

Aspirational Design and Messy Democracy: Partisanship, Policy, and Hope in an Asian City

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ABSTRACT

Recent research in CSCW, urban informatics, and sociotechnical systems has proposed new framings and emphases of the city as a locus of research on computing and called for a heightened focus on the entanglements of social policy and design. Yet there are relatively few empirical investigations of actual policy-design entanglements in specific cities, and of those available, non-Western cities are underrepresented. We report an empirical study of the 2010 Taipei International Flora Expo (TIFE) as a case to explore these urban informatics/social computing issues. Specifically, we offer an empirically grounded analysis of design as a mechanism of public futuring and debates, which contributes to a better understanding of “participatory urbanism” [6]; and we do so focusing on a non-Western city, both to ensure a broader representation of urban ways of life and also to de-center Western experiences as the primary basis of urban informatics theory in CSCW.

Author Keywords

Urban design; urban computing; urban experiences; sociotechnical system; aspirational social vision; East Asia; Taiwan; public policy; politics; civic participation

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI)

INTRODUCTION

CSCW researchers have investigated how interaction scales, initially from individuals to dyads or small teams, and more recently to urban-scale social interactions. For example, research on urban informatics [2, 4, 6, 13, 28] views cities not merely a geographical locus for social and technical phenomena but also a meaningful intersection of people, place, and technology in urban environments, which leads to new forms of life, culture, and identity.

This line of research has contributed to CSCW by empha-

sizing the importance of situating the design of sociotechnical systems culturally and geographically, and by highlighting why “understanding the existing human activities, cultural practices, and the holistic nature of a given place should be the starting off point for an urban computing deployment” [13, p. 661]. According to such an understanding, participation in a city implies having a stake and a voice in the city’s future. It includes awareness of the city’s trends and dynamics, its problems and opportunities, its distinctive qualities and identity, and an ability to contribute to public initiatives to improve the city – all of these constitute a mechanism of *public futuring*, which uses “community visioning as a way of building anticipatory democracy and partnerships in the Network Society” [3, p. 640]. This mechanism would encourage people of all ages and of all walks “to gain a better appreciation of their capacity to bring about change within their local community by networking people and re-invigorating a more contemporary interpretation of community values” [7, p. 359].

Yet research in urban informatics focusing on urban experiences such as aesthetics [1] and collective memory [18, 25] is relatively sparse and tends to focus on the experiences of small groups [13]. Additionally, little research explores strategies and best practices to promote public futuring -- e.g., inviting a broader urban public to engage, debate, and participate in urban computing policy and its implementation. Finally, western cities such as London [1] and Melbourne [26] are the dominant field sites, while cities outside of the West (e.g., Asian, African, and Latin American cities) remain illegible to researchers, if not altogether neglected.

In the present work, we report our empirical research of the 2010 Taipei International Flora Expo (TIFE), which was simultaneously a spectacle of cutting-edge Taiwanese technologies and a platform for public debates about the future. Addressing the limitations in present research just mentioned, we offer three interrelated contributions to CSCW research. We investigate a diverse group of urban inhabitants’ experiences of city life and point to how such experiences are situated in design as a mechanism of public futuring and debates. Second, we provide a solid empirical study of the roles of policy in a public design: While CSCW has recognized the need for further exploring the relationships between policy and design [8, 9, 15, 29], there is relatively little empirical literature. Our study sheds light on how

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city/national policies and politics shape and are entangled in urban, public design initiative. Third, the study of Taipei contributes to the “decentering” of the Western-centric perspectives in HCI and CSCW [17]. Thus, we contribute to the current trend in CSCW and HCI to reframe democratizing technology as a sociopolitical matter [17]. Doing so, we believe, has the potential to provide insights for the design of specific urban computing technologies -- what urban computing can do and can be [4] and how it can, in turn, be manifest as a public, participative aspirational vision.

BACKGROUND

TIFE was held in Taipei, Taiwan from November 6, 2010 to April 25, 2011. It featured 14 individual pavilions, including the “Pavilion of Dreams,” the “Pavilion of Angel Life,” and the “Pavilion of Future.” It was organized by the Taipei city government and also supported by the Taiwan central government. Occupying a combined area of 92 hectares of space in downtown Taipei, the TIFE development initiative gathered a network of professionals to conduct various design activities, dramatically changing the physical space where itself as a public event and even the whole city situated, and intending to promote the national identity and collective sense of the future of Taiwan. The expo hosted nearly 9 million unique visitors in total, peaking at over 100,000 people in a single day.

Obviously, flora expositions typically focus on horticulture and environmental protection. However, TIFE was unique in terms of its wide use of Taiwan-developed technologies (e.g., biotechnologies) and emphasis on “scientific arts,” which made it an interesting combination of science, technology, urban design, architecture, and arts. TIFE was significantly influenced by the national development plan “Creative Taiwan” that launched in May 2009 [16] and the “Cultural and Creative Industries Development Act” that became law in 2010 [11]: It showcased not only technological achievements but also creative innovations (e.g., product design, architecture design, creative lifestyle, and cultural and arts performances). All of this is intended to reflect Taiwan’s policy shift from “large-scale manufacturing and production operations” to a “knowledge-based economy” [16, p. 3].

Urban Informatics and TIFE

According to [6], urban informatics as a disciplinary domain is situated at the triangle of place, technology, and people in urban environments. Driven by this triangle and intertwined with *participatory culture* -- a culture that encourages artistic expression, civic engagement, creating and sharing one’s creativities, and social connection with one another [10], *participatory urbanism* has become a new form of city life: It cultivates citizens to become “participating members of a greater collective, diverse culture” and builds “an infrastructure that can better support connectedness with each other and with places” [6, p. 4]; it also opens opportunities for citizens, along with city planners and policy makers, to engage in the collective vision of their city’s

future, which empowers them to “comprehend current complexity, anticipate impending change” [24, p. 642] and shape a plausible desirable future.

Three key issues have arisen in urban informatics literature that are of significance for CSCW and HCI researchers:

1. A distinction between the technical construct of a city and the cultural and social aspects of city life (i.e., urban computing vs. urban informatics), which leads to a research shift from “urban form” to “urban experience” [2, 4, 6, 13, 22];
2. A need to reconceptualize the notion of “the city,” which does not treat particular cities as instances of generic “world cities” but as complex assemblages of specific economic, technological, spatial, and social production [4, 6, 17, 21, 28];
3. An emphasis on how to make the design process democratic, so as to design technologies and practices to make a broader and diverse group of urban inhabitants (not just the young affluent, and mobile [28]) have a voice, be heard, and engage in city life [26, 28].

Our study of TIFE addresses all three of these issues, as follows. Shedding insight on (1), TIFE is an urban design project, which proposes a social vision that is narrated at an ambitious scale, a vision that the public was invited to engage, judge, and buy into. TIFE reveals interlocking complexities of the social and technical worlds as they interact at scale as well as ways of life, skilled practices, forms of social control, living spaces, and subjective experiences.

With regard to (2), TIFE is situated in unique sociocultural, political, and technological context. Taipei, the city where TIFE was held, is a city in search of a global identity. With a population of 2.7 million, it is the capital city of Taiwan, today the home of the most democratic Chinese society in the world, having established multi-party democratic elections in the early 1990s. Its two main political coalitions are defined largely by their positions in the hotly contested debate concerning Taiwan’s status with regard to Mainland China: is it a renegade province or independent state? The coalitions are the Green (led by the Democratic Progressive Party), which tends to favor independent nationhood, and the Blue (led by the Kuomintang or Nationalist Party), which tends to favor eventual unification with China. Meanwhile, since the 1960s, Taiwan grew into a high-income country (2015 population: 23.5 million; 2015 GDP: 528 billion USD; 2015 GDP per capita: 22,469 USD; source: www.focus-economics.com/countries/taiwan) and is known particularly for its IT manufacturing.

According to government documents and media interviews, TIFE was publicly positioned as the first long-term, worldwide event ever held in Taiwan. It represented the joint efforts of industry, the city and national governments of Taipei and Taiwan, academics, artists, scientists, engineers, and the general public to reflect on the past and envision the future. This double set of visions – the ideological and po-

litical dimension of Taiwan's future, and the potential socio-economic power in the prospective industrial market—makes TIFE not just a *place* for urban design, computing technologies, horticulture, and environmental protection but a hub that embraces mechanisms of public futuring and debates.

As for (3), policy and policy makers played important role in designing, organizing, and implementing TIFE. They sought to build on the economic significance of professionals operating in the overlapping creative (e.g., design, computing, advertising, media, etc.) and cultural (e.g., tourism, heritage, parks and recreation, museum, etc.) industries. In addition, the design process of TIFE comprised a network of professionals (government policymakers, engineers, designers, fine artists, etc.) who worked together for several years on the project. Thus, our study of TIFE teases forward how science and technology, privacy, culture and creativity, and nation-building policy are intertwined to shape the design and deployment of sociotechnical systems at scale over time.

METHODOLOGY

Data Collection

We collected data in three ways. First, two of the authors visited TIFE multiple times in person and took field notes regarding their direct experiences of the design. During their visit to Taipei, these two authors also collected 4,000 pages of design process and implementation documents provided by the designers and organizers of TIFE dated from 2008 to 2010. These included TIFE design and planning team's periodical reports to the Taipei city government, technological reports, planning and construction diaries, meeting notes, official publications, design sketches/photos/videos, and email communications between team members, representing a total of roughly 4,000 pages of documentation. Second, the authors conducted 12 face-to-face member check [12] interviews of professionals who engaged in the planning and design process of TIFE reflected on their practices, for a total of 20 hours. Interviewees included lead designers, engineers, and policymakers involved in TIFE, who were selected initially through mutual acquaintance in the Taipei design community and then snowball sampled.

Third, to understand public perception and debates about TIFE, all of the authors collected traditional and social media coverage about TIFE in both English and Chinese languages published from April 1, 2010 to May 1, 2011, including newspaper articles, posts and blogs published on popular online forums and blogging sites (e.g., www.pixnet.net/, the biggest blogging site in Taiwan) by ordinary citizens (e.g., retired teachers, freelancers, doctors, musicians, and students), scholarly publications, and TV news. These data provided evidence of the general public's perceptions of TIFE and understandings of its societal consequences. We chose this time span for two reasons: 1) it covers major stages of TIFE from designing/planning,

launch, to closing; 2) the official report of TIFE provides statistics of positive and negative news on TIFE within the same time span, which makes comparative analysis possible. We used a combination of random and systematic sampling in order to both ensure the representativeness of our data and limit potential bias (e.g., subjective selection of data): 1) used keywords such as “2010 Taipei Flora Expo” and its Chinese version “台北花卉博覽會” in Google search to retrieve relevant articles; 2) used a researcher randomizer (www.randomizer.org/) to generate two sets of random numbers: Set X (article list) included five random numbers from 1 to 10 (i.e., X_1 to X_5), since Google returned 10 results per page; Set Y (page list) included 10 random numbers from 1 to 20 (i.e., Y_1 to Y_{10}), since we intended to sample the most relevant articles (e.g., appeared in the first 20 pages of Google results). 3) systematically sampled articles that were ordered as the No. X_1 to No. X_5 on page Y_1 to Y_{10} -- for example, every first, third, and 8th articles on Page 5, 8, and 10. After removing general introduction articles (e.g., a Wikipedia page), our dataset includes 243 online articles.

This combination of data sources has several benefits. First, the majority of documentation was first-hand data provided by the designers, technologists, and organizers of TIFE. Analysis of such data draws on direct experience of people who were most intimate with the implementation of the project. Second, our data provides a longitudinal perspective (2008-2011) of how TIFE evolved over time, and how a network of professionals collaborated with one another over several years on a project of national significance. Third, the dataset captures different groups' (i.e., organizers and designers, researchers, and the public) understandings of the sociocultural meanings of TIFE.

However, a limitation of this data is that media sources are often crafted narratives, suggesting that our analysis of media coverage may not completely reflect the perceptions and attitudes of the general public. Attempting to address this limitation, we collected media coverage from various platforms and sources (e.g., official news sites, anonymous forums, and personal blogs) with the intention to represent a diversity of perspectives.

Analytical Procedures

Our analysis involved two levels. First, we identified characteristics of planning, organizing, and designing TIFE via an empirical, in-depth qualitative analysis of the collected document and interview data. The coding and interpretation procedures were: 1) All authors closely read through the collected data. The two authors who conducted interviews and visited the expo in person also shared their direct experiences with other authors; 2) All authors examined the thematic topics emerging in the data, and identified a set of narrative themes and characteristics of planning, organizing, and designing TIFE; 3) All authors collaborated in an iterative coding process to discuss, combine, and refine themes to generate a rich description synthesizing how



Figure 1. The Pavilion of Dreams, Lobby (left); the grounds of the Expo (right)

these themes composed TIFE as a design project situated in a unique urban environment (i.e., Taipei), afforded technologically mediated urban experiences, and encouraged aspirational social vision.

For the second level of analysis, we focus on how TIFE enabled civic participation in experiencing and reflecting upon urban projects. This is achieved via a content analysis of the collected media coverage. Two authors, who are native Chinese speakers, were involved in the coding procedures: 1) One of the two authors closely read through the collected data and created a codebook with 17 categories (e.g., source, format, negative/positive attitudes, and political views); 2) The two authors coded the data independently and adjusted the codebook iteratively if necessary; 3) All authors collaborated to discuss the coded data and findings. The average percent agreement between the two coders was 81.6%, and Cohen's Kappa was 0.774, which represents substantial agreement between coders [19].

FINDINGS

In our analysis we came to understand TIFE in at least two ways: *TIFE as a design process*, including a network of professionals (government policy-makers, engineers, designers, fine artists, etc.) who worked together for several years on a thoroughly documented set of design activities, yielding a generative framework of ideas (i.e., the themes, images, aspirations, components, etc., guiding the implementation of the expo); and *TIFE as a public event*, including a public park filled with dozens of pavilions, gardens, paths, and other attractions (Fig. 1, right), which was officially opened for the floral expo from November 6, 2010 to April 25, 2011, and which continues to exist and attract public interests several years later. Our analysis focuses on 1) the technology-mediated urban experiences afforded by TIFE, including aesthetics, creativity, and innovation; 2) the embodiment of the unique images of Taipei and Taiwan created in/around/through TIFE, including how policy goals and partisan politics informed and impacted such a large-scale urban design; 3) the public perception and debates of TIFE emerged in the interplay between 1) and 2).

Technology-Mediated Urban Experiences

One of the most popular attractions in TIFE, the Pavilion of Dreams (PoD) combined technologies, creativity, and arts. It featured an organizing theme of “Hope, Dream, and New Horizon” and five sub-themes (i.e., blossoming, diversity, reciprocity, integration, and love and dreams) demonstrated in different rooms, including the lobby, four galleries, and a Dream Theatre (Fig. 1, left). Without using any real plants, PoD materialized artists’ design concepts and created an individualized, interactive and immersive journey for visitors -- experiencing the harmony between human and nature via cutting edge technology (e.g., the world’s smallest RFID reader, the world’s first no touch sensor, the world’s first intelligence controlled plasma screen, and 3D display for the naked eye) developed by a government-industry research collaboration, the Industrial Technology Research Institute (ITRI). Additionally, PoD was the most successful of all pavilions in TIFE, based on number of visitors, media coverage, and general consensus. As cited in the Taipei City Government’s official report, a survey found that 94.8% of the 1,000-person sample agreed that PoD honored Taiwan.

Aesthetics

According to the designers of PoD, aesthetics was centrally embedded in their design. One designer noted, they found that “*everything in nature moves with certain rules, like migratory birds flying in lines,*” so they tried to recreate the beauty of “*these natural behaviors in the form of technology.*”¹ PoD provided visitors with an experience of aesthetics by engaging them in an interactive journey of “flowers of science and technology” [27] guided by a seed named Yabi, the official mascot of TIFE. Yabi led them through a story whose theme was “the harmonious relationship between the nature and human beings, and between science, technology, and arts” [27, p. 205]. As a designer described, “*Yabi is similar to the rabbit in Alice’s Adventures in Wonderland, who guides the visitors to enjoy an adventure on a dream*

¹ Unless otherwise noted, all quotes were originally in Chinese and have been translated here by the authors.

land.” This story started with a visual and audio exhibition of a slowly blossoming gigantic mechanical flower and the sound of nature (leaf-shaped paper-thin speakers developed in Taiwan) (Fig. 1, left). Visitors were immersed in a “special environment where people and nature were reciprocal, co-existing, and integrating with each other” [27, p. 205] by walking through different galleries that provided a variety of interactive experiences with technologies, such as turning into insects (as seen on the screen) so as to travel in a maze of tangible digital petals. At the end, each visitor released a unique personalized digital flower, using the activity data recorded by the RFID smart wristband that he/she wore, the flower flowed down a river to join thousands of other flowers in a moving vision of national unity.

Such technology-mediated experiences moved the visitors. For example, a photographer noted in a commentary,

I saw a middle-aged man and his mother, who was in a wheelchair, visit Pavilion of Dreams. They held their hands and looked at the butterflies on the screen, smiling to each other. I was thinking: though his mother was old now, she might feel like a little girl again in this Pavilion. I didn't have time to take a picture of such a beautiful moment, but I will remember it forever. I really appreciate how the Expo made all of these beautiful things possible – beauty of environment, beauty of people, and beauty of life.

Similarly, two visitors blogged about how PoD recreated collective memories of Taiwan, motherland, and childhood for many people and inspired them to confront challenges in daily life:

I think Pavilion of Dreams is beautiful because it reminds me of my childhood and what my motherland, Taiwan, looks like. I believe that many people share similar reactions. One reason is that it used technologies to realize the imaginative world of Jimmy's “Hide in A Corner of the World” artwork. It's amazing that one can embody imagination in this way. [Jimmy (幾米) is a famous Taiwanese illustrator and author.]

I just lost my job. Luckily, I got a ticket to visit the Pavilion of Dreams so I went there at noon on a cloudy day, trying not to think about my unemployment. I was inspired and completely transformed! I felt more confident about the future and myself again as a result of the visit.

Creativity and Innovation

PoD provoked experiences of creativity and innovation for both the public and the design team, albeit in different ways. For the designers and engineers, the need to showcase cutting edge technologies while creating experiences of aesthetics generated tensions that stimulated both design and engineering innovations. One example is the design and implementation of “pupa” in the Gallery 3 of PoD, as an ITRI engineer told us in the interview:

Our sensor had [previously] been used as a medical device. Patients had to sit still; otherwise, it would not work. But

the designers insisted that “visitors cannot be easily controlled” and asked us to use the sensor in a big open space with a lot of noise. So we had to keep upgrading our sensor, which forced us to upgrade our technology. We also came out with an idea to add a “pupa” on the tree. Visitors were supposed to put their hands on the pupa, keep still for a second, and imagine that they were inserting life into the pupa. This story provided a reason to keep visitors still long enough for our sensor to detect their heartbeats; then butterflies would come out of the pupa, shown on the screen.

Many visitors appear to have assumed that everyday citizens cannot relate to IT research or cutting edge technology, in part because the latter is “cold” in the sense of being technical, abstract, or disconnected from everyday life. Yet PoD deployed cutting edge technology to simulate embodied and engaging interactions with the natural world, including simple acts of listening, of reaching out to touch, of moving the body through obstacles and in changing light, even carefully attending to organic life. By juxtaposing these two different universes, the pavilion surprised its participants, stimulated their interest in emerging technologies, and above showed them that they could relate to these technologies, making visitors alive to new possibilities. Suddenly the notion that art and science could be brought together in Taiwanese innovation became very real. This transformative experience was summarized in a news article at the time:

This Expo let us know that science and technology are not just “cold” research but something that can intimately interact with people, and can create feelings of being moved and inspired ... If we can bridge the development of science and technology with our creativity and local culture, it will be Taiwan's future.

The design and the experience of the pavilions appear to have been illuminating for both the public and the designers/engineers. It was as if neither group initially fully bought into the vision of a Creative Taiwan, but their experiences of making/visiting the pavilion changed that. This offers evidence to support the idea that design actually did bring about a new understanding of Creative Taiwan and a visceral sense of its immanence.

Design, Policy, and Politics

As stated earlier, TIFE not only represents the benefits of art-science cooperation; it also embodies it. Such a design practice was motivated by the national policy (“Creative Taiwan”) and the emphasis on design and the arts—mechanisms by which Taiwan's creativity are hoped to be unleashed on a par with its existing engineering know-how. In Taiwan, as in many other places pursuing such policies, the goals are not merely economic but they are also part of the project of forging a national identity. The policy seeks to construct a vision of Taiwanese culture that can drive the economy and also identify Taiwanese styles and products globally. It does so first by identifying distinctively Taiwanese creative industries (e.g., traditional Taiwanese

crafters) and also industries where Taiwan is particularly strong (e.g., computer science and engineering); then this policy seeks to experimentally fuse these industries, in an attempt to cross-pollinate their respective strengths. Taiwan is well known for its engineering and manufacturing, but many in Taiwan feel that its engineering culture is too conservative, ultimately inhibiting creativity and innovation. The alternative, cultural creativity, is intended to help Taiwan emerge from its position making OEM products for other IT innovators, such as Apple, so Taiwan can emerge as a source of design and innovation. Thus, the design intention of TIFE was to showcase not only technological achievements but also creative innovations (e.g., product design, architecture design, creative lifestyle, and cultural and arts performances).

The “Creative Taiwan” policy informed and implicated the design of TIFE in the following ways:

An Image of Taipei and Taiwan to Engage Its Citizens and the World. Though TIFE as a public event has justifiably been perceived as political, which we will discuss in the next section, TIFE downplayed its politics, at least on the literal level. Above all, from its conception, TIFE was conceived as an opportunity to host an international event, akin to hosting a world expo, that would offer an aspirational image of Taiwan to engage its own citizens and the international community, one that reflects its particular strengths and is worthy of being on the world stage.

In various ways, citizens of Taipei and Taiwan actively participated in and contributed to the design and deployment of TIFE: They were involved in the collective process of proposing and selecting logo and mascot design for TIFE by entering public competitions, brainstorming, and online voting from early 2008 to October 2009. According to [27], 1,669 entries for the logo design and 3,469 entries for the mascot design were received from the general public. As a result, a logo of five people-shaped flower petals and a seed mascot named “Yabi” were selected via citizens’ online voting and then approved by the Taipei government. Additionally, though citizens were not directly involved in the IT and design execution processes, they monitored the progress of TIFE, demanding explanations and necessary modifications for questionable designs (e.g., why using plastic bottles to build a “green” building?) and policies they viewed as questionable. In some cases, they contributed directly and materially, for example, a local farmer who grew flowers for the expo, saying, “*The Flora Expo is a rare opportunity for Taiwan and an opportunity for the flower growers to make their name. Even if we should lose money growing flowers for the sake of the Expo, we would still do it to give Taiwan a chance to take the world stage.*” [27, p. 9]. In addition, citizens enthusiastically participated in the Taipei City Garden Promotion Plan (a policy to promote growing more plants at home and in the neighborhoods) in order to extend the effects of TIFE throughout the Taipei City. Finally, over 28,000 citizens signed up to be

volunteers at TIFE and 14,860 provided services. These volunteers’ dedication, high quality service, and hard working were considered the key to the success of TIFE.

Deemphasizing politics and attempting to speak to and for all citizens of Taiwan became the designers’ main strategy to create experiences that would reach beyond any particular coalition. As a lead TIFE designer told us in an interview,

It’s difficult to find a place on the international stage for Taiwan. So I think our mayor’s plan was to hold international events through which outsiders would know more about Taiwan. Especially after Shanghai World Expo 2010, Taiwan didn’t want to be marginalized. This was the original idea to hold TIFE. But what should TIFE do to highlight the Taiwan spirits, Taiwan identity, and Taiwan charisma? To be honest we did not think of those complicated political issues, just simply what made Taiwan “seen” by the world.

Another designer added,

I think the image of Taipei is always vague compared to those of other famous cities such as Tokyo, Hong Kong, and Bangkok. It is relatively easy for architects to convey the “Taipei look,” such as its skyline, to the other parts of the world. But what we, as designers, organizers, and Taipei citizens wanted to show was our identity. I don’t know how to exactly define our identity, but I know it is a warm, fuzzy atmosphere in which you are immersed once you come to Taiwan. You would feel warmth, easiness, hospitality, and friendliness here. One of our design goals is “feeling moved.” Visitors would feel moved when they come to TIFE.

These quotes encourage people to view Taipei/Taiwan on entirely new terms than it had in the past and to recognize its ongoing effort in winning its seat on the world stage. The articulation of Taiwan’s identity not as a political stance in the Taiwan-China dispute, but rather anthropomorphically -- Taiwan as feelings of friendliness, warmth, and hospitality -- circumvents political divisions while finding a basis for the design’s social ethos.

Themes of National Change and IT Innovation. From the very beginning, the TIFE planning and designing process was positioned as a story of change (“*changing and constructing Taipei City into a ‘World-Class Capital’*”), innovation (“*the country’s soft power*”), and expectations for an autonomous, democratic and assured future (“*respects freedom and protects human rights*”). In one of our interviews, a lead designer of TIFE told us,

To be honest, Taiwan’s flowers are not the prettiest in the world. Talking about flowers, you would think of the Netherlands not Taiwan. I really do not think flowers are the key of TIFE. Then what’s the point of having TIFE and showing those flowers? When we talk about Taiwan, we typically think of micro-electronics and technologies. So the Taipei

city government's idea was to focus on Taiwan itself, not just Taiwan's flowers. This may be different from what other countries thought of Flora Expo.... What does Flora Expo do with science and technology? But for us, we wanted to create flowers of science and technology, which may give us some ideas about what Taiwan should look like in the future.

Thus, while TIFE was ostensibly for displaying flowers (i.e., the beauty of nature), its actual story was not about flowers but “flowers of science and technology”; it was not about beauty but the “power of beauty” [27, p. 23] understood in very specific ways—the integration of science, technology, and arts by means of which Taiwan, develops into a materially and politically autonomous nation.

To achieve this goal, one major strategy was to use only Taiwanese-developed technologies and local artists and designers:

Every detail of TIFE, from the very beginning of the planning period to hardware and software design, construction, and the exhibition organization, operation, and management after completion of construction, was entirely handled by Taiwanese [27, p. 60].

TIFE sought to be a collective narrative told by the people of Taiwan, using their own language, experiences, and technologies to tell that story. The general producer of TIFE, who was responsible for all stages of TIFE from planning to completion, emphasized the collaborative nature of TIFE, saying: “I deeply feel that everyone involved in the exposition was amazing! Each step and each part of the exposition were vivid evidence of Taiwanese people's hard work. It is truly made in Taiwan!” [27, p. 23]. The phrase “made in Taiwan” featured prominently in both the reports and our interviews, and the sense of national pride was palpable, in this case almost as if the speaker himself was surprised to say it.

Taiwan-developed technologies featured prominently in TIFE's most high-profile pavilions. From the planning dairies and interviews with lead engineers from ITRI, we found that the first step for designing TIFE was to find Taiwan-developed technologies, as an ITRI engineer recalled in the interview:

The general producer's first visit to us [ITRI] was mainly to ask “What lead technologies were developed in Taiwan, so we can use them in TIFE?” He and his team made it clear that we must exhibit these technologies in TIFE to show Taiwan's power of technology, though at that moment we had no design idea yet.

This quote suggests that as much as the technology-mediated experiences of aesthetics, creativity, and innovation provided the background, the design constraint to demonstrate Taiwan-developed technologies occupied the foreground. This constraint had the benefit of connecting people directly with these technologies, helping them intuitively

understand their aesthetic power. But it also shows that of the two driving generative forces behind TIFE - the urban experience for city building and the push to demonstrate technologies made in Taiwan -- neither could be understood and experienced without another.

Politics and the Practice and Process of Sociotechnical System Design. Though TIFE intentionally downplayed its politics, from the very beginning it was inevitably situated in both urban politics (e.g., Taipei mayor election) and national politics (e.g., partisanship). For example, Flora expos held throughout the world have been usually launched, planned, and managed by non-profit organizations (e.g., Floriculture Development Association). TIFE is an exception. It was initiated and implemented by a top-level politician (then Taipei City Mayor Hau Lung-Bin) and government departments (e.g., Department of Economic Development of the Taipei city government). Mayor Hau described his motivations to initiate the plan:

To introduce Taiwan to the international stage so that the world could see the country's soft power in all aspects, I had been proactively changing and constructing Taipei City into a “World-Class Capital” since I was inaugurated as the Mayor of Taipei City. I wanted to build Taipei into a city that respects freedom and protects human rights. [...] To make Taiwan part of the inter-national society is not only a slogan. It requires many solid-grounded efforts.... In 2006 I started to feel the capabilities of Taiwan to host the International Flora Exposition [27, p. 12].

Already we can see in this quote the intention to use the Expo and Taipei itself as a social experiment to improve Taipei's international standing and to advance Chinese democratic ideals. At the same time, the fact that TIFE was a Kuomintang (Blue) politician's initiative made it susceptible to political entanglements. The planning and designing TIFE was overlapping with the campaign timeline of Taipei City Mayor election. Since TIFE would be held in Taipei, both Blue and Green candidates used TIFE to advance their political goals: For example, the Blue candidates urged TIFE designers and engineers to implement creative arts and cutting-edge Taiwanese technologies, with the hope of winning the election through the demonstration of technological innovations on a global stage. Such desires often complicated the design process, as one designer told us,

Sometimes our design was different from what the City Government expected. Sometimes we could not fulfill their specific demands. For example, we were told to use as many touchscreens as possible because the City Government wanted to show off interactive technologies. But from our perspective, there are many more types of better interactive technologies than touchscreens, not to mention that touchscreens don't really fit our design ideas.

In an attempt to discredit Kuomintang's efforts and win the election, Green candidates often accused their opponents of corruption and mismanagement of funds for TIFE.

The attack negatively impacted the design team as they were compelled to justify and motivate their design decisions via public media. For example, the architect of three pavilions (Pavilions of Angle Life, Future, and Dreams) had to explain her design idea to the public in an interview as a response to accusations alleging corruption:

We designed these pavilions as real ‘green buildings,’ which requires us to find unique materials and experienced professionals to create bamboo architecture, plant walls, and chairs mad from recycling papers. So it is reasonable if the construction cost is higher than that of a normal concrete building. I don’t care about the Blue-Green conflicts but politicians should have some basic ethics! Don’t let politics speak over professional specialization.

Public Perception and Debates

Thus far, we have focused our analysis on how TIFE designers and organizers turned dry public policy into an urban exhibition that engaged millions. However, TIFE is not without problems. As shown earlier, criticism of TIFE included substantiated accusations of corruption/overspending; dispossession of poor, elderly, and ethnic minorities to create the site on which it was placed; failure to advance the China-Taiwan conflict; under-specified relations between democratic freedom of speech and cultural creativity; and the treatment of culture and creativity as “industries” further perpetuating neoliberal reduction of everything to its economic costs and benefits.

Using our sample of media coverage (N=243), we now turn our attention to explore how TIFE enabled civic participation and public debates overtime, especially with regard to the aforementioned issues. In particular, we foreground two aspects of the public perception of TIFE: General attitudes toward TIFE (i.e., positive, negative, mixed, neutral) and political discussions (i.e., Explicit – Blue vs. Green conflicts; Implicit – general politics but no partisan politics; none). We also used direct quotes from popular online articles (e.g., receiving more than 50 views, likes, and/or comments) to support our analysis.

Fig. 2 shows results of the general public’s positive and negative attitudes toward TIFE over time. Mixed and neutral attitudes were not presented due to their very low percentages. We also compared our results (up) to the data provided in the official report of TIFE (bottom). It should be noted that the official report seemed to downplay the negative perception of TIFE: Compared to our findings (i.e., negative press dominated the online news outlets), the official report painted a more positive picture, though negative press was acknowledged. However, both figures show two consistent patterns in general: First, prior to October 2010, the public perceived TIFE as very controversial since negative media coverage accounted for a large portion of the overall press. Scholars, journalists, and citizens all participated in debates on whether TIFE was a good initiative for Taiwan. For example, an anonymous citizen questioned the misleading information published in a partisan news

outlet. He conducted his own research on the planning and budgeting of TIFE and encouraged citizens to think critically and independently about TIFE. He said the following on his blog (365,433 visitors) at www.pixnet.net, which received 100 “likes” and 22 comments:

Before getting too angry with our Mayor, I decided to Google relevant information to figure out what’s going on myself. Media in Taiwan are associated with Blue, Green, and Red [China]. We should not totally depend on media and be misled. We should make our own fair judgment using our own resources. [...] After my research, I disagree with the Government’s idea of using TIFE to make more citizens love flowers and appreciate the beauty of environment.

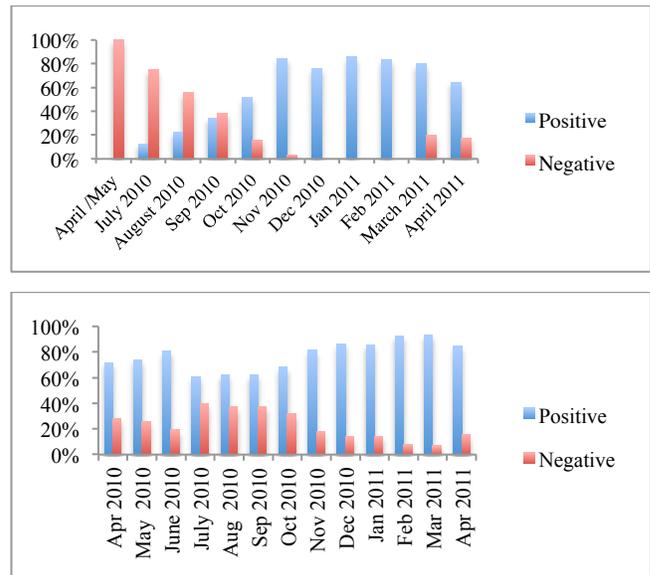


Figure 2. Positive and negative media coverage toward TIFE (up: our data; bottom: official TIFE report)

Another anonymous citizen was also cautious about partisan news reports and showed his support of the Taipei City Government and TIFE in a blog entry at MEPO Blog (123 likes, 10 shares, and 8 comments):

I have been so confused by so many attacks on the Taipei Flora Expo, in part because popular media seems very manipulative. It’s hard to tell the validity and authenticity of the reports. Recently, this Expo has been compared to a farmer’s market, or even lower status than that. Key words associated with the Expo are always “wasting money,” “corruption,” etc. So I did my own research and list some evidence here. [...] I believe that after reading these, you would understand that all the attacks and rumors about the corruption of the Expo are not true.

Second, over time, public perception of TIFE did transition from negative/controversial to positive; even the news outlets affiliated the Green party showed similar patterns (i.e., transition from negative to positive or neutral over time). For example, in our dataset, two negative

news/commentaries were published in April and Sept 2010 by *The Liberty Times*, a Green party press outlet. Both strongly attacked TIFE and the Taipei City Government. However, there was also one positive news report published in February 2011 and two neutral ones in April 2011 by the same newspaper. All three did not show any negative attitude toward the Taipei City Government or the Blue party. There was an increase of negative press upon the closing of TIFE (April 2011). However, the negative coverage did not attack TIFE, the Taipei City Government, or the Blue party but mainly criticized the refund process of unused TIFE tickets.

Two reasons could explain the transition of the public’s perception of TIFE from negative/controversial to positive: First, TIFE officially opened its doors on November 6, 2010. Since then the general public were able to experience TIFE in person instead of getting information from media sources. For example, a citizen of Taipei blogged, “*I heard about the overpriced Kongxincai [water spinach, a kind of morning glory] so much. But when I went to TIFE, saw how those vegetables were displayed and maintained, and what ecological meanings they had, I feel those critiques are too picky. Also there are hundreds of vegetables and plants, why do they only focus on Kongxincai?*” Second, one designer informed us that Wen-hsien Chen, a well-known television commentator known for her political independence, published her support for TIFE on October 16, 2010. Her commentary helped change how the general public perceived PoD - from a symbol of political corruption to an honoring of Taiwan. She wrote:

Among all the attacks to TIFE, I have seen how the Pavilion of Dreams presents a wonder for us. I have seen artists, architects, engineers and technologists adhere to their dreams and make Pavilion of Dreams such a success. Through them I start to realize why Taiwan, an island filled with uncertainties and turbulence [because of its liminal status as Chinese province vs. independent nation], can still be so strong: Some people are always here, at the corner, outside of the chaos of politics and mass media. They are making every effort to make our motherland better, step by step.

Fig. 3 demonstrates the political perception of TIFE over time. Prior to October 2010, online discussions on TIFE were highly politicized. The media closely connected this event to the Blue vs. Green conflicts, including commentaries such as “*I think Kuomintang considers this a life-saving straw to win the election*” and “*the Mayor always uses the excuse of ‘arts and science are priceless’ while this Expo is just his personal show.*” Many citizens were well aware of this trend. They understood that it might be inevitable to discuss politics while discussing TIFE: Without coordinating resources and funds at the national level, it was impossible for TIFE to be successful due to its massive scale and ambitious design intentions. Yet they also argued for depoliticizing TIFE:

This Expo cannot happen without political support; however overpoliticization will make the Expo fail and lose its focus. We definitely should assess whether the Taipei City Government is corrupt or not in handing TIFE, but we shouldn’t overdo it; otherwise, the whole world will laugh at us. What’s needed is close monitoring of government activities in advance and carefully audit the expense reports afterwards. (a blog entry posted by an anonymous citizen of Taipei, receiving 78 likes and 7 comments)

I think the Expo is the victim of the mayor election and Blue vs. Green conflicts. It also represents the biggest danger for Taiwan: Pan-politicization. Taiwan does not have too many chances to play a role on the International stage. So everyone, please value every precious opportunity like this, and please support such an international event! This is much more beneficial for Taiwan’s image in the world than our dollar diplomacy. (a blog entry posted by an anonymous citizen of Taiwan who lived in Europe, receiving 54 likes and 4 comments)

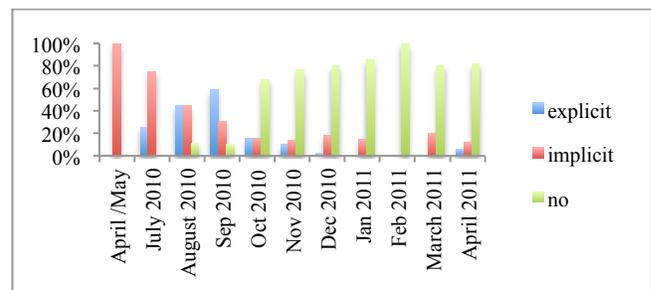


Figure 3. Political perception of TIFE over time

The official launch of TIFE, coupled with the citizens’ changing attitudes, seems to have contributed to public debates’ being less political and more Expo-focused after October 2010. This timeline is also consistent with the transition from negative to positive attitudes toward TIFE as shown in Fig. 2. We draw two insights from our content analysis: First, once the public perception of TIFE became less political/partisan, the general public’s attitudes toward TIFE also became more positive. Second, the participation of a diverse group of urban inhabitants shaped public debates on TIFE. Though well aware of the controversy of TIFE, many in the public did not blindly follow media narratives but formed their own opinions and expressed them via social media. Once TIFE officially opened to the public, citizens experienced it in person and shared their most positive opinions with others, gradually but significantly altering the terms of the debates.

DISCUSSION

In this section we discuss how our findings contribute to a better understanding and further address the three urban informatics/social computing issues we raised at the beginning of this paper: 1) design urban experiences for diverse groups of citizens as well as to encourage them to participate in and reflect on such experiences; 2) the entanglement of design, policy, and politics in urban environments; and

3) “decentering” the Western-centric perspective on urban computing and urban experiences.

Messy Democracy in Public Futuring: “Dreams that Everyone Wants” (?)

Urban informatics and CSCW researchers have argued that both *diversity* (e.g., experiences for groups of diverse ages and financial statuses) and *agency* (e.g., actively producing rather than consuming or restraining urban living) [4] should be keys to the process of designing and implementing urban computing. Yet they both are challenging to achieve due to an ethical issue – how to make such a process democratic rather than autocratic. One reason is that massive-scale sociotechnical systems are often more like utilities than consumer products: they are often natural monopolies. Citizens cannot vote with their wallets or opt out of bad systems. For TIFE, this ethical challenge became: how to invite the people of Taiwan to collectively envision and create “dreams that everyone wants,” dreams that “honor Taiwan”—and to do so in a form of public futuring that both accommodated the political and cultural heterogeneity of its people and acknowledged their contributions to shaping a desirable future for Taiwan.

As a collective design process and product, TIFE did demonstrate several democratic values by providing opportunities for the general public to appreciate, criticize, interpret, and engage in a massive urban implementation. In this process, citizens not only reinforced their shared memories of the past and the present of the city but gathered together for a common goal – to collective reflection about near-future national-cultural-economic priorities. TIFE had more specific mechanisms for involving the public as well: citizen participation in decision-making (e.g., online voting for logo and mascot design), quality assurance (e.g., public monitoring, questioning, and debating), crowdsourcing (e.g., providing resources from all over the Taiwan to support the expo), and volunteering. TIFE also used several tactics to encourage such public participation. That TIFE unfolded over many months in a huge public space, filled with gardens and pavilions, inevitably invited a diverse and evolving response by the public, in the media, and so forth. We have offered evidence here—and there is much more in our data—that the public’s reaction did evolve over time, which suggests that the meaning of the event was not dictated or controlled from the beginning, but entailed at least some bottom-up interpretation and sense-making. Another tactic is the fully integrated—experientially, narratively, thematically—demonstration of creative IT innovation in Taiwan. By demonstrating these technologies—not in booths at consumer electronics shows—but in a coordinated, nationalistic, and widely accessible event, TIFE situated its visitors temporarily within Taiwan’s (projected) future, to experience how Creative Taiwan might one day look and feel. TIFE is not a merely description of a future Taiwan, but a prototype that is envisioned and built by the people of Taiwan and invites the world to directly experience it.

However, as a government initiated and funded urban deployment, TIFE was far from a grassroots project, problematizing claims that it was “democratizing.” As a project of a certain scale, its success depended on meeting high standards of execution, strategic planning, technical expertise, and the acquisition of significant financial and human resources. In this regard, TIFE was led by political, technical, and financial elites.

Given a goal of “creating dreams that everyone wants,” participation becomes both a processual and ethical imperative, an ideal worth striving for yet difficult to achieve. TIFE did not achieve that ideal, and its implementation leaves room to question how strong the striving was. At a minimum, though, dialectics characteristic of democratic participation are visible throughout in the form of tensions between citizen participation and government power. The idea of TIFE as an aspirational experiential prototype for Taiwan’s future was introduced to citizens top-down. Yet there was serious push-back in the media and other public forums, pushback laden with serious accusations of corruption and wasteful spending demanding response. There were pro-government reports painting an over-optimistic picture (as our content analysis of news reports about TIFE revealed), and of course public and media-based reactions once TIFE actually opened. As noted, there were direct mechanisms of citizen involvement in the design process (e.g., the mascot contest) and implementation (e.g., tens of thousands of volunteers).

The democratization of TIFE is messy both because of the messiness that is characteristic of democratic processes, and because the democratizing features of TIFE were uneven. Taiwan’s speech and press freedoms clearly contributed democratizing elements to the project. These freedoms contribute to the hyperpartisanship characteristic of many contemporary democracies. TIFE leaders anticipated that robust debate and preemptively sought to position themselves in a way that they could withstand it, in part by playing down partisanship where possible. By making the policy vision a public spectacle, yet one made of artfully presented cutting edge technologies, TIFE also enabled a scale and inclusivity of critical engagement that is hard to achieve in more traditional venues such as consumer electronics shows and gadget magazines/blogs. Arguably, what might be most democratic about TIFE is that its public *meaning* was democratically contested, that it did cause considerable and open debate about its representation of an aspirational Taiwan, and the fact that it would be so debated was never in question; in fact, it was designed.

Viewed as a design process, it is difficult to argue that TIFE was strongly democratic or participatory. Without denying a need for technical expertise—that of civil engineers to ensure safety, or that of fine artists to produce artwork—the design process could have leveraged deeper citizen involvement. For example, the theme of the Pavilion of Dreams, “Hope, Dream, and New Horizon,” appears to

have been selected and operationalized by organizers, yet clearly there was an opportunity to invite the public to participate in the development of these key concepts. Similarly, the decision to use only Taiwanese technologists and technologies, artists and craftspeople, and other experts has democratizing potential, except that these appear to have been treated as elements within a top-down vision, rather than as actors actively helping to construct that vision.

Urban Aesthetics Mediated by Policy and Politics

The idea of policy preceding and prefiguring design and practice [9, 15] in social computing is not new: As [9] discussed, policy, as a third factor, can determine the “shape, meaning, and trajectory of shifting computational forms” [9, p. 588] together with design and practice. Examples include influences of privacy legislation on interface design and ubiquitous systems [14, 23], US Spectrum Policy on the future of mobile computing [29], and science policy on science-society relations [8]. However, a novel insight from our findings is how to use urban aesthetics to build momentum for high-level policies (e.g., creative industries policy) in a divisive political environment. As we have shown, the broader formulation of TIFE was to put on a compelling demonstration of Taiwan’s creation of “flowers of science and technology” – experiences of urban aesthetics. Yet the underlying goal of such aesthetics is to envision “the future of Taiwan” through displaying the beauty of Taiwan’s flowers, arts, cultures, and technologies. Therefore, TIFE represents both an urban design and a policy initiative, and it was both paid for by the policy and intended to be a showcase of it.

As a *design project*, TIFE built on a collective sense of Taipei as a capital city that has come of age, democratically, economically, and culturally, a city that itself has (so to speak) flourished. Grounding this image—and preventing it from devolving into self-delusion and mere propaganda—is Taiwan’s global role in micro-electronics and IT engineering; this role, combined with an aspirational vision of creative industries, becomes the plausible future the people of Taiwan are invited to desire. But creativity demands free expression, and so Taiwan’s democracy becomes not merely a political argument, but also an epistemic one. This combination of freedom, creativity, and proven IT know-how becomes the basis of the “soft power” [20] and “intimate” and “inspiring” technology that will characterize the future of Taiwan’s leading industry and global identity.

As a *policy initiative*, TIFE was controversial and polarizing. It encouraged members of the public to self-identify with the bipartisan national vision it offered but triggered public debates on its true value for Taipei and Taiwan. It sought to shift public attitudes about the social value of creativity, art, and design—lending them more social capital, and increasingly supporting them via financial capital (through the Creative Taiwan policy initiative, for example) and curricular shifts (e.g., the rise of design departments in Taiwan’s universities) – but was criticized as politicians’

personal show under the cover of arts and technology. It asserted a desire to downplay partisan politics but was nonetheless subjected to inevitable pressures from both parties: the Blue Party’s enthusiasm to make it a glorious achievement, and the Green party’s predisposition to question TIFE’s costs to Taiwan, as well as its political and even allegedly corrupt financial benefits for its organizers.

In short, TIFE not only reflects but also is critically interrogated within a design-policy-politics entanglement distinctive in some ways to Taiwan (e.g., its particular history), but also characteristic of other democracies (e.g., in the debilitating effects of hyperpartisanship). This leads us to the third urban informatics/social computing issue we identified: “decentering” the Western-centric perspective on urban computing and urban experiences.

An Aspirational Image of Taipei as “the City”

Existing studies in urban informatics/social computing for designing urban experiences have argued that treating cities as interchangeable urban spaces and people living in these spaces as averages would be counterproductive to designing and implementing any urban computing technologies [13, 28]. Yet prior research has still emphasized Western-centric perspective on urban computing and urban experiences. In contrast, we argue that TIFE as an urban project situating in Taipei as “the city” does not fit any Western perspective.

Specially, TIFE is unique because it uses a floral expo as a space and metaphor to arouse feelings of collective identity in a way distinctively appropriate to Taiwan at a certain point in its history; it reimagines contemporary social practices—in particular, practices of cultural creativity on the one hand and practices of IT research and development on the other; and it depicts Taipei as globally significant capital city of a nation with its own identity (a political stance in opposition to the notion of Taipei as a provincial city of China, as China asserts and as recognized by the U.N.).

Therefore, designing and implementing TIFE proposes a collective, aspirational vision of a plausible desirable future. This future is plausible because it is based on credible trajectories of the current images of Taipei and Taiwan: an industrialized democratic nation with leading micro-electronics and OEM manufacturing industries. This future is desirable because it proposes mechanisms to bring together Taiwan’s existing, but hitherto mostly separate, strengths in cultural creativity and IT engineering, which is intended to yield high-paying, high-satisfaction professional jobs in design and startups, while continuing to stimulate demand for Taiwan’s micro-electronics. By doing so, TIFE provides its audience with context-sensitive urban experiences of Taipei and Taiwan -- imagine themselves within that world, to be wooed or repulsed by it, and, assuming the former, to build public support for and identity with the vision.

In sum, all of these highlight the research need for exploring more urban computing projects outside of the Western

context. As we have shown, Taipei as a complex assemblage [17, 21] informs and guides what technologies can do and can be in its urban environment, while technologies can in turn “alter the meanings of physical space, and affect the activities performed in those spaces” [13, p. 658] in this city.

CONCLUSIONS

As they achieve a certain scale, sociotechnical and ubiquitous systems increase in sociocultural impact, no longer merely reflecting needs and practices of a small group of users, but also increasingly opening up new ways of being and belonging by intertwining people from all walks, technologies, places, policies, and politics. By investigating TIFE, we have explored three urban informatics/social computing issues. In particular, we have highlighted how urban computing can open up opportunities for citizen participation, anticipatory democracy, and public futuring, contributing to a better understanding of participatory urbanism [6] in CSCW and HCI. More broadly, we join calls to reframe technological innovation as a sociopolitical problem rather than a technical problem [9, 15, 17]. TIFE both showcased and promoted technological innovations as distributed in time and space, and importantly, across diverse contributors; in other words, it can at least yearn towards democratization of technologies: Its design and implementation was collaboratively enacted by diverse stakeholders, including a mayoral office promoting its city; engineers, artists, and designers envisioning, sketching, and prototyping the event; the media asking difficult questions and articulating diverse points of view; and members of the public experiencing, participating in, reflecting on, and judging for themselves whether TIFE offers a dream that they want.

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