contextualized our findings within some theories about different layers of CLA and made some recommendations on how to improve and add depth to participatory urban foresight interventions in Isfahan and possibly other cities in Iran and other developing countries.

The city of the future: what does the literature suggest?

Images of the future are essential to a society's survival (Wuellner, 2011). In reference to the images of future cities, numerous conceptual umbrella terms have been proposed to develop the image and achieve the desired urban transformation toward it in the pertinent literature: optimization and performance logics (Harrison et al., 2010), urban sustainability (James, 2014), the compact city (Fulford, 1996), urban smartness (Batty et al., 2012), smart sustainable cities (Ahvenniemi et al., 2017; Bibri & Krogstie, 2017), the crowd-powered smart city (Wang et al., 2019), human-centered smart cities (Andreani et al., 2019), anthropocentric approaches (Berardi, 2013; Turcu, 2013), "Smart with a Heart" (Menny et al., 2018), Ecocity (Wong & Yuen, 2011) and smart city 2.0 (Trencher, 2019), to name only a few.

Apart from sustainability, one of the most presiding themes shaping the future of cities is "smartness"; Digital City, Information City, Intelligent City, Knowledge-based City, Ubiquitous City, Wired City are some other nicknames used by different scholars (Ismagilova et al., 2019). Smartness is often greeted enthusiastically as "the all-embracing panacea of urban ills" (Fulford, 1996). It was predicted in 2015 that the smart city imaginary is "on its way to become [the] leading driver of urban sustainability regeneration initiatives"(De Jong et al., 2015, p. 22). Nonetheless, there is no unanimous definition for smart cities (Dameri, 2013), and the strategic planning of how to create them is under-researched (Angelidou, 2015).

Despite the fuzzy definitions of smart cities, the widespread application and untapped potential of ICT (Bibri & Krogstie, 2019), digitization and big data analytics (Al Nuaimi et al., 2015), Internet of Things (IoT) (Alavi et al., 2018), cloud computing (Clohessy et al., 2014), blockchain technology (Biswas & Muthukkumarasamy, 2016), new thinking paradigms (Cretu, 2012), smart collaborations (Meijer & Bolívar, 2016), optimization and personalization technologies (Bekiaris, 2019), public-private partnership and open-innovation platforms (Ferraris et al., 2018) are said to be among the building blocks of the next generations of cities. Höjer and Wangel (2015) likewise believe that five developments building the basis for the concept of smart sustainable cities are as follows: globalization of environmental problems and sustainable development, urbanization and urban growth, sustainable urban development and sustainable cities, information and communication technologies, and smart cities. At the juncture of smartness and innovation, Nilsson (2019) offers a typology of smart urban innovations including technological, organizational, collaborative, experimental dimensions which can accelerate urban transformation.

As it can be seen, in all forward-looking visions of the city of the future, ubiquitous technology plays a central role (Angelidou, 2015). Technophiles speak about the enormous potential of emerging technologies and envision future smart cities and urban techno-utopias (Albino et al., 2015). They follow a single-vision logic which can be contrasted with multiple-vision approaches (Guy & Marvin, 1999); within the futures research community, more alternatives are presented for the future of cities and a certain degree of skepticism is expressed toward smart city imaginaries. For instance, Trencher (2019) suggests that we should move beyond polarized discourses of smart city visions and accept the "co-existence of contrasting yet complementary visions" (p. 1). In support of diverse alternatives, Daffara (2004, 2011) criticizes the conventional approaches to urban strategic planning through a macro-historical analysis of linear, cyclic, and spiral patterns of city transformation. Four scenarios are suggested by him for cities of future: a possible future named "spiritual city", a probable future of "collapse scenario", a plausible future of "mass civilization and urban sprawl" and finally, a preferable future of "holistically sustainable cities". Combining images, archetypal myths, and alternative futures, Wuellner (2011) argues, can expand the public economy-and-technology-focused discourses to include "qualitative contextual factors such as identity, community, sacredness, and nature" (p. 662). In this regard, participatory urban foresight workshops can be a useful tool to create an ongoing inclusive dialogue to represent all stakeholders (McGowan & Russo, 2007).

Moreover, depicting the future of cities as a technological promised land has been criticized in favor of more

integral and holistic approaches by combining technological, social, scientific, and cultural solutions in quest of more sustainable cities (Bibri & Krogstie, 2019). Bina et al. (2020), for instance, heavily criticize the "smart city imaginary" which promotes "techno-utopian" fantasies without pondering over risks of technological determinism. Also, the literature suggests that the experience of citizens in smart imaginers is not at the forefront of implementation (Andreani et al., 2019) and their role is ambiguous and can vary from being totally absent to acting as urban sensors or even being subjugated by ubiquitous technologies (Vanolo, 2016). In order to tackle this shortcoming, Sokolov et al. (2019) collect factors/drivers of the development of smart cities; for them, the key success factor for all cities is the involvement of all stakeholders including citizens, businesses, and experts; they also highlight the importance of contextual factors and differences for both small and big cities.

To enrich the diversity of future city images, Collie (2011) propounds that science fiction should be deployed to generate "cities of imagination" to grasp, communicate, and enrich "connection to place in urban communities" (p. 424). Similarly, Toivonen et al (2021) highlight the significance of equipping the next generation of city developers with futures literacy through engaging them with foresight methods. In a participatory foresight case study, Gudowsky et al. (2017) explore the intersections of urbanization and aging society and conclude forward-looking urban images should not be merely technology-oriented but should be built on transdisciplinary agenda.

Method

This paper used a participatory action foresight approach conducted as a futures workshop (Jungk & Müllert, 1987) during which the participants were engaged in a "participative deliberation" about the futures of Isfahan in 2040. A futures workshop—regarded as a "temporary socio-spatial crystallization of expertise"(Dufva & Ahlqvist, 2015, p. 2)— is a future-oriented event in which various stakeholders discuss "possible futures", present different interpretations of alternative futures, problematize the deep-seated assumptions and design action; The process is based on "cumulative discussion flow" and "revelatory statements" (Dufva & Ahlqvist, 2015, p. 1).

In this workshop, 25 managers and employees of Isfahan municipality who are among Isfahan's city planners participated in a one-day workshop. Our purpose was to extract the visions of the participants about Isfahan in 2040 and observe their collective interactions during a future-oriented intervention. Fig.1 shows some photos of the workshop.

Fig.1: some photos of the workshop event

The participants were divided into 5 groups. Some warm-up activities were introduced to let the groups get to know each other and create an informal climate. The participants were then asked to envision a preferable future for Isfahan 2040 and then design backcasting steps in 5-year intervals to reach the action targets. Two facilitators helped

the participants during the workshop. The workshop comprised group discussions, online searches, presentations, whole-group activities, and follow-up reflections. An ethnographic stance was employed (Hammersley & Atkinson, 2007). All group discussions were recorded and transcribed, the whole workshop was filmed, photos were taken and four graduate students of futures studies took extensive notes as ethnographers. All sticky notes, backcasting diagrams, recordings, films, photos, and field notes were analyzed by researchers. After the workshop, the triangulation (Cohen et al., 2007, pp. 141-144) of different types of data (observations, ethnographic field notes, reflections, transcriptions, and backcasting diagrams) was done using CLA by researchers to answer the following questions 1. What is happening in this workshop[15]? (Davies et al., 2015) 2. How do the participants imagine urban futures of Isfahan and what are their limitations?

CLA is a layered method to investigate the future consisting of four levels—Fig.2: litany, system, discourse/worldview, metaphor/myth (Inayatullah, 1998). The litany level shows the pop official description of the issue represented by events, trends, media news, etcetera. The second level offers technical and export-oriented explanations by studying often quantitative social, economic, cultural, and political factors. The discourse layer delves into "deeper social, linguistic, and cultural structures that are actor-invariant" and often "non-negotiable" (Inayatullah, 1998). The last level tries to probe into unconscious/invisible dimensions of the issue: deep-rooted stories, collective archetypes, and ancient bedrock narratives.

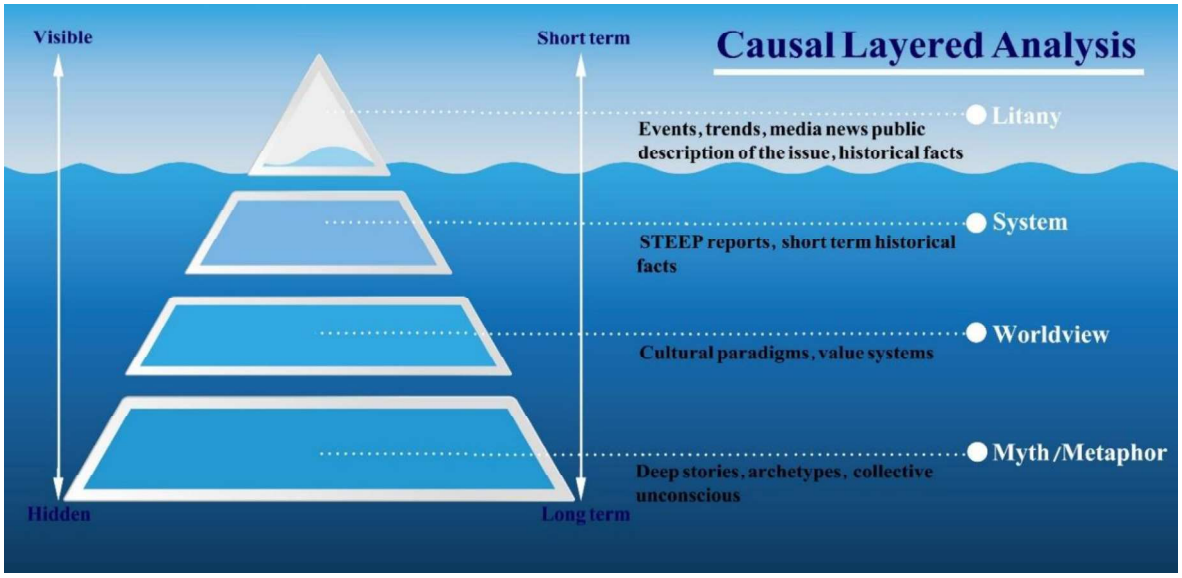

Fig.2: different layers of causal layered analysis (Inayatullah, 2009, p. 37)

We used CLA to thematically analyze the way the participants conceived the futures of Isfahan 2040 to create a tapestry of their futures thinking: What are their litanies? What inner stories do they tell themselves about urban transformation? What discourses dominate their futures thinking? Do they have a holistic image of Isfahan 2040 in mind or a reductionistic one? Do their visions have depth? We also used several theoretical perspectives related to the central themes at each layer to shed some light on the themes, the possible origins of their central weight, and possible ways of deconstructing them. In this particular workshop, since our purpose was to explore mental models of city planners, facilitators did not direct the workshop toward critical spheres or invisible aspects of urban transformation. We used CLA to construct a map of the city planners' mental schemata and pre-suppositions about the futures of Isfahan. By contextualizing our findings in relevant theoretical domains, we tried to further analyze central themes by using a "post-structural future toolbox" i.e. deconstruction, genealogy, distance, alternatives, and re-ordering knowledge (Inayatullah, 1998). Finally, the paper makes recommendations to be taken into consideration in foresight projects in Isfahan and probably other cities in developing countries to create inclusive

[15] We conducted an event ethnography during the workshop.

and integrated urban transformation policies.

In order to record a holistic summary of the workshop, a graphic recorder drew a collage of key emergent themes and reflections during the workshop. This collage was co-created via the collaboration of the participants, the facilitators, the ethnographers, and the graphic recorder. Live- illustrations synthesize the articulated spoken knowledge into holistic codified knowledge. They prevent information overload, foster creativity, boost socio-material processes, help the participants bookmark the information in their minds, and facilitate decision making. Fig.3 shows the final collage.

Fig.3: A holistic collage of emergent themes of the workshop

Results and discussions

The five following visions were chosen by groups; “Isfahan a co-created city garden”, “Isfahan: the most liveable city of the Middle East”, “Isfahan hub of smartness”, “Farewell to private cars” and “Zero-carbon Isfahan”. Fig.4 shows one of the backcasting diagrams created by one of the groups[16].

[16] Other diagrams have not been included for the purpose of brevity

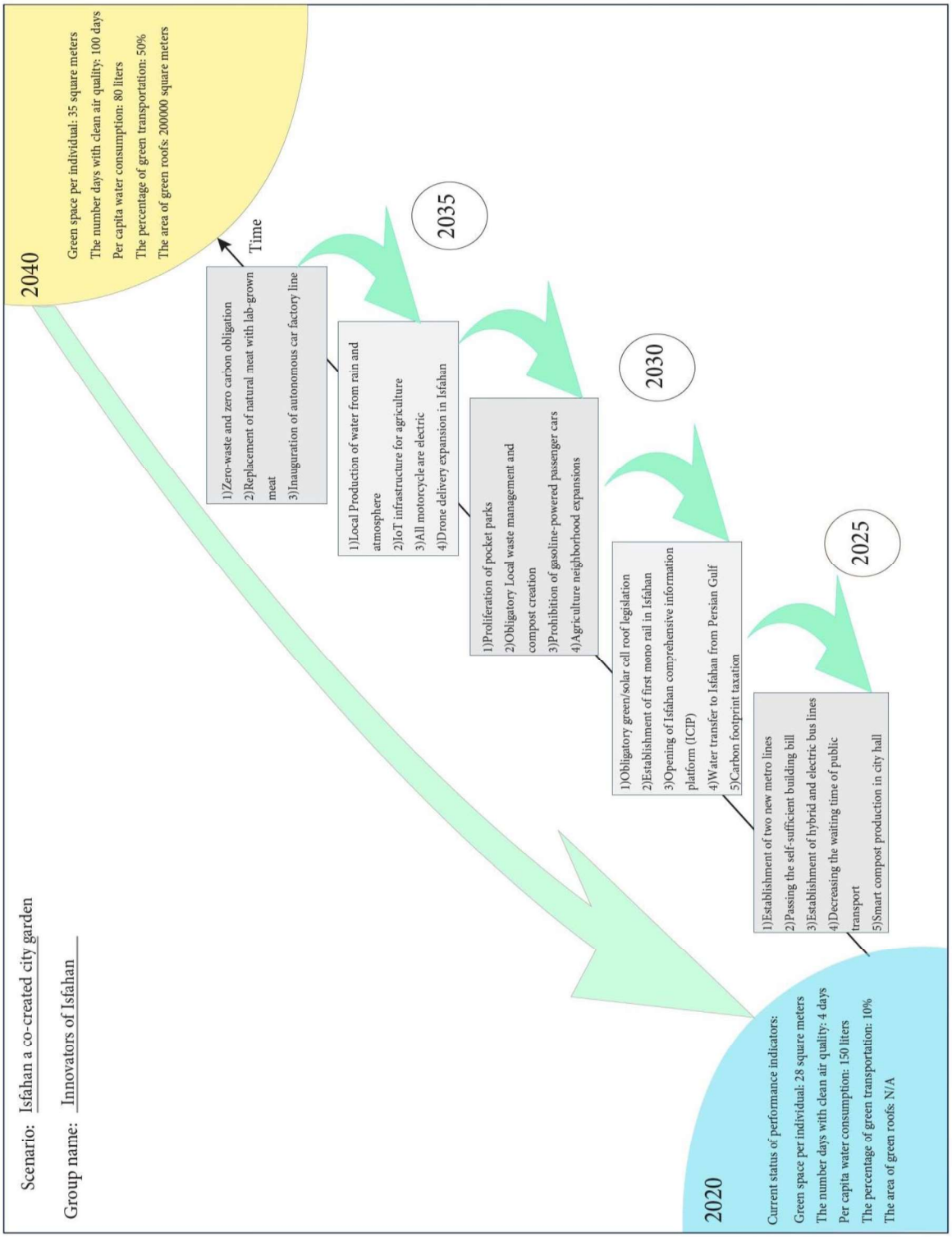

Fig.4: A backcasting diagram created by one of the groups in the workshop

The collage—Fig.3— created by the graphic recorder shows some of the central themes of the workshop which were synthesized during the workshop. Through analysis of the graphic recording, the field notes, the backcasting diagrams, transcription of the recordings, the films, and the photos, the following themes were found to be frequently repeated during this event: "smartness and smart cities", "recycling and circular economy", "co-creation", "big data and data-collection platforms", "Isfahan comprehensive information platform (ICIP)", "crowdsourcing and crowdfunding", "emerging transportation systems", "agriculture neighborhoods", "pocket parks", "start-up culture", "unicorn companies" and "self-sufficient buildings". Table 1 shows the CLA conducted by researchers on the collected data. Frequently repeated themes and causal layered analysis corroborate that a substantial chunk of solutions/policies/actionable steps designed by the participants was locked on the first two levels of analysis. Paradigmatic basis of visions/policies were rarely questioned by the participants. The participants were totally oblivious of the atemporal dimensions of urban transformation. Fig.5 is an attempt to create a visual illustration of Table 1 for different levels of CLA to give it a symbolic depth—a Pictorial Causal Layered Analysis. We have included abstract paintings, expressions, archetypes, and cartoons to create a more visual representation of city planners' mental models about city imaginaries. For instance, on the myth level, in Fig.5 from right to left, there is an image that reads "West is best". Beside it, one can see a picture of Leviathan, an illustration of data prisons, a depiction of "to save everything, click here" and a picture symbolizing the "invisible hand", respectively. The pictures on this diagram are visualizations of the concepts in Table 1. Visual thinking is said to help us decipher complex systems as it reduces their complexity. Fig.5 "consists of 'multimodal complexes' that combine language, images, and other semiotic resources"; visual thinking can result in a "congruent (or concrete) depiction of abstract concepts and ideas" (Fernández-Fontecha et al., 2019, p. 5).

CLA level	Problems and Solutions
Litany	Index aficionados (2, 50, 75 & 80, Performance indicators such as Liveability index, Zero-carbon hype, area of green roof, number of city apps). Just follow optimal smart one-size-fits-all practices (smart meters, autonomous cars, smart parking, smart street lamps and benches, smart houses, smart fertilizer, smart everything, ICIP, mono-rail, drone delivery, unicorn companies, sensors, 5G, IoT, robot city servants, cloud-computing, artificial intelligence, Industry 4.0).
System	Datasphere, Datafication (convert everything to data, self-documenting devices, spime, citizens as urban sensors.). Follow trends: (Privatization, globalization, digitalization, smartization, customization, personalization, decentralization. co-creation, phygitalization). Solutionism (Technology can solve all urban problems) City management as a spaceship (waste management platform, circular economy, control city metabolism).
Discourse/Worldview	Newtonian/Cartesian worldview (the city is a physical container). Techno-utopian discourse (engineer everything!) Consumerism culture. Male machines dominate female fabrics. The culture of conformity and mimesis (I follow). Egocentric discourse (me-centeredness). Mayors rule the world. Top-down discourses.
Myth or Metaphor	To save everything, click here. God gave the earth to man to do with as we wish. West is the best. In "invisible hand" we trust. I consume therefore I am. The myth of unlimited growth. The analogy of a spaceship.

Table 1: The causal layered analysis conducted by researchers

In what follows, we will present some of the results derived from the workshop and the subsequent casual layered analysis.

Isfahan: an upgradable machine!

One of the major challenges of futures thinking is the inability to think holistically. Instead, a one-dimensional reductionistic avenue is often taken. The data collected from this workshop made this limitation transparently clear. Almost all groups had a simple, linear, "tame", and structured" interpretation of the "city". All groups were emphatic about the seemingly magical wand of "optimization" materialized by "top-down" approaches. Hard technical considerations, i.e. "litany and system layers" overrode softer dimensions and there was almost no mention of the intricate interrelations among different dimensions of a city as an eco-systems, as a living organism. The technical language employed was overwhelming. In confirmation of the prominence of litany and system levels and a Cartesian/Newtonian interpretation of the city by the participants, one of the ethnographers wrote[17]:

> "The participants approach futures of Isfahan as a mathematician or an engineer and not as a sociologist or an anthropologist. The algorithm, process, optimal solutions, utility functions, and cost-benefit analyses are the currency of the conversations."

Furthermore, the participants were driven by an omnipresent techno-utopian masculine discourse. Most visions depicted a one-dimensional-technology-infested Isfahan in 2040. Technology was considered as a genuine driver of change and the ultimate determiner of the futures of Isfahan. Amid group discussions, a contributor enunciated:

> "The main yardstick to distinguish between traditional and modern, between past and future is the presence and density of technologies. Once technologies are gone, you are a villager. I sincerely do believe that technology can create a favorable city for all citizens. Isfahan 2040 for me is a city taken out of a Jules Verne novel".

During a group reflection, Ali[18], best summarized the core belief of the discourse of "technological utopianism" (Segal, 2005): "The most certain path to a development is through technological development". When technology is considered as an "exogenous force", the possibility of defining it as an "integral component" of society that affects politics, economy, and culture and, at the same time, is deeply influenced by them disappears (Douglas, 1990).

Any foresight practice in Isfahan can benefit from deconstructing this non-negotiable "technological triumphalism" and problematizing the single-vision dogma so that context-specific images will not be marginalized.

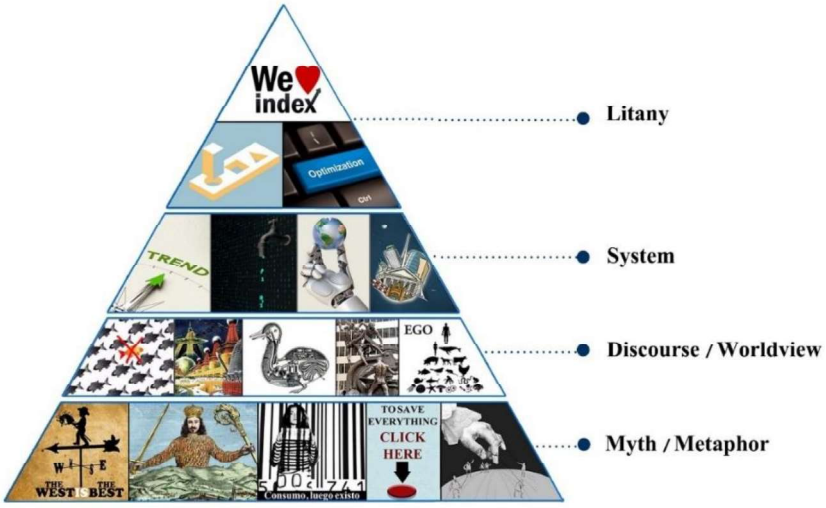

Fig.5: A pictorial causal layered analysis based on themes of Table 1

[17] Field notes and statements of participants have been translated by researchers.
[18] All names are pseudonyms

The ontological bias of considering technology as the major cause of city transformation ignores a holistic transformation and reduces the city from an "organic social ecosystem" or "holon" (Daffara, 2011) to an "upgradable machine". This does not mean that the role of technology should be denied because "purely social relations are to be found only in the imaginations of sociologists or among baboons but equally "purely technical relations are to be found only in the wilder reaches of science fiction"(Bijker, 1995, p. 273).

The implicit assumption of "technological determinism", if followed, reduces "urban foresight practices" into a "positivistic engineering" of emerging technologies. This reductionism can lead to one-dimensional urban development. The collage co-created during the workshop—Fig.3— can be regarded as an attempt to develop a multi-dimensional organic picture of the city transformation. The yardstick of "gross national happiness" used by one of the groups instead of econometric indices is an example of this type of deconstruction.

A deeper presupposition implicit in technology-overpowered images of Isfahan 2040 is masculinity. Throughout history, men have made technology their exclusive/monopolistic terrain thereby regimenting it into a gendered modern myth. Machines grew to be "the markers of technology and the measure of men" (Wajcman, 2000a, p. 788); this discourse has traveled through history, women have been othered and silenced which has contributed to the problematic current status of cities. This discourse was perceptible in frequent repetitions of different derivatives of the word "engineer" during the workshop. One of the ethnographers brought this up in her notes:

> "At one point, in the middle of a group conversation I was observing, I got perplexed. Different derivatives of the word "engineer" were used by every single member of the group: 'we will need more software engineers, 'this should be engineered very carefully', and 'Indeed the municipality is run by engineers'. Social engineering was referred to by one of the managers, as well."

Genealogically speaking, a look at the history of the word engineer shows how it became an archetypically masculine culture. Typically male engineers are equipped with the latest technology and are behind the steering wheel of shaping the future (Wajcman, 2000b). In Iran, similarly, development has been translated into engineering mega-projects such as the Corbuserian project of towers and centralization in Tehran, ubiquitous construction of dams during two decades all over Iran, and recently the water transferring project from the Persian Gulf to the central Iran. In a patriarchal society where women are rarely present in government and parliament, this translation of development has always been conducted by men driven by a masculine mindset of conquering nature. The voice of women and female translations of development have been largely ignored.

The importance of women's agency and voice to picture and build future cities was rarely mentioned during the workshop. The "machines of men" were considered the driving images of Isfahan and not "the fabric of women". On the myth level, this graphically illustrated the domination of the myth of Citadel over Garden as a city-form (Akkerman, 2006). Nonetheless, contradictions arising from the current malfunctioning cites which were promised to be well-functioning may lead to the re-emergence of the Garden myth in the city of the 21st century (Akkerman, 2006). Once the lens is widened and the silenced gender does enter the picture, future city imaginaries can radically change. Efforts have been made and should be continued to contest this ascendency of male discourse and question the male symbolic representation of technology/city.

"Urban foresight vision buildings" can be more successful if they move toward being a "theater of competing voices"; we have a duty to bring in "other" voices into the discussion of cities of the future in order to "contest the straightjacket" of the dominant narrative, contest gendered norms, and challenge the power relations inscribed to city-forms (Hudson & Rönnblom, 2020). Women's absence from spheres of authority and influence and the religiously institutionalized power relations in Iran mean that problematizing this discourse will be a daunting long-term social undertaking.

The government should import urban development!

"Cumulative discussion flow" of the workshop was predominantly guided by the "used futures": "smartization", "digitalization", "expansion of underground rail systems", and "highway construction" were frequently repeated in groups. The attempts by facilitators to run a group activity titled "newspaper headlines from the future" gave the

following results: "Isfahan surpasses Tehran in Metro expansion". "Isfahan city of bicycles" and "The parliament passes a bill about obligatory self-sufficiency of new constructions", to name only a few, which clearly address either the litany or system levels. In other words, one of the central metaphors of the participants about development in general and city transformation, in particular, was that development is a "mimetic" procedure or "one size fits all smart city in a box" mantra. It can be "transferred" from more developed countries or cities to less developed ones as if you want to transfer the assembly line of Peugeot from Paris to Isfahan. Benchmarking roadmaps of "foreign" cities were the prescription of almost all groups to create visions of Isfahan 2040: Arzoo, with a sigh of regret, professed this in her monologue:

> "We have to hire foreign consultants to develop city transformation roadmaps and deliver it. Why should we start from scratch or reinvent the wheel? Watch the YouTube video of Dubai's development. What is the key ingredient of their success? Emulate the west, create a free zone for investment and hire foreign managers".

One of the ethnographers had a similar observation:

> "Irregularities, contextual and local specifications, and intrinsic differences are rarely discussed in groups. The focal point of discussion is to "emulate" a 'role model' or 'import' a 'template'. The shadow of Tehran is a heavy presence in discussions".

The pressure of imported/purchased images and formulas of development was transparently clear. That is to say, used and second-hand futures were the currency of the workshop which are the result of personal mental schemata, repeated organizational keywords, collective habitus (myth level), and omnipresent global trends. These pop futures lead to the "illusion of transparency" and future being modeled based on "progressive approximations" of past experiences or "experiences of others". In criticism of this mimetic approach to futuring, Inayatullah (2008) propounds that Asian cities have followed the western archetype of "eternal growth" without paying attention to "nature or liveability of cities" and "eastern traditions" and ought to seek new images for their cities. The conducted CLA perspicuously presented the centrality of neoliberal economic orthodoxy and the consumerist culture in the participants' worldviews. The grand narrative of the "invisible hand" was predominant in their unconscious.

During the 20th century in Britain and the United States, the pioneers of implementing principles of neoclassical economics, and in other western countries, "the economic nest got hijacked by the cuckoo goal of GDP growth" (Raworth, 2017, p. 35). But is eternal growth measured by GDP a reliable assessment of development? Donella Meadows (1999) was one of the first visionary thinkers who debunked the idea of growth: "Growth is one of the stupidest purposes ever invented by any culture". When we talk about growth, it is imperative to ask "growth of what, and why, and for whom, and who pays the cost, and how long can it last, and what's the cost to the planet, and how much is enough?" Recently, dystopian images of dire consequences of growthism have been depicted by future historians. They conclude that "a second Dark Age had fallen on Western civilization, in which denial and self-deception, rooted in an ideological fixation on 'free' markets, disabled the world's powerful nations in the face of tragedy" (Oreskes & Conway, 2013, p. 40). The fallacy of endless growth and the unsustainability of capitalism is being demystified by younger generations. According to a poll conducted by the Harvard Institute of Politics in 2016, only 19 percent of Americans ages 18 to 29 identified themselves as "capitalists" (Foroohar, 2016). The Greta generation with their worldwide demonstrations exhibited their disagreements with the myth of perpetual growth:

> "You have stolen my dreams and my childhood with your empty words… People are suffering. People are dying. Entire ecosystems are collapsing. We are at the beginning of a mass extinction, and all you can talk about is money and fairy tales of eternal economic growth. How dare you!" (Thunberg, 2019)

On the litany level, Kate Raworth (2017) argues that index aficionados are turning against the "single, narrow metric" of GDP— as a sole measure of development in favor of more sustainability-based indices. In years to come, neoclassical economy models might turn into a strange aberration. In Isfahan, where community and villages as alternative development concepts have been traditionally cherished, why should we emulate a presumably failing

model and narrative? Who says that perpetual growth is beneficial and desirable? Why should Iran's cities borrow their image of the future from western cities? Addressing these perennial questions can benefit urban foresight practices in megacities of Iran as well as other developing countries.

At the heart of mimetic urban transformation as well as technological utopianism lies the ever-present concept of "smartness" used by the participants as the holy grail of future cities. Nevertheless, the definition and desirability of "smartness" should be evaluated critically and based on contextual specifications. The results of our workshop show that the participants—who can be considered as representative of city planners—"lack an effective future-oriented approach" and the most important task at hand is changing their value systems (Ratcliffe & Krawczyk, 2011). That is to say, Isfahan 2040 is not necessarily a city rife with "sensors", "biotechnology", "5G internet", "IoT", "high-speed trains" and spimes. Companies like Siemens, IBM, and Cisco—pioneers of smart city movement— as the major consultants of smart city projects, pretend to be among the stakeholders of future cities (Hollands, 2015), but actually are promoting, shaping, and solidifying the next "technological frame" (Bijker, 1995). At this stage, the "interpretive flexibility" about the futures of cities allows the genuine stakeholders in developing countries to envision alternative city futures instead of joining the bandwagon of "smartness" before "closure" mechanisms kick in. Once the next technological frame is stabilized, the future strategic decisions will be guided by it, they will re-produce themselves and the strategic window of "thinking about alternatives" and "civic epistemologies" will be closed. During this strategic window, if we were technological somnambulists (Winner, 2014), showed no resistance, and created no alternatives, we would be the consumers of the smart city technological frame. Karl Marx aptly described this "image exhibition":

> "The country that is more developed industrially only shows, to the less developed, the image of its own future" (Marxl, 1974, p.19 as cited in Mandle, 1980).

The popularity of a "future image" or authentication of it by unicorns and governments does not make it the best imaginable future. In fact, there is scant evidence that the implementation of the hegemonic concept of smartness will improve social well-being, lead to equitable communities and reduce consumption, waste, and carbon emissions (Cavada et al., 2015). For instance, tackling climate change complications cannot be subsumed within litany and structure levels with a journalistic caption of "zero-carbon cities" delivered by a "solutionism-based" marketing campaign for "smart energy meters" developed by Siemens. Deep down, at the myth and discourse levels, there is an antagonism between narratives that cause a "preserve-consume" dilemma. This antagonism makes the relationship between environmentalism and consumerism paradoxical. This paradox cannot be resolved with litany/system-level solutions which populated the workshop and backcasting diagrams. CLA is eloquent here: at best, smartness addresses and calls for structural transformations but the western grand narrative of "endless growth" does not get debunked. Unpacking these deep-rooted contradictions can assist "participative deliberations" about the futures of Isfahan because, at the height of a technological framework being advertised and advocated by governments and multinationals alike, the border between pipedreams, practicalities and possibilities gets fuzzy; time and time again, historical evidence has suggested that there is no guarantee that technologies will "behave" as their developers and promoters claim (Evans et al., 2019). As Bijker (1995) states cities "function" because they have been accepted by relevant social groups not because they are the best possible urban design i.e. the Ideal city.

How did the participants conceive the importance of social capacities and collective desires of society? For many of them, the social component of futuring, at best, played a peripheral role, and once more, the power relations kicked in. Based on the data analysis, the municipality, the government, the system, the parliament, the legislator, the regimen or some form of a "centralized power" was held accountable for the transformation of the city in a bureaucratic, top-down, and irreversible fashion. Jalal conveyed this stance vividly:

> "If the government is not determined to change, if required legislation is not passed, if upstream documents are not written, any meaningful change in our city is an illusion. Most of what my colleagues presented is out of people's control. People and citizens are consumers of future and not the creators of it".

In sharp contrast, foresight is usually defined and practiced as a social capacity based on "civic epistemologies" and "agonism". As Slaughter (1996) emphasizes, foresight is a social capacity which allows us to be equipped with long-term thinking ability. It brings future generations into the center of the stage and seeks sustainable solutions In this conceptualization, foresight is a decentralized and emergent process based on "civic epistemologies" (Jasanoff, 2011). Above and beyond this, instead of the system or the government, all stakeholders and citizens are true owners and creators of futures. Even if Isfahan agrees upon "smart cities" as the final destination, it is noteworthy to mention that "smart city governance is not a technological issue" but "complex process of institutional change." Also, "the political nature of appealing visions of socio-technical governance" is another important factor (Meijer & Bolívar, 2016, p. 392); The politics of public-private smart city project—which are primarily profit-seeking— can be questioned. Integrated strategies may help to advance human capital mainly manifested by citizen empowerment and participatory citizens, improve social sustainability and digital inclusion, and galvanize behavioral change through creating a sense of agency and following a humane approach (Angelidou, 2015).

Some observations about the dynamics of the workshop

What about the dynamics of knowledge creation in the workshop? One observation was a lack of familiarity with participative deliberations as a form of decision-building. One of the ethnographers wrote about this deficiency in his field notes:

> "The workshop is an amalgamation of dialogue, silence, over-enthusiasm, indifference and at times apathy caused by the inability to engage in a constructive conversation. The joy of creation and the indescribable feeling of building and narrating the futures of your city is evident in the workshop. While the presentations are conducted, active and careful listening rarely occurs and groups are mainly immersed in their fabricated microcosms. Inside groups, 'the craving for talking' overrules 'the enthusiasm for listening'."

The workshop was like a war room where the general and commanders made strategic decisions for the next military operations. Markers, sticky notes, the unfinished collage, posters, smartphones, Google searches, the backcasting diagrams, debates, whispers, and presentations created a "social-material process". This process acted as a "becoming vector"(Wilkie, 2010): a vector to represent, touch, and create the future. But there was an imagination chasm due to the abstractness of future images. As we discussed earlier, the domain of inquiry for all groups was, to a great extent, limited to technological imaginaries of the future. This can be partly due to premeditation caused by the employed workshop methodology. The facilitators did not directly intervene in the dynamics of the workshop by directing it toward critical spheres or Potentialisation and/or Visualizations (Dufva & Ahlqvist, 2015) because our main purpose was to observe and elicit from the participants.

How can we have affected the dynamics of knowledge creation to add depth and "leaps of imagination" to the workshop? Within the workshop medium, material deliberations and "embodiment of knowledge into physical artifacts" helped the knowledge creation dynamics of the workshop; the graphic recording collage and the printed large backcasting diagrams were great assets in the conversion of codified, articulated, and embodied knowledge into one another (Dufva & Ahlqvist, 2015).

As a general technique, in order to bridge this chasm and provide a multi-layered and comprehensive conception of the future, participative deliberations can move toward socio-material approaches and include "substantive representations" of future cities. It is necessary to design immersive experiences, create a face-to-face communication with the future, and replace third-person learning with first-person learning (Johansen & Ferguson, 1976). They can help the participants to move toward narrowing their "experiential gulf" with the future (Candy, 2010, p. 62). Prototyping is an illustrative example of this substantive representation which transfers the future from a "perfect memory" or a "horrifying image" to a "tangible presence". In other words, as far as human-scale futures are concerned, the "interplay of theory, code and tools" (Dufva & Ahlqvist, 2015) as well as novel practices "through the simultaneous creation of storyworlds, prototypes, characters, and plot" can assist us to explore the interconnectedness of futures "from the inside" (Burdick, 2019). Transformational visions of change "must be felt

at the existential (from within) and structural levels (systems, societal) of existence" (Cruz & Villanueva, 2014) to provoke determination and action. For example, for digitalization which is an irreducible component of smart cities, when facilitators asked the participants in the workshop about the impact of it on Isfahan, they only had some abstract information. In other words, the participants did "not have a first-hand experience of what digitalization actually feels like". An embodied experience could provide them with an active sense-making i.e. digi-grasping (Dufvaa & Dufvab, 2019). In this regard, the motto of the Museum of the Future in Dubai is revelatory: "see the future, create the future". The smart city of "Expo 2020" in UAE and "Songdo" in South Korea as a "blueprint" for cities of the future are ambitious projects of "substantive representations" (Wilkie, 2010, p. 142). Following this logic, foresight workshops can be more beneficial if they are converted from a mere "participation medium" to "immersive platforms". As workshops become more unconventional, and a relative de-familiarization occurs, imagination chasms might be bridged, "out-of-radar knowledge" is likely to be created, and deepening of the discourse and myth levels may be achieved.

Another discernable factor affecting the dynamics of the workshop was an implicit tendency to conform. At the myth level, Iranian culture is strongly supportive of conformity. In one of the presentations, the generation gap was brought up by one of the participants, Fatemeh, and others showed negative reactions:

> "My daughter is 12. For her, the biggest problem of Isfahan is the lack of entertainment opportunities and freedom to take part in them. She loves technology. She loves her mobile phone but she loves freedom, too. Generation Z and Alpha have different visions of Isfahan."

Her distinctive proposal was treated abominably. The next speakers tried to talk her out of considering visions of the following generations by suggesting that they should conform to hierarchal decisions and visions. So should Fatemeh.

It is noteworthy to mention that foresight is not a means of converging divergent opinions and reaching a "consensus". Convergence, consensus, and definitive agreement are in direct conflict with uncertainties and alternative futures. According to Pløger (2004) the continuous debate about differences through "adversarial relationships" is at the heart of planning. Strife is inevitable and should not be swept under the rug in favor of consensus. Strife among different perspectives on discourse and myth levels of CLA is the key to re-imagine the future. Conformity not only negatively affects the dynamics of the discussion flow but can also reinforce the mimetic approach to building future city imaginaries which was previously discussed in detail. Yes, for a fish, it is difficult to swim out of water, but it is the prerequisite to evolve. The recipe of "following the mainstream, trends and popular opinions" will shift futures knowledge created in the workshop away from "out-of-radar" knowledge and lock it on litany and system levels.

Conclusion

In this paper, we presented the results of a causal layered analysis of data collected during an urban foresight workshop. The prominence of litany and system levels in the participants' thinking tapestry was transparent. Also, different levels of causal layered analysis clearly depicted western, masculine and heteronormative values implicit in urban visions of the participants. When a society is predominately patriarchal, gendered norms and power relations depict a masculine image of the city of the future. The concept of smartness, as the literature also suggests, was a leading driver of the futuring of the participants. At this stage in Isfahan and other cities of Iran, and with a certain degree of generalization in other cities, the time seems ripe to question the mainly technological borrowed masculine city imaginaries, include female imaginaries, stimulate originality, and substantively represent futures knowledge. The Goliath of "current urban pathologies" is unlikely to be overcome by the David of "smartness." Technologically smart cities can prove to be socially and culturally underdeveloped. And, the best time to be critical is usually when it is extremely unfashionable to be critical. If we follow the mainstream imported urban futures and color inside the lines, the picture will never change. Re-engagement of social sciences and deconstruction of the dominant narrative can prove to be a good starting point.

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