

# Ecologies of Contestation in Participatory Design

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## ABSTRACT

How do various forms of contestation and agonism in collective social contexts challenge and transform Participatory Design (PD)? Under what conditions does agonism lead to productive outcomes, expand participation and social inclusion? In this paper, we highlight key insights and issues emerging from three case studies, where design practitioners engaged in PD projects for urban and cultural transformation in New York City and Cambridge. Wide-ranging interviews and participatory workshops reveal how PD is transformed by different “ecologies” inherent in the socio-cultural conditions, power relations, design constraints, and intrinsic values of practitioners grappling with contestation and seeking to engage agonistic pluralism.

## CCS CONCEPTS

• **Human-centered computing** → Interaction design .

## KEYWORDS

Agonism, Contestation, Participatory Design, Participatory Action Research, Pedagogy, Ecologies, Urban Design Practices

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## 1 INTRODUCTION

Participatory Design (PD) and Participatory Action Research (PAR) have long been influential as methodologies in the design and research communities as well as in pedagogical settings, while they continue to pose many challenges for design practitioners adopting such approaches in larger-scale public and urban contexts. In this paper, we explore as a central question what happens to participation under *agonistic pluralism*. In order to answer this question, we introduce the notion of “ecologies” along a set of frames as a potential approach for design practitioners to interrogate, engage, and reflect on the nature of Participatory Design in messy real-world contexts where contestation often emerges.

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Participatory Design, for some, often implies common purpose, motivations, stakes and equitable dispositions among participants engaging in a consensual process towards amenable design outcomes. Much has been written about the nature of participation, power relations, and socio-political challenges of ensuring co-determination, reflexivity and agreement in design [1, 2]. What happens in social contexts or publics “characterized by heterogeneity and difference with no shared object of design” [3] harkening the “agonistic pluralism” posed by Chantal Mouffe [4, 5] in her political writings? The concept of agonism runs counter to tacit consensus, highlighting inherent disagreements and confrontations that may lead to productive deliberations, resistance or contestation.

Seyla Benhabib [6] critically examines the Habermasian notion of “deliberative democracy” that attempts to ground legitimacy in rational discourse. Participation here is governed by the norms of equality and symmetry. This assumes that all participants have the *capacity* and *right* to initiate and engage in “speech acts” that question, interrogate and argue their own positions freely and without coercion. In this idealized discourse the process of participation should lead to “generalizable interests” and rationale consensus as legitimate outcomes. Benhabib invokes a sound critique that these idealized social conditions rarely exist in most public spheres. Even when they do it presumes that participants must engage within the norms and procedures prescribed for such discourse, which in itself sets a condition for a power imbalance and biases the space of possible outcomes.

Chantal Mouffe [4] proposed agonistic pluralism as an alternative to deliberative democracy, explicitly acknowledging power and antagonism as inherent “political” characteristics of the public sphere. By recognizing the existence of power relations as constituted in social contexts, the question becomes how to make them transparent or reconstituted in conjunction with democratic values. In a pluralistic democracy there needs to be room for dissent and for institutions that allow “conflictual consensus” to manifest as real alternatives to imposed dispositions, forced choices and tokenistic participation. Mouffe states that “an agonistic democratic approach acknowledges the real nature of its frontiers and recognizes the forms of exclusion that they embody, instead of trying to disguise them under the veil of rationality or morality.” It forces us to confront the multiplicity of voices and complexity of power structures embedded in a pluralistic society; the challenge is how to transform “antagonism” into an “agonism”. Mouffe believes that for democracy “agonistic confrontation is in fact its very condition of existence”. Carl DiSalvo extends agonism as a radical practice among critical designers to embed political values and implications into provocative or conflicting objects and design *things* (constituted from conflicting parts) [7, 8].

In today’s political climate though, notions of conflict seem ubiquitous as populist movements unfold across the globe. We view this

phenomenon not as an over-abundance of conflict and agonism, but what Mouffe cites as a result when agonism is not embraced. When conflict and dissensus is not acknowledged, when an adversary is not legitimized, then we do not temper antagonism into agonism. Debates then are performed along the lines of morality, it becomes a fight against Good vs. Evil, which becomes a reductive framing of contestation and conflict [9]. This work situates itself in the understanding that un-tempered conflict leads us into an antagonistically unproductive democracy and system. If rational consensus is a known impossibility [10], and antagonism is a known inherent condition, how do we embody this worldview and pedagogically engage aspiring design practitioners (esp. students)? How can they become more aware of potential conflicts inherent in the social contexts in which they operate, embracing contestation as a condition of design? This is what we asked ourselves as we began this inquiry, but first it is helpful to examine the conceptual origins and political ethos of PD and PAR over the past few decades.

## 2 POLITICAL INCEPTION OF PARTICIPATORY DESIGN

When Participatory Design (PD) emerged as a practice in Scandinavia in the 1970's and 1980's (originally referred to as co-operative design), it was motivated by Marxist ideals to empower workers in labor unions by fostering greater inclusion and democratic decision-making for the introduction of new technologies in the workplace [2]. Workers and their unions were increasingly concerned about losing control over their work situation and the role of automation in disempowering their skills and expertise. While legal agreements and regulations mandated the involvement of workers in the introduction of new technologies, many believed they had less bargaining power to influence decisions undertaken by management [1]. Scandinavian researchers devised a so-called "collective resource approach" [11] to allow workers to collectively explore the potential consequences of technology change, strengthen co-determination agreements, and better collaborate with researchers, software engineers and managers in shaping the outcomes [12]-[14].

While these efforts showed encouraging results, workers often found it challenging to argue for alternative ways of introducing and using technology, which was usually influenced in advance by the inherent goals and organizational needs of management [2], giving workers little power over final solutions adopted. Later researchers conducted ethnographic work and participatory approaches grounded in *action research*, whereby systematic data collection, analysis and *practical work* to support design changes with participants was used to examine how the craft, skills and autonomy of workers could be valued in conjunction with the introduction of automated technologies [15]. Pioneering Scandinavian projects such as *UTOPIA* (1981-1985) further explored the co-operative design methodology using mockups, low-tech prototyping, computer-based tools and design workshops to establish a "technology laboratory" for workers to co-design computer graphics platforms for newspaper publishing [16]-[18]. While it failed to produce a commercial product, new tools and techniques emerging

from *UTOPIA* and many subsequent experimental projects strengthened participatory design principles for engaging the workforce and supported its goal of encouraging industrial democracy [17].

There has been an ongoing debate around the need for cooperation among workers and managers (socio-technical approach) vs. the unavoidable adversity emerging (collective resource approach). Many have argued that for workers to feel more empowered in the process, participatory design must take on an action agenda and an explicit political-ethical orientation for practical theoretical reflection [17], that may better engage issues of worker rights, challenge power relations and constraints imposed, and negotiate potential conflicts emerging. While these issues of adversity, conflict and negotiation have not been dealt with extensively in participatory design literature, some limited accounts have emerged in ethnographic work conducted for contextual design [19], among others. Much of how participatory design is practiced today, particularly in industry and design consulting firms (but not necessarily in community-based contexts), may unintentionally support neoliberal ideals of individualization and depoliticization, while implicitly ignoring or responding poorly to the complex cultural and collective social contexts that may embed many forms of antagonism and agonistic pluralism.

While contemporary PD practices often work with individual stakeholders, there is less recognition of the political capacity and processes of engaging institutions as inherent to the participatory process; this notion of *institutioning* expands participation in the public realm offering macro-level frames for policy and action [20]. Huybrechts here notes that the turn towards focusing only on the "micro" contexts within PD paradoxically depoliticizes it by inhibiting practitioners and researchers from seeing the complexity of the bigger picture.

As PD methods began to move from the workplace to public spaces, designers began to question how these types of engagements create more heterogeneous terrains of stakeholders, contexts, and how PD can reflect local democracy in relation to these challenges [21]. Researchers have also explored the possibilities of co-design and diversifying stakeholders to inform urban planning practices and neighborhood publics [22, 23]. Björgvinsson, Ehn and Hillgren examined alternative participatory design practices using an interventionist action-research-oriented approach while running *Malmö Living Labs*, neighborhood-based incubators for social innovation to support marginalized immigrants in Malmö, Sweden [24]. We believe that coupling PD with action-research allows practitioners to examine a wider frame of agency and inclusion in participation and address the nature of agonistic pluralism emerging, while being reflexive of their practices.

## 3 DRAWING ON PARTICIPATORY ACTION RESEARCH

Participatory Action Research (PAR), which has influenced some aspects of PD, emphasizes the process of jointly conducting research, action, and reflection with participants while explicitly recognizing the potential conflicts and negotiation of stakeholder's positions; these must not only be addressed along the way, but are crucial to the essential ethos of collective participation, inquiry and empowerment.

One can trace PAR's influences in part to the work of emancipatory educator Paulo Freire in Brazil in the 1960's and 1970's, advocating for the participation of marginalized people in knowledge production and social transformation through his work on Pedagogy of the Oppressed [25]. He popularized the notion of conscientization (*conscientização* in Portuguese), a form of critical consciousness grounded in post-Marxist theory, as a means for the poor and marginalized to heighten awareness of external oppressive forces in their lives to inform and undertake their own emancipation and political action [25]. The first wave of participatory and community-based research emerged in the Global South (in Africa, India and Latin America) in the 1970's and 1980's, as a practice grounded in people's struggles and leveraging local knowledge to foster alternative institutions and radical social change.

PAR encompassed a wide range of participatory approaches to action-oriented research, whereby researchers and participants worked jointly to examine problematic situations and consider actions that may transform them for the better [26]. For decades, the PAR methodology has been challenging the traditional approach to conducting research by rethinking the hierarchical relationship between researchers and the "subjects" of the research, now better referred to as participants or co-researchers. PAR seeks to empower participants in jointly formulating the goals, methods and outcomes of the proposed research, and ideally accrue benefits to themselves and their communities through an action-oriented agenda. The process of PAR ideally tends to be cyclical, whereby researchers and participants jointly develop the goals of the project, identify problematic issues or situations, devise context-specific methods of inquiry, conduct research, analyze or critically reflect on emerging outcomes, and undertake necessary actions. This cyclical process of research, action and reflection allows both researchers and participants to learn from each iteration of the inquiry, while informing how to adapt their goals, methods, analytic interpretations and actions [27]. However, successfully conducting a PAR-oriented project is not without its challenges.

PAR requires a deep commitment in interest, time and resources on the part of both researchers and willing participants, to build trusting relationships, ensuring there is sufficient capacity or training to enable participants to engage more fully as co-researchers, facilitating open exchange of ideas and critique among all involved, and having the ability and desire to enact the changes or actions needed to transform the situation. PAR inevitably forces a commitment to reflexivity and critically challenging one's own assumptions, values and biases about the intended goals of the inquiry, participants involved, and potentially contradicting outcomes, which often emerge in any socio-cultural context characterized by agonistic pluralism.

As we have shown above it is important to recognize that these interrelated methods for participatory inquiry, emerged in particular political and socio-cultural contexts as critical responses for design practice, cooperative research, pedagogy and socially-engaged action. Hence, it is crucial to consider a wider ecological framing of the environment and conditions within which they are conducted; this allows for a more nuanced understanding of how these approaches can be translated and potential implications for participatory design process and outcomes.

## 4 EXAMINING RIGHT TO THE CITY AND INTERROGATING PARTICIPATORY URBAN DESIGN PRACTICES

How do participatory processes engage stakeholders across cities on issues of governance, infrastructure and citizen rights? Cities today are dynamic urban ecosystems with evolving physical, social, cultural, and technological infrastructures. The concept of the "right to the city" was first proposed by Henri Lefebvre [28] to reclaim the city as a co-created space and mediate its socio-economic and spatial inequities. Lefebvre bemoaned the effects of capitalism in commodifying urban life, shared governance, and social interactions in the city [29, 30]. David Harvey [31] has since argued that the right to the city is far more than an individual liberty to access urban resources, but a means for citizens to exercise collective agency in transforming urban space and the processes of urbanization. Harvey suggests that "the freedom to make and remake our cities and ourselves is one of the most precious yet most neglected of our human rights."

While many social movements in Europe and Latin America have undertaken this concept of right to the city for social justice struggles, they have primarily focused on squatter rights, housing equity, and inclusive use of public spaces. Extending this notion to culture and *free movement* in the city provides a powerful argument for broader notions of social justice and renewed access to urban life. For example, framed within a "right to the city" it can also be forcefully leveraged to advocate for fair and affordable access to transportation amenities and mobility alternatives. However, this presumes that citizens have the means (and incentive) to access meaningful information about evolving transportation infrastructure and mobility services, operating scope and costs, and actual patterns of provision and usage across the city. Such information access could be constituted as part of a citizen's "Digital Rights to the City" [32, 33]. How should such digital rights be recognized by cities as forms of public good and leveraged by citizens for civic advocacy? Many contestations emerge as municipal governments, private entities, and citizen groups increasingly undertake or cooperatively participate in transforming the urban, cultural, and digital fabric of neighborhoods in the city.

As academic researchers we have found ourselves engaged in teaching and practicing such participatory approaches within the university, with neighborhood communities and organizations in New York City, and in many developing country contexts. Each participatory engagement brings with it a complex ecology of socio-cultural, political, design-centric and personal concerns, that can deeply influence or transform the process and its overall outcomes. Over the past year, we set out to examine these conditions and challenges in a more systematic manner, by undertaking a research project with design practitioners focusing on participatory projects in the urban and cultural fabric of New York City and Cambridge.

The research was supported in part by a competitive university research fellowship focusing on design, politics and ethnography at The New School; it involved a series of interviews, participatory workshops, and in-depth case studies conducted with selected design practitioners and graduate students in design disciplines across the university. The year-long series of workshops and interviews generated new spaces for co-production and reflection

about the socio-technical, methodological, political, pedagogical and ethical implications of conducting PD in conditions of conflict or emerging contestation. It became clear that most students and design practitioners were not always sufficiently prepared at the onset of such projects (from prior academic training or experience) to fully understand and engage complexities emerging in contested situations.

Confronting the inevitable and unexpected turns and lapses in their participatory engagements with a diverse set of stakeholders often required shifting their frames of understanding, devising impromptu adaptations to the process or potential outcomes, and sometimes radically rethinking their own role, positionality, and values along the way. In our case studies, we discuss how these design practitioners critically questioned the role of culture and top-down participatory planning for diverse neighborhoods, reworked their design of urban streetscapes to engage agonistic views, and re-examined urban mobility datasets with different stakeholders and value-based interpretations for civic action. Such contestations are rarely foreseen at the beginning of participatory design projects or even possible to simulate in any pedagogical setting; we believe they can only be fully apprehended when a design practitioner is exposed to the full span of a PD projects' lifecycle and the nature of diverging or agonistic potentialities which may be embedded or inevitably emerge during participatory engagement in these social contexts.

Through this research, we began to consider how students and design practitioners might be better prepared to critically engage PD in conditions of conflict or contestation and recognize its inherent limitations in such situations, while being reflexive about how their own values and sensibilities are influenced or transformed along the way. Of the practitioners we surveyed, we selected cases in which the contestation could be easily teased out in layered and salient ways. We held a series of workshops to unpack these issues and focus not simply on the outcomes, or the perceived success of a project, but the challenges and conflicts that had to be navigated in the process. These workshops gauged interest from students and practitioners to help us understand how to translate these lessons into potential frameworks and tools to be leveraged for socially-engaged design practice.

## 5 ECOLOGIES OF CONTESTATION: A FRAMEWORK

In late-November 2018, we interviewed a Brooklyn-based artist, designer and educator who described the dynamics around an urban art project that he was commissioned to develop. “It was definitely frustrating at times because of the jurisdictional issues, kind of Kafkaesque hilarious moments where you have (to work with) an elevated transit infrastructure. The Manhattan Bridge is interesting, because the train tracks are run by the MTA, while the sidewalk is run by the New York DOT (Department of Transportation); the pipes and street lights are operated by different utilities... so we definitely had to do a lot of, you know, juggling and negotiating. I saw it more as a design problem, rather than stepping back, because this was the point of the project like this. It's not only a physical design issue, but also kind of a policy jurisdiction. And you have (complex) design constraints that the projects must address.”

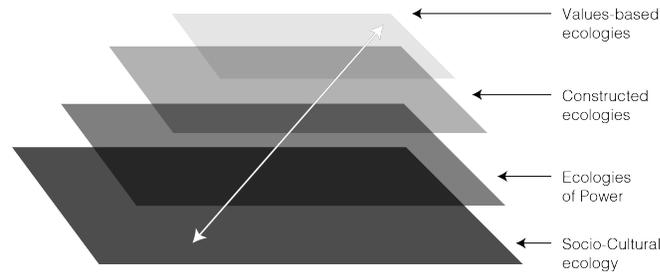
In our subsequent interviews and case studies, the practitioners highlighted many such interrelated layers of social, political and ultimately value-based considerations that emerged in their design practice. We began to recognize these as part of “ecologies of contestation”, which offered a meaningful framework for analysis, introspection, and pedagogical engagement with such participatory design projects.

The science of ecology, which emerged in the 19th century, examined interactions between organisms and their physical surroundings, while contemporary ecology expands these ideas beyond biological systems offering interpretive and philosophical frameworks in social, cultural and political contexts [34]-[36]. We find it helpful to introduce this ecological framing to understand the layered complexity of relations among stakeholders and the material and situational aspects of the environments in which design practice is conducted, environments that often unfurl contestations the practitioner must face.

As we previously mentioned, Huybrecht's notion of *institutioning* [20] calls upon a shift from a micro-context focus in PD to one that considers the meso- and macro- levels that PD is informed by and engages with as well, pointing to the oscillating movement that occurs between and within institutional scales. Our work aims to expand on this by providing this ecological framing tool so that the practitioner can be better prepared for the potential contestations that occur when different frames do not line-up neatly, as they move between micro and macro scales.

Janet Vertesi's ethnographic research into the heterogeneous collaboration of a multinational Space project highlights the infrastructural “seams” that emerge when teams work with different socio-technical systems. These aspects then reveal potential contestations and conflicts that must be mediated and remediated on the micro-level, which requires capacity from the individual to understand how to stitch across these divergent cross sections [37]. This analysis of friction and difference in a collaborative, multi-stakeholder endeavor reveals the need to prepare individual practitioners to have the agency, foresight, and capacity to deal with contestation as it arises. This is grounded around understanding, at an implicit or explicit level, of how these heterogeneous systems and stakeholders interact or relate i.e. understanding the underlying ecology within which they operate. This work also informs us that there is a need to go beyond the micro-, meso-, and macro-levels of institutions and at the level of individuals. Studies of ecology include both the environmental and contextual levels (biomes, ecosystems) but all the way down to organisms on a cellular level, hence our use of this term to represent multi-scalar phenomenon.

This notion of ecological framing has previously been used to examine socio-technical systems. Bergman, Lytinen, and Mark conducted a study of boundary objects in Information Systems workplaces from an “ecological” orientation. They separate two forms of ecology, Political and Functional [38]. Political Ecology is derived from principles that examine who has power to make decisions and how that power is applied [39, 40]. Meanwhile, Functional Ecology is focused on examining how the goals and functionalities needed to achieve intended outcomes is deployed, in essence the design goals and constraints. These two ecologies clearly influence each other. The Political Ecology affects what functionalities and features will be discussed and how; meanwhile, the Functional



**Figure 1: Framework of ecologies that influence contestations that emerge in Participatory Design.**

Ecology orients these applications of power to specific goals. This work highlights the necessity to examine these endeavors from more complex, multi-scalar perspectives and how these various viewpoints affect and mediate each other.

What we propose here is a framework to examine and unpack potential contestations within Participatory Design endeavors: Socio-Cultural, Power, Constructed, and Value-based Ecologies (see Figure 1). The **Socio-Cultural Ecology** underpins the wider context of any undertaking, highlighting the social context, political conditions and environment within which a practitioner must engage. What are the greater forces afoot here? When, where, and why is this work occurring and how does this inform the ethos of one's inquiry and design? The **Ecologies of Power** allow practitioners to examine the complex social hierarchies and inherent power relations across the many explicit and implicit stakeholders and participants influenced by a project. Understanding the Ecologies of Power can reveal how stakeholders reinforce or push the boundaries of their Socio-Cultural Ecologies through how they orient their practice and actions. **Constructed Ecologies** emerge from material and design constraints that the practitioner faces in co-creating potential design interventions or shared artifacts. The very medium and disciplines of these constructed artifacts can influence the nature of access, inclusivity and capacity for participation. The Constructed Ecologies hence orient the political conversations that occur, in that power is applied through the co-creation of the emerging artifacts. These constraints can then further reflect and reveal the political lines and potential contestations of the Power Ecology. Finally, the **Value-based Ecologies** harken back to the ethical integrity of the design practitioner. How is this work meaningful in the socio-cultural context and how do their values shape the process of participation and emerging artifacts? How is the practitioner's agency, integrity and reflexivity engaged with these concerns, and how does it influence their response to emerging conflicts and contestations?

In today's age of heightened antagonism, embracing agonistic pluralism can lead to productive applications of PD since it accepts the inherent nature of contestation in diverse contexts. Informed by the political inceptions of PD and the ethos of PAR, we use this framework of ecologies as a lens to explore the many complex challenges faced by practitioners through three distinct case studies that we describe in the following sections. Each case study, like any PD endeavor, inevitably deals with aspects of all ecologies, however in each we highlight an interplay between at least two of these ecologies that they illuminate best. We then summarize

our findings for how these could be broadly applied, not only in other participatory design contexts, but also as a useful framework in design education.

## 6 CASE STUDIES

### 6.1 Culture in Participation: CreateNYC vs. the People's Cultural Plan

In July 2017, Mayor Bill de Blasio unveiled *CreateNYC*, a 175-page document detailing New York City's cultural plan, with much fanfare after a one-and-a-half year process of conducting surveys, focus groups, and workshops with over 188,000 residents across all five boroughs of the city [41]. The NYC Department of Cultural Affairs (DCLA) commissioned Hester Street Collaborative in 2016 to engage artists, cultural organizations, city agencies, arts and culture experts, and community residents to collect data and public input to inform the cultural plan. Masoom Moitra, a community planner and co-director of The New School Collaboratory, was hired by Hester Street to manage the engagement and ensure that the plan was informed through inclusive city-wide participation. She remarked that "in spite of us being true to what we were collecting and the commissioners being committed to equity and inclusion, eventually, when we presented our findings to the city, they wanted to claim ownership in framing the cultural plan to align with their vision and acknowledge limitations in language and policy recommendations." When we unpacked this experience with Masoom it was clear that the tension was felt strongest between the macro-level Socio-Cultural Ecology and the Ecology of Power.

Cities have a complex set of actors engaged in devising, planning, building and maintaining not only its built urban infrastructure but also its socio-cultural platforms or institutions. New York City has the largest local budget, second only to the federal budget, that goes towards supporting the arts and culture in the city. DCLA was established as its own agency dedicated to this endeavor and supports over 900 non-profits in the New York area; 41% of their annual fiscal budget goes towards upkeep of the Cultural Institution Groups (CIGs). These are large institutions such as The Metropolitan Museum of Art or the Bronx Zoo and the public funding of these institutions was modeled after the nascent agreements the city made with the existing cultural institutions in the late 1800s, providing land, capital, and subsidizing operational costs. Meanwhile, Mayor Bill de Blasio's platform was based on addressing economic and social inequities of the city, tackling these situations through innovative initiatives such as the CreateNYC plan and

the Office for Economic Opportunity or NYC Opportunity. These initiatives placed a value on design through actions like creating departments of Civic Service Design. From this vantage point we see an overall value for arts, culture, design, and an administration that prioritizes economic equality but also an institutional system that privileges large institutions. Socio-culturally this case is situated in a city that places a value on arts and culture with an administration that prioritizes social equity.

If we dive into the Ecologies of Power here, we see that in total there are 33 CIGs which shows us that 41% of the budget goes to only 3% of the organizations that DCLA supports [41]. This reflects the top-down approach DCLA takes and the historic relationship the city has had with large institutions. This led to inherent contestation between the Socio-Cultural Ecology and the Ecology of Power affecting Masoom's work. Among the many forces that determined the limitations and power of DCLA to turn the tide on cultural equity, the historical power and influence of the CIGs remained a strong one. Meanwhile Hester Street Collaborative, tasked with leading this participatory effort in partnership with other organizations, had to answer to the city and therefore DCLA. There was not much that could be done to rearrange the power dynamics and these were the political boundaries the project had to operate within. Masoom mentions how tokenistic participation emerges, "I think it's often to put a checkmark on the fact that you touched on that many constituents, but ultimately, you're going to write what is most aligned with the vision of the administration in power. The system is not conducive to radical transformation, so you won't write things that are controversial, offend or belittle the work of other city agencies like the Economic Development Corporation or Department of City Planning." This inadvertently leads to a form of 'half-baked participation' or *non-participation*; because there is an apparent pretense to participate, but the outcomes are not truly reflective of what has been collected.

Even though the process was designed to be decentralized, its very top-down "participatory" structure was inevitably created to avoid inviting conflicting views. It seemed that city officials and design consultants strived to diffuse or extract out conflict to offer generalizable consensus. We see this at the constructed ecological level. What was created was a nearly 200-page document that lays out the funding structure and history of DCLA, but only paid lip service to issues of equity without radically challenging what true equity in cultural support might be in the city. Interestingly though, one day before the release of CreateNYC, a coalition of community organizations, artists, activists, and labor groups responded with their own version of a cultural plan, the *People's Cultural Plan* [42]. This concise, 17-page document focused on the ways in which communities of color in New York City remain underfunded and dispossessed, often in the guise of *culture*. Within this top-down power ecology, certain stakeholders took this as an opportunity to self-organize and create an entirely different plan since the city was already organizing large scale workshops and surveys through the CreateNYC initiative. The artifact that was constructed clearly did not reflect all the values of the participants and designers involved with this work. Because of this highly hegemonic orientation across the different ecologies, the only option was to create a radical alternative of their own image.

Shortly after both were unveiled Kenneth Pietrobono, a member of the Citizens' Advisory Committee for CreateNYC (and an artist/activist), argued that the two plans should not be seen as antagonistic but rather as parallel visions for the city that could work in tandem. He stated that "each contains something the other lacks to be effective: authenticity and resources; the People's Cultural Plan is authentic in its demands and process, while the city's cultural plan has the capacity for affecting budgets and legislation." Kenneth continues "their deepest agonism is that they see the intersection of culture and community differently — they do not share a politics. CreateNYC is squarely positioned in the logic of incrementalism and negotiation, believing in the power of the legislative process to uphold culture and that culture is an effective way to serve communities. The People's Cultural Plan is firmly positioned in the logic of radical equity and organizing, believing the city's cultural plan is a threat to communities and that culture is a distant second to the needs of community members, artists, and beyond" [42].

It is unclear to what extent the city indeed incorporated any elements or priorities highlighted in the People's Cultural Plan in their planning process. However, it inadvertently triggered intense participatory deliberation among those involved, while framing a more politically aspirational agenda ahead. The complex Socio-Cultural Ecology of the city and the Ecologies of Power among both top-down agencies and grassroots neighborhood groups led to the emergence of alternative discourses on the very definition of "culture", inclusion, equity, agency for residents, and participation. These hegemonic power relations, multi-faceted stakes, capacities and aspirations across these ecologies nurtured a form of pluralistic agonism to support a wider range of cultural initiatives and practices led by city agencies and neighborhood groups in New York City.

Masoom has since found herself working closely with El Puente, a community advocacy group, on a collaborative initiative to support their *Bushwick Community Plan*, and a Gowanus-based neighborhood project, part of the *Cultural Blueprint for Healthy Communities* in Brooklyn. At the ecological level of values, Masoom shifted her practice to work directly with these grassroots communities to reflect her ethos as a practitioner. Part of this work successfully led to the reopening of the first NYCHA community center in Gowanus that had been shut down for over a decade due to federal budget cuts. Here we see how different frames affected a radical change in values and practices for the designer. This in turn created new constructed artifacts, like the community center, and shifted Masoom's practice into a new power ecology that isn't completely forced to succumb to tokenization of PD and focuses on centering community self-determination. In many ways this agonism led Masoom to transform her positionality from operating within an institution to agonistically engaging with it by working with grassroots initiatives. She does so by facilitating a form of PAR in devising shared blueprints for neighborhood cultural initiatives, embedded within community-based values and grounded in local politics while negotiating with institutions like DCLA; this gradually co-exists in a constructive tension with the larger Socio-Cultural Ecology of the city-wide planning ethos of CreateNYC.

## 6.2 Mediating Digital Rights to the City: Emerging Contestations in Urban Mobility (Data)

In the earlier case study we saw how overarching tensions between cultural planning efforts of city governments inspired efforts to contest the conditions of power through the lens of a PD practitioner. As we continued to interview other urban designers we encountered contestations occurring between the Ecologies of Power in the city and the Constructed Ecologies of digital infrastructure and its artifacts, as experienced by citizen participants.

While municipal governments have been slow to adopt digital infrastructure and make their data accessible to citizens, some cities have begun to develop open data initiatives to recast urban mobility data as a public asset in the spirit of transparency and accountability, but more often to incentivize companies to develop technology-based services leveraging such data. Meanwhile, municipal authorities have struggled to get tech companies (like AirBnB and Uber) to share data openly with them; a few have begun to create their own data standards or “mobility data specifications” as a way for city governments and companies to share knowledge. For example, the Los Angeles Department of Transportation (LADOT) is developing its own data standards for “new mobility” options allowing *two-way sharing* of vehicle mobility in city streets [43]. These issues and endeavors highlight material ways to transform the Ecologies of Power over who maintains ownership over urban mobility data.

To examine these concerns around mobility and open data access in cities, we invited design practitioners from an urban-tech startup, Stae, to co-lead a workshop engaging participants in learning about and working with urban mobility data for civic action. Stae works closely with cities to create uniform APIs and user interfaces to promote open data policies and help make such data more accessible and usable for diverse stakeholders from government agencies to citizen groups. Stae has begun facilitating discussions of civic issues in neighborhoods such as the usage and obstruction of shared bike lanes in New York City.

In this workshop with Stae, participants worked in a digital sandbox to examine contestations emerging in accessing and using urban mobility data, and the implications for civic action. These included how ride-sharing data is used by companies for planning docking stations in neighborhoods, causing conflicts by residents opposed to them or others who feel left behind as less lucrative areas for such private mobility infrastructure. Participants gained an overview of civic data, how it can be used, and the new ways in which organizations like Stae engage multiple stakeholders for awareness and informed decision making. Participants considered privacy concerns, who this data serves, and how the data is being captured. We then transitioned into utilizing the Stae databases and querying user interfaces to surface contestations in civic data. The initial exercise included conducting a brief “data scavenger hunt” of publicly accessible ride-sharing data in NYC neighborhoods, to familiarize participants with the tool.

Stae had created backend solutions to generate uniform APIs to ingest open datasets on urban mobility in the city. Centralizing this into a single database creates an immense amount of complexity. Therefore, artifacts made with this data required facilitation from

Stae team members but also allowed flexibility to engage with civic data activists and municipalities. In the workshop, participants were asked to browse CitiBike data; however, it was apparent that the ideology of Open Data did not trickle into the interface due to the power structures manifested materially through the data infrastructure in two ways. First, this was a huge data set and required access to powerful computing to handle streaming of such data volume using the platform. Large datasets like these show the power imbalance between citizen access to data and institutional resources. Second, the data itself required expertise, not necessarily of data science but of what certain variables, syntax, and values meant. Even once we truncated the dataset participants had no idea where or what “Docking Station #XXXXX” is.

The artifact, in this case the user interface and database, clearly was designed for people with the capacity and expertise to conduct and understand urban data analysis. The artifact represents a Constructed Ecology for engaging with such civic data, limited by the Ecologies of Power it was materialized from. While Stae is often able to mediate this process by offering data services to municipal entities and activist groups, engaging citizens directly in participatory research and action is far more challenging as we learned in the workshop. Some participants examined the contradictory goals and values of supporting bike lanes and ride sharing in neighborhoods like Chinatown, that are increasingly facing greater gentrification and conflicts due to loading trucks blocking such bike lanes. Examining the many layers of mobility infrastructures and actual data patterns of usage can reveal the inherent agonistic spaces for participatory design to ensure all stakeholders’ interests and values are better addressed. However, contestations between the constructed artifacts and the powers that constrain how they are made need to be addressed first.

Several other tech start-ups like Remix and Populus are trying to address gaps in the IT capacity among municipal agencies by developing software platforms for cities to manage and share urban mobility data. While these platforms have laudable aspirations, they are not designed to directly engage citizens in these urban policy questions. Hence, such urban civic data is not easily obtained or usable by citizens themselves let alone serve as tools for advocacy, co-design or urban transformation, as Lefebvre and Harvey would insist. Participatory research and design in the realm of civic data and digital inclusion in e-governance today, demands a critical ecological perspective to highlight the inherent complexity and contestations faced by stakeholders and design practitioners.

## 6.3 Participatory Design for Urban Transformation: *Playful Streetscapes*

While each case study thus far has hinted or implied each ecology, we’ve focused on two distinct interplays. First is the interplay of the Socio-Cultural Ecology with the Ecologies of Power in the CreateNYC cultural plan. We then examined contestations between Ecologies of Power and the Constructed Ecology of urban mobility data with Stae. We now showcase contestations that emerge between Constructed Ecology and Value-based Ecologies.

In 2014, two urban design practitioners, who wish to remain anonymous, were commissioned by a municipal arts council in Cambridge to transform an underutilized street into a public art installation. Since 2010 they have been creating site-specific, community-based, and socially engaged public arts projects. This commission was meant to infuse an artistic and playful reconstruction of the everyday built environment to make it more engaging for the surrounding community and create a new sense of place, prompting unexpected interactions among the public. This project was different from others they previously did, since it was a permanent urban installation transforming city infrastructure. What they did not anticipate was that after nearly four years of participatory design workshops, stakeholder meetings, and public engagement in the process of reconstructing this site-specific project, the very public interactions that this playful urban streetscape was meant to evoke instead unexpectedly yielded uncompromising contestations; this required its creators to rethink and radically alter their completed design, barely a few weeks after it was unveiled with much public fanfare.

At its inception, the city wanted to repurpose a neglected street in a residential area that pedestrians avoided. To better understand the best ways in which they could redesign the space, the designers held a series of town hall meetings with residents and participatory design workshops with children in nearby schools. In many ways their process was exemplary of PD principles. They held a series of capacity-building workshops with participants so they could conduct their own studies of suitable materials for the streetscape and offer their own creative visions for the project. Through these workshops the first models of the street installation were co-designed. The emerging proposal would utilize various materials to highlight different tactile features and textures, inspired by the tactile learning principles of the Montessori education in the school. The participants also devised ideas for adding three dimensional elements to the street, which were incorporated in the final design. The designers presented these ideas to residents and city agencies through town hall meetings for feedback.

It was through these feedback sessions that the first lines of contestation emerged. Because the artifact was a piece of urban infrastructure, a street, the designers required permits and discovered that their initial model would not work. Concerns around disability access and safety arose and they had to revise their proposal. Various city agencies had different jurisdictions on the site and lines of contestation between the Ecologies of Power were negotiated through the materiality of the Constructed Ecology. Instead of novel materials, they had to utilize concrete to ensure accessibility for the disabled community and as a measure of safety. The designers opted to dye the concrete in different colors to retain some of the original community vision. Eventually the design passed and was ready to begin construction. It consisted of three dimensional, multi-colored concrete pathways and mounds that also had seating designed into the built environment. These features were constrained by the Ecologies of Power but represented the Value-based Ecology the designers and community intended: inclusivity, co-mingling of different people, and playful engagement.

An unexpected contestation emerged when the street began to invite new types of usage: skateboarding. Initial hype emerged when avid skaters came to film their tricks and tactics. Even though

the initial influx died down to young novice skaters, this new type of usage triggered a minority of residents to complain about the (temporary) noise to the city manager. To take care of the issue swiftly, the city responded by promising alterations without consulting with the designers in advance. Here we again see the interplay of the Constructed Ecology and Ecologies of Power in intriguing ways. Because this was a street, and not a park or plaza, the police had no jurisdiction over it; they could not simply ban skating. So as a stop-gap response the city put up traffic barriers, but this only invited more skaters since it presented new playful obstacles. These traffic barriers became material constraints that reflected applications of power available within the legal/political realm of the city.

The designers made a series of appeals to the city and the community with extended ethnographic data, interviews and revised solutions proposed to ameliorate the noise complaints about the skating. However, residents who complained to the city manager ultimately wielded more power. The city demanded to either remove the mounds that encouraged skating or a commissioned civil engineer would install skate deterrents that could potentially also cause harm to novice skaters. It is this turning point of the case that is crucial to hone in on, where the reflexivity of the practitioner is critical. It was clear to the designers that the revised design would consist of features that did not reflect their ethos nor the community's values of inclusivity and play. The Ecology of Power had an ultimatum that did not align with their Value-based Ecology, negotiated through the Constructed Ecology (the artifact). Hence, the designers decided to remove the mounds, replacing them with grass and plants as a compromised solution, negotiating some values such as play, over other values such as inclusivity.

We see in this case study that the ecologies were a lot messier in nature. There were more frontiers and lines of contestations like the complexities of the various city agency jurisdictions. Meanwhile, the Constructed Ecology was less fungible than say a policy planning document. These relations created many more contestations. Because the Constructed Ecology was less malleable, the political lines in the Ecologies of Power were well documented by the debates over the design artifact. We also see that in this case the ecologies produced a very different outcome. Instead of a radical alternative, this PD project resulted in a piece-meal compromise. But what made this case stand out for us was how values really came into question. From the larger Socio-Cultural Ecology, the Greater Boston area has demonstrated a desire to integrate play into its public urban spaces [44]. As this project was situated in infrastructure, it brought forth questions of how "play" is actualized. Is it in radical urban imagination or simply a tokenized value confined to pre-designated areas like playgrounds? Even more hotly contested though were the values of the practitioners and the reflexivity required to devise a suitable compromise at the end. The Value-based Ecology morphed to reveal that community inclusivity was a more critical value to foster than play, despite the artistic and imaginative commission of the project. It came down to the designers choosing to constrain the Constructed Ecology within the frame of shared values that they and the community held.

Finally, the decision to anonymize the details and identities of practitioners involved in this case is another contestation to acknowledge. For design practitioners, in reality there is often a

stigma to publicly frame or acknowledge such emerging contestations. This has potential repercussions such as the ability to be awarded new project commissions or legal implications. The designers involved also requested sensitivity in how this case was discussed as they had not presented this project in large public settings, and wished to better contextualize and articulate contestations in their own narrative. This reveals yet another challenge or conflict in our collective Value-based Ecologies within Participatory Design. It signals for this community of practice to place a value on contestation and conflict as an accepted social condition, and how one should productively speak about such things while recognizing the potential implications for participants and stakeholders involved. We believe it is essential to highlight these value-based concerns, to interrogate the Socio-cultural, Power and Constructed pedagogical boundaries of PD practice going forward.

## 7 CONCLUSIONS AND DISCUSSION

In this paper we have examined how participatory design practices are increasingly operating in conditions of conflict and contestation emerging in many urban contexts today. The CreateNYC case demonstrated that while large-scale participatory initiatives built on rational consensus support forms of participation, they don't necessarily address true social inclusion due to the hierarchical planning processes and a deeper culture of inequity embedded in city politics and governance. Alternative conceptions like the People's Cultural Plan emerged to challenge the Ecologies of Power and ensure the Socio-Cultural backdrop of culture, arts, and equity is upheld in their vision. Examining these ecologies in the digital realm of civic data, practitioners at Stae recognized the limitations of their constructed artifacts (databases and user interfaces for urban mobility data) to enable stakeholders to participate in decision making. Lack of capacity to engage in design and technology thus revealed new Ecologies of Power. Finally, in re-designing the streetscape in Cambridge, the designers navigated a series of difficult confrontations and decisions to ensure the values of the community and their own practice would be preserved in the artifact they co-created. While we focused on certain interplays in each case, this does not signal that each ecological frame wasn't also present or that these frames operate linearly. These frames need not be adjacent to each other to demonstrate interaction and contestation.

Addressing issues of power in PD is crucial to developing a realistic view of the possibilities and limitations of participation. As Bratteteig and Wagner postulated, in order for designers to collaborate with users in co-design, they need to find ways to share their power and acknowledge the differences in the valuable experiences and expertise offered by users [45]. Hence, designers can seek to create horizontal Ecologies of Power, which may be both more instrumental and socially just in participatory processes. Embracing agonism as a useful construct for inclusive design also offers generative possibilities. Practitioners can become aware of these unexpected contestations and conflicting values emerging in the process of engaging in such participatory projects, which often challenges their own ethical responses and adaptations in design practice.

When conducting this research, we held onto this tension that we felt was underlined within urban PD practice. First, that contestations like the ones we have outlined are not exceptions within PD. Agonistic Pluralism then becomes a pertinent theory to then frame these contestations productively. Secondly, these contestations are rarely mentioned, let alone showcased, when designers present their work publicly. Mouffe advocates for acknowledging power and antagonism in the public sphere. This became an underlying theme across our workshops, where we unpacked emerging contestations rather than the successful completion of design projects. This allowed us to reflect on how we prepare students and aspiring designers to not only recognize contestation but devise productive approaches to transform antagonism to agonistic spaces. Concerns around such ecologies of contestation in PD practice is something that design education has yet to address critically.

A constraint when designing coursework engaging PD in university curricula is that the complex and urgent stakes in these contestations often aren't felt unless the practitioner is present for the full span of the project lifecycle. In the cases we highlighted in this paper, the designers were engaged in multi-year long PD endeavors. Something to consider while doing this research was if contestation would be too abstract in an academic setting due to such constraints. However, our workshop sessions seemed to resonate well with students and built on one another with the crucial involvement of experienced practitioners. In fact, one of our workshops on contestations in urban mobility emerged when the practitioners from Stae attended a previous workshop exploring contestations in the CreateNYC cultural plan. Clearly, these sessions critically engaged and expanded these conversations for both students and practitioners, offering pragmatic approaches and a shared action agenda to better address contestations in PD practice.

What we have proposed in this paper is a framework and conceptual toolkit, for students and design practitioners to explicitly recognize and critically unpack contestations that they are bound to encounter in PD projects. It is clearly not feasible to distill the lifecycle and outcomes of an entire PD project within the timeline of an academic semester, or even an extended thesis research project. However, such a framework can reveal critical questions to inform design practice, while serving as a pedagogical foundation for students entering professional work settings. Coursework engaging PD in university curricula, can benefit from explicitly examining the ecological frames we have outlined in our case studies, having students critically consider their own values and responses while recognizing the nature of contestation and dissensus inherent in the many real-world projects they will likely encounter.

The focus on design education though is also a gestural one that expands to practitioners. As we mentioned with the anonymization of the designers in our last case study, subtle actions emerging as a consequence of or a means to address implicit or explicit conflict often go unmentioned. So much of the labor of PD is in mediating these contestations but the traces we leave behind are often only the material artifacts that emerge at the conclusion, rather than many of the critical deliberations and unworkable design alternatives conceptualized along the way. We believe it is crucial to heighten awareness of the Socio-Cultural Ecology of PD to regularly engage in an open discourse about these facets. This is clearly a tricky proposition, since it can be rather challenging to undertake these

sensitive conversations in the midst of design projects with multiple stakeholders and power structures in place. However, there may be crucial opportunities to do so retrospectively or in the formative stages of client engagements. This sets expectations about potential contestations while creating space to negotiate them more tactically during the design process. Classrooms are also venues where we can be critical of PD practices without being beholden to real world implications. The case studies we featured are articulated in a way that places contestation as an expected condition and design constraint that can help practitioners and students not only reflect but make decisions that align well with their values. Ultimately, it is this shared transformation of values and practices emerging from both expected and unexpected contestations that may influence how we continue to undertake and reflect on participatory design more critically in the future.

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