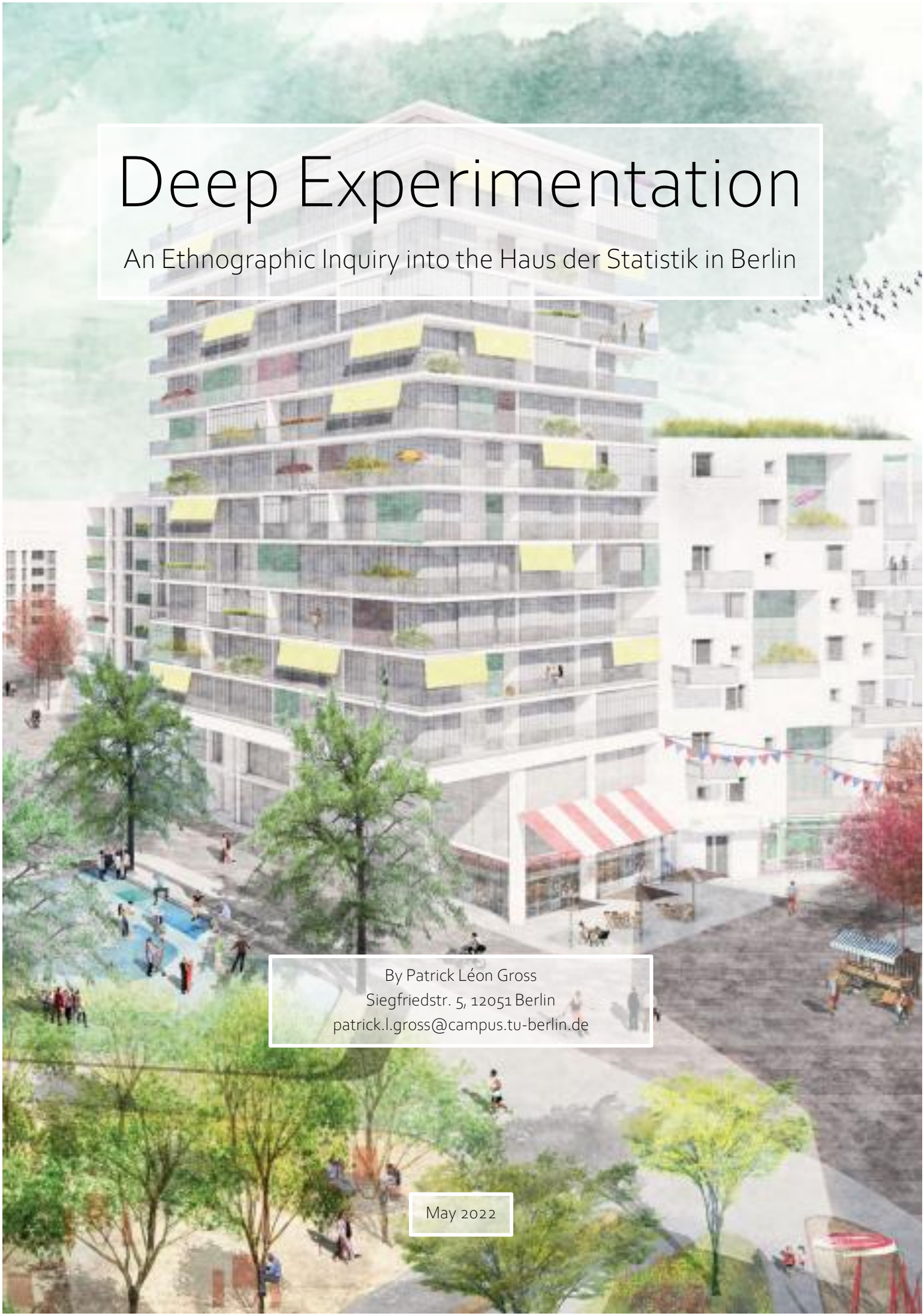
Deep Experimentation

An Ethnographic Inquiry into the Haus der Statistik in Berlin



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Abbreviations

Abbrv.	*German*	*English*
BIM	Berliner Immobilienmanagement GmbH	Berlin Real Estate Inc.
DDR	Deutsche Demokratische Republik	German Democratic Republic
HdS	Haus der Statistik	House of Statistics
HdM	Haus der Materialisierung	House of Materialisation
KOOP5	Kooperation von fünf Partnern	Cooperation of five partners
MLP	Multi-Level Perspektive	Multi-Level Perspective
SenSBW	Senatsverwaltung für Stadtentwicklung, Bauen und Wohnen	Senate Department for Urban Development, Building and Housing
UTT	Urbane Transitionen und Transformationen	Urban Transitions and Transformation
WBM	Wohnungsbaugesellschaft Berlin-Mitte mbH	Housing Association Berlin Mitte Ltd.
ZKB	ZUsammenKUNFT Berlin eG	Cooperative for urban development

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"When one steps back from the marketplace, things can be seen in a different light. While time passes on the surface, we may dive down to a calmer, more fundamental place. There, the urgency of commerce is swept away by the rapture of the deep. Designers working at that depth choose to delve into the essence of design itself. Form, structure, ideas and materials become the object of study."

Brenda Laurel (2003, p. 33)
Cultural studies of design scholar
Cited in Escobar's *Designs for the Pluriverse* (2018)

"What if we were to accept that the goal of theory is not to extend knowledge by confirming what we already know, that the world is a place of domination and oppression? What if we asked theory instead, to help us see openings, to provide a space of freedom and possibility?"

Gibson-Graham, J. K. (2008, p. 619)
pen name of the feminist economic geographers J. Graham and K. Gibson
In *Diverse economies: performative practices for ›other worlds‹*

"Cities have the capability of providing something for everybody, only because, and only when, they are created by everybody."

Jane Jacobs (1993, p. 4)
Journalist, author, and activist
In *The Death and Life of Great American Cities*

"The right to the city is far more than the individual liberty to access urban resources: it is a right to change ourselves by changing the city. It is, moreover, a common rather than an individual right since this transformation inevitably depends upon the exercise of a collective power to reshape the processes of urbanization. The freedom to make and remake our cities and ourselves is, I want to argue, one of the most precious yet most neglected of our human rights"

David Harvey (2008, p. 28)
The worlds most cited geographer
In *The Right to the City*

Abstract

In the quest for sustainability in the Anthropocene city, urban experiments play a key role in facilitating the translation of ambitious policy targets into tangible projects that can demonstrate how other worlds are possible. However, existing theorizations of urban experimentation in the sustainability transitions and transformation literature either appear to be apolitical and ontologically naïve or to lack practicability and orientation. By systematically intersecting perspectives from both scholarly communities, this paper proposes a framework that offers a new, third way to study urban experiments, structured along three analytical entry points: emergence (the background and imaginaries driving experimental beginnings), functioning (the institutional and cultural practices through which experiments are implemented and maintained), and tensions (the constraints arising in the processes of enrolling the experiment and the strategies to circumvent them).

The paper demonstrates the usefulness of this framework by means of an in-depth ethnographic case study of the Haus der Statistik in Berlin, an award-winning urban experiment whose innovative character has hitherto not been subjected to comprehensive analytical scrutiny. Seeking to understand how the Haus der Statistik re-envisions, practices, and negotiates urban experimentation towards sustainable cities, the paper reveals that new forms of urban change can be both action-oriented, pragmatic, and targeted whilst striving towards a more radical, politicized and imaginative ontological politics beyond capitalism, thereby pushing the boundaries of the possible and probable in urban sustainability towards yet unknown territory.

Building on these theoretical and empirical contributions, the paper introduces the concept of "deep experimentation." Deep experiments can be defined as historically contingent place-based interventions aimed at creating socially, ecologically, and democratically sustainable cities, which are animated by shared capitalist struggles and imaginaries of new forms of urban life, attainable through strategic negotiation and institutionally stabilized by public-civic-partnerships. The concept contributes to "deepen" an ongoing shift in transitions research that has recently been striving to equip itself with the analytical and intellectual tools to address the influence of capitalism on sustainability transitions, and *vice versa*. The paper concludes with an outlook on further research.

1. Introduction

1.1 Berlin Allesandersplatz: Urban futures in the making

"Everyone has theory, we have the practice!" (personal communication, December 2021) the architect proudly announces before letting her gaze wander from the styrofoam scale model of the project they are working on up to the "Haus der Statistik's" (HdS) eleven-story façade. On its rooftop, an iconic sign spells out the word "ALLESANDERSPLATZ." The message's target seems clear: overlooking Berlin's infamous "Alexanderplatz"—a landmark in the middle of the city where abundance and poverty clash more closely than hardly anywhere else—the ALLESANDERSPLATZ is a minor but ingenious play on words that crafts a profound political vision of an "altogether different place." In an unlikely alliance, artists and activists, politicians and administrators, as well as planners and architects came together to prevent the privatization and demolition of the long-abandoned ruins of the HdS arguing that it should be refurbished in service of the "Gemeinwohl" (common good). This would imply not only that in the Haus der Statistik's façade alone 619.500[1] kg of CO_2 would remain locked but also that a mixed-use neighborhood center with art studios, workshops, administrative uses, a new town hall, and affordable rental apartments including assisted housing, intergenerational living, and housing for more vulnerable groups would be created. The expectations about the place are high: "It's the sort of project dreamed up by utopian collectives around the world. Here, it might actually happen" (Berg, 2019, p. 1).

Three hours into the opening of the "Ko-Markt"—a non-commercial, largely donation-based community fair underneath and around the protective ceiling of a discarded bumper car station—the HdS's creative energy becomes palpable as it radiates contagiously through the smiling faces of its guests. More than forty so-called "pioneer users" showcase their work: from the fermented pickles of a food saving network to the world's first 100% recyclable and recycled surfboard to rescue drones for refugee missions in the Mediterranean Sea. Visitors can repair, share, and try out new things, or simply listen to the panel discussion on the adjacent stage: "It's a huge statement about the future of development in Berlin," says one of the main organizers; "if it works, it will be a model for bottom-up city-making—and a lesson in how outsiders can claim political power" (personal communication, May 2022). The "model" they refer to is the "KOOP5," a partnership of five institutions that shape the site together, including the "Senatsverwaltung für Stadtentwicklung, Bauen und Wohnen" (SenSBW; Senate Department for Urban Development, Building and Housing), the "Bezirksamt Berlin Mitte" (Berlin-Mitte district office), the two state-owned companies "Wohnungsbaugesellschaft Berlin-Mitte mbH" (WBM; Housing Association Berlin Mitte Ltd) and the Berliner Immobilienmanagement GmbH (BIM; Berlin real estate management ltd), as well as the "ZUsammenKUNFT Berlin eG" (ZKB), a cooperative for participatory and creative urban design. In 2021, the

[1] The calculation was conducted by *Baubüro in situ ag Zürich* following K. Pfäffli, Architekturbüro K. Pfäffli, (Variante 2B).

project won the prestigious "Golden Lion" award at the Venice Architecture Biennale for its innovative public-civic partnership approach to mixed-use development.

Looking outside a large display window from the "Werkstatt"—the ZKB's unofficial headquarters—the large, straight boulevard of "Karl-Marx-Allee" stretches over more than five kilometers towards the East. Here, Soviet tanks once rolled on parade into the city to claim victory over Nazi Germany. This view offers a portal into the historic legacy of the Haus der Statistik, which already once had been cherished to be a center of experimentation and possibility—not only for the city but for an entire nation.

1.2 From ruined experiments to experimental ruins

The Haus der Statistik was designed to turn the economic dreams of a young socialist nation into reality. Seeking to contain the economic specters of unemployment, social inequality, and private greed that had haunted the Weimar Republic before the fascist horrors of World War II, in the mid-1950s the German Democratic Republic (GDR) introduced the "Command Economy" as a mechanism to re-organize social and economic relations towards what was perceived to be a more just, equitable, and democratic society. At its core, this new economic system was about deliberately setting the rhythm for economic production, consumption, and prices in the nation, codified in comprehensive "Five Year Plans." Walter Ulbricht, the First Secretary of the "Socialist Unity Party of Germany" (SED) saw the Command Economy as an antidote to the model of "profits for a few capitalists" and the "warmongering of the imperialist camp in West Germany" that would "awaken the great creative forces in each German" and create "a happy, peaceful [country]," all the while "speed[ing] up reunification" (1952, p. 2).

Because it put the very nature of freedom, prosperity, and citizenship at stake, failure of the socialist economic project was unthinkable: the Five Year Plans had to be flawless. Striving to do its grand aspirations justice, in less than three years the "National Office of Statistics" constructed a giant fifty-thousand-square-meter techno-scientific repository of concrete and steel which accommodated unparalleled computing and calculation power.[2] Spread over four connected downtown blocks, it provided ample, sober space for an armada of world-class mathematicians who produced precious secrets. The Five Year Plans, printed onto thousands of sheets of paper and stored in mile-long underground file cabinets, were transported away by armed security in bullet-proof vehicles. As the center of socialist economic intelligence and control, the building complex was of unparalleled strategic importance. Its symbolic postal address at Karl-Marx-Allee's number 1—amidst the prestigious heart of the socialist elite's confectioner-style residential building district (today in the process of becoming an UNESCO world heritage site)—seems a less than accidental reflection thereof. Matching its inconspicuous and functional appearance, the building complex would carry the most apt and pragmatic of names: Haus der Statistik (House of Statistics).

[2] The designs for the HdS came from an architecture collective around Manfred Hörner, Peter Senf, and Joachim Härter.

Bundesarchiv, Bild 183-L0824-0308
Foto: Liebers, Peter | 24. August 1972

Impressions of HdS from 1972 [Bundesarchiv Bild]

Parents stroll in front of the HdS, 1970 [Bundesarchiv Bild]

Impressions of the Alexanderplatz between 1950-1974 [Bundesarchiv Bild]

After the Five Year Plans and the socialist economic experiment had failed, the Haus der Statistik was used for other administrative purposes before sitting vacant for over a decade. In 2015, a group of artists dropped a fake construction banner on the ruins' derelict walls in a protest against an increasingly precarious real estate market and the building's impending privatization. The banner proclaimed the HdS to be converted into a space for "arts, culture, and social activities," thanks to the support of the National Government, the State of Berlin, and the European Union. Without knowing it, their prank leaped them forward into an experiment which may turn out to be even more ambitious than that taken on within the building's walls more than half a century ago.

The Haus der Statistik, despite enjoying widespread recognition as a "truly special place" (Bieber et al., 2021, p. 4) by commentators across the world, has not been subjected to comprehensive analytical scrutiny. The question as to what the precise nature of this "specialness" ought to be and in what way it can inform critical acupuncture points for improvements in planning practice and theory building as well as avenues for further research, remains open. Therefore, this paper offers a theoretically-informed ethnographic case study of the Haus der Statistik as a way to explore how it forges (potentially) new pathways towards sustainability in the Anthropocene city.

1.3 Taming the Anthropocene city

At the time of the protest at HdS, the colorful, irritating, and "altogether different" project described above did not yet exist but the conditions it proposed to solve were real. Like most European cities Berlin has entered the "meta crisis" of Anthropocene urbanization, which is characterized by the three intertwined sustainability challenges of social injustice (e.g., social inequality, housing shortages, neighborhood segregation), ecological risk (urban heat, drought, air pollution), and democratic instability (e.g., populism, disenchanted voters, crumbling municipal agency) (Bulkeley, 2021; Dryzek & Pickering, 2019).[3] Moreover, large parts of the city's own wealth rest on a globally unsustainable rate of resource consumption and exploitative labor relations (Ulgiati & Zucaro, 2019), which creates a special level of responsibility for the health, wellbeing, and rights of ecosystems and communities further down the supply chains upon which the city depends (McKinnon et al., 2019). At the same time, cities like Berlin have been identified to play a key role for global sustainability (Wolfram, 2016). Not only are they places with an increased urgency for change but they also create many sustainability solutions (Barry, 2020; Rees & Wackernagel, 2008).

The message that "the city[4]" has assumed unprecedented planetary importance has increasingly been accompanied by literature discussing the negative impacts of capitalist spatial development practices

[3] As used in this paper, the term "sustainability" encompasses a triangle of social, ecological, and democratic goals. While this does not preclude the idea of "economic" sustainability, it regards economic sustainability rather as a means to an end than an end in itself, hence why the idea of economic sustainability is not included as a goal.

[4] Following Julia Spanier and Giuseppe Feola (2022), this paper problematizes the binary rifts between the "urban" and the "rural" by insisting on their hybridity and interlinkage. The rural constitutes the urban as much as the urban constitutes the rural, which exposes "the project of urban sustainability as an experience negotiated at spatial scales that implode the city" (p. 166).

(Brenner, 2019; Chatterton, 2016; Feola et al., 2021; Smiley & Emerson, 2020). In the context of urban development, capitalism can be understood as a historically specific form of social and economic organization, characterized by the private property of land and the means of production, the transformation of nature and labor power into a commodity, as well as modes of constant expansion (Kocka, 2013). Since the neoliberal turn of urban planning in the late 1970s, market-disciplinary rationalities and extractive human-nature relations have become the prevalent modes of governing, using, and valueing urban space (Newman, 2008). These logics of capitalist development are increasingly foregrounded as the driving force undermining systemic approaches to sustainability (Frantzeskaki et al., 2017; Longhurst et al., 2016). Empirical evidence includes the fact that environmental benefits from technological efficiency-gains have been eaten up by the rebounds of rising consumption scales (C. W. Chen, 2021), highlighting the unfeasibility of green growth strategies that seek to decouple growth-oriented development from its intrinsically destructive impacts on the natural environment (Hickel & Kallis, 2020). Ecological restoration and climate mitigation efforts, in turn, have become a vehicle to increase asset values, leading to segregation by "carbon" or "green" gentrification (Béal, 2017). The consequential displacement of disadvantaged communities to the outskirts curtails the diversity necessary for democratic processes of spontaneous encounter and exchange between different urban milieus (Widestrom, 2015). Clearly, within a capitalist environment of austerity governance and privatization, the possibility to tackle social, environmental, and democratic sustainability goals *at the same time* has become increasingly contested.

Taking this perspective, leading geography scholar Leslie Head (2019) argues that by connecting conceptions and critiques of industrial modernity, neoliberalism, global environmental change, and sustainability transformation, it is now "widely recognized that we need to shift some very big cultural frames—the importance of economic growth, the dominance of fossil fuel capitalism, the hope of modernity as unending progress—to deal adequately with the climate change challenge" (p. 9). However, despite its crumbling foundations, the primacy of capital accumulation—encoded and formalized into systems of state ruling, accounting practices, and welfare indicators—remains a powerful narrative in urban planning, which justifies and naturalizes a "commons sense" way in which urban spatial development should be pursued (Xue, 2021). In this vein, Milburn and Russell (2018) refer to neoliberal urban development as a "dead but dominant' ideology that continues to lurch haphazardly onward (if not forward), incapable of managing the contradictions it helped to create" (p. 48). In other words, the current situation traps cities within a "double utopia": "While it is clearly an illusion that society can continue along the present trajectory, fundamental change beyond capitalism seems equally implausible" (Benedikt Schmid, 2019, 4).[5]

[5] This duality also speaks to the ancient Greek meaning of "Eutopia," which can simultaneously mean somewhere achievable ("a good place") and somewhere completely not achievable ("no place", "nowhere"), e.g. compare to Levitas (2010).

1.4 Different shades of experimentation

Urban change imperatives are currently proliferating across the wider policy and academic sphere. Initiatives from the EU-level "New European Bauhaus" to the German "Leipzig Charta" to the local "Berlin Strategie 2030" seek to encode the principles of social, ecological, and democratic sustainability into urban planning guidelines, funding programs, and research collaborations. At the same time, since the 2008 financial crisis, the debate on the conditions and potential of post-growth and post-capitalist economies has expanded beyond the circles of activists and critical theorists to reach a range of academic, mass media, and institutional fora (Blauwhof, 2012; Frase, 2016; Gallino et al., 2008; The Guardian, 2018), including the EU and the UN (Järvensivu, P., et al., 2018). For example, the German "Enquete-Kommission Wachstum, Wohlstand, Lebensqualität" acknowledged the limitations of the gross domestic product as a growth-based welfare indicator and sought new ways in which prosperity, well-being, and sustainable development could be adequately defined and mapped, including important ramifications for the governance and design of cities (Schäfer, 2012).

In the quest for sustainable cities, urban experiments play a key role in facilitating the translation of these policy goals into tangible projects that can demonstrate how other worlds are possible (Fuenfschilling et al., 2019; Savini & Bertolini, 2019). Experimental approaches are based on a critique of mainstream urban planning which still largely operates within a "predict and provide" paradigm and is deemed incapable of grappling with the intertwined and "wicked" processes of change involved in overcoming systemic unsustainability (Sharp & Raven, 2021). Urban experimentation, broadly defined as a "multi-actor and somewhat chaotic process" (Frantzeskaki et al., 2017, p. 5) aimed at producing knowledge "in the real world" and "for the real world" (ibid., p. 7) seeks to foster and activate communities' "innovation[6]" capacities in an attempt to purposively embed something new in a locale and explore how that may contribute to wider efforts to transform the city (Hodson et al., 2017). Similarly, Sengers et al. (2019) define experiments as "inclusive, practice-based, and challenge-led initiative[s], [which are] designed to promote system innovation through social learning under conditions of uncertainty and ambiguity" (p. 185). Urban experiments thereby offer a promising way to ignite the necessarily profound and systemic reconfigurations of the ways in which cities organize their economies, politics, infrastructures, and lifestyles, as well as governance and institutional frameworks (Dryzek & Pickering, 2019; Frantzeskaki et al., 2017).

At the same time, urban experimentation is at risk of becoming somewhat of rascal concept: "promiscuously pervasive, yet inconsistently defined, empirically imprecise, and frequently contested" (Storper,

[6] The quotation marks around the term „innovation" here signify a critical distance to the mainstream interpretation of innovation as a successful invention on the market which is typically tied to goals of economic growth and technological advancement and dominates the discourse since the 1950s. Rather, in the sense of Russell and Vinsel (2016), this article makes a deliberate choice to "hail the maintainers", i.e., it recognizes that while capitalism excels at innovation, it fails at maintenance, which for most lives matters more. As a result, this research seeks to expand the notion of innovation by considering other forms of "newness", such as an alternative uses of the existing, which may involve practices of repair and care.

2016, p. 245). While attempts to conceptually define (Bergmann et al., 2021; Bulkeley et al., 2016; Chronéer et al., 2018, 2019; Kronsell & Mukhtar-Landgren, 2018; McCrory et al., 2020; Schäpke et al., 2018, 2018; Steen & van Bueren, 2017), and practically explore (Ascione et al., 2021; Baccarne et al., 2016; Della Valle et al., 2021; Marvin, Bulkeley, Mai, & McCormick, 2017; McCormick & Hartmann, 2017; Timo von Wirth et al., 2020; Voytenko et al., 2016; Wirth et al., 2019) urban experimentation are by no means rare, existing theoretical and empirical investigations reveal important blind spots. Either they fail to integrate and respond to the abovementioned insights and critiques of capitalist modernity, thus show technocratic, managerial tendencies (J. K. Gibson-Graham, 2006; Koretskaya & Feola, 2020; Benedikt Schmid, 2020, 2021a) and leave ill-defined the actual sustainability of sustainability transitions in the city (Chatterton, 2016; Feola et al., 2021), or they offer radical post-growth visions without formulating how change beyond capitalist modes of social organization might unfold in practice (Hölscher et al., 2018; Loorbach, 2007; Benedikt Schmid, 2019).

1.5 Recognizing sustainable urban experimentation

To recognize and strengthen in particular those experiments that hold the potential to bring humanity within a safe and just planetary operating space, a better conceptual and empirical understanding of the extent to which different types of urban experimentation can challenge the "deep structures of civilization" (Jasanoff & Kim, 2015, p. 189) that undergird the systemic unsustainability of Anthropocene cities is urgently needed. To understand, distil, and nuance the characteristics of sustainable experimentation in the city, this paper offers an ethnographic case study of the Haus der Statistik as a promising and popular urban experiment which has hitherto not subjected to analytical scrutiny in the context of urban sustainability. The analysis is guided by a new theoretical framework that synthesizes the rich but disconnected literature from the fields of "Sustainability Transitions Research" and "Sustainability Transformation Research." The framework qualifies three domains of inquiry to explore the defining characteristics of sustainable experiments: emergence, functioning, and tensions. Building on these points of departure, the study is guided by the following research question: *How does the Haus der Statistik (re)envision, practice, and negotiate urban experimentation towards sustainable cities?* This implies the following sub-questions:

(i) Emergence: How did relevant actors *re-envision* the Haus der Statistik and what background did they mobilize to realize this vision?

(ii) Functioning: Which cultural and institutional *practices* are key to understanding the day-to-day functioning of the Haus der Statistik?

(iii) Tensions: Which tensions arise in the Haus der Statistik and and how are they *negotiated* in strategic ways?

As a case study nested within the city of Berlin, the exploratory inquiry into the "Haus der Statistik" relies on collaborative and multi-modal architectural- and urban ethnography, which combines different forms

of observant participation, desk research, interviews, and survey data. The findings demonstrate the usefulness of the developed framework by revealing the Haus der Statistik as both action-oriented, pragmatic, and targeted whilst striving towards a more radical, politicized and imaginative ontological politics beyond capitalism, thereby pushing the boundaries of the possible and probable in urban sustainability towards yet unknown territory. Addressing the incapability of existing conceptual tools to capture the innovative character of places like the HdS, the paper develops the notion of "deep experimentation" as an analytical envelope that permits the recognition, differentiation, and specification of what may be an emerging new type of urban experimentation working towards (truly) sustainable cities.

The paper is structured as follows: *Section 2* develops the analytical framework grounded in a review of relevant transition and transformation research around urban experimentation, offering the emergence, functioning, and tensions of experiments as three promising points of departure for further empirical examination. *Section 3* outlines the research design by which the framework is applied to the Haus der Statistik, including data collection and methods of analysis. *Section 4* lays open key insights about how the Haus der Statistik envisions, practices, and negotiates urban experimentation towards sustainable cities and discusses them in dialogue with relevant literature. Based on these findings, *Section 5* introduces the idiom of "deep experimentation. *Section 6* concludes with an outlook on further research.

2. Theoretical pointers: Situating urban experimentation

2.1 Transition or transformation? Disentangling urban experimentation research

The literature discussing urban experimentation is scattered across various disciplines, concepts, and geographies. Concentrated within the Global North and, in particular, within Northern-European contexts, examples are institutionally and sectorally diverse. Fields of application, e.g., include post-fossil mobility (Wimbadi et al., 2021), sustainable food provisioning (Raven et al., 2019a), community-led neighborhood development (Frantzeskaki et al., 2018), renewable energy cooperatives (Beermann & Tews, 2015), or organized sharing localities (Sharp, 2020). Researchers have sought to bring order into this puzzle by defining the characteristics of different types of urban experimentation, including concepts like "urban living labs" (Bulkeley et al., 2016), "real-world laboratories" (Schneidewind, 2014), "urban commons" (Williams, 2018), or "autonomous spaces" (Vasudevan, 2015). While notable exceptions apply, the plurality of these conceptual contributions can generally be traced back to the rich but largely disconnected scholarly communities of (i) "Sustainability Transitions Research" and (ii) "Sustainability Transformations Research." This section offers an introduction into both fields to (iii) sketch a much-needed deep dive into potential synergies between them.

2.1.1 Urban experimentation in Sustainability Transitions Research

Sustainability transitions research is grounded in the intellectual traditions of innovation management, evolutionary economics, and technology studies. It views the city as a "nodal point" (Frantzeskaki et al., 2017) of different, intersecting socio-technical *systems*[7] (e.g., energy, transport, housing, or agro-food systems). These systems are conceptualized in shorthand as "socio-technical" because the fulfilment of societal functions involves not only technologies, but also "situated consumer practices, cultural meanings, public policies, business models, markets, and infrastructures" (Geels, 2011). Characterized by lock-in effects, path-dependencies, and infrastructural obduracy (Köhler et al., 2019), socio-technical systems tend to cumulate into "dynamically stable" "socio-technical regimes," which are by definition difficult to change (Köhler et al., 2019). While socio-technical systems are typically conceptualized to take effect at the national or supra-national level (Coenen et al., 2012), the particularity of cities is that they are legally confined by administrative boundaries in which different socio-technical systems overlap in one place. However, the geographical dimensions of socio-technical systems remain underdeveloped, which limits the concepts explanatory power in the context of urban spatial environments (Frantzeskaki et al., 2017).

The transitions literature primarily focuses on *how* sustainability transitions unfold. Translating to "going across," transitions are characterized by high degrees of uncertainty, ambiguity, and non-linearity, as well as unclear outcomes (F.W. Geels & R. Kemp, 2006). In the context of urban sustainability transitions, experiments in the city are typically situated within the protected "niches" (Savini & Bertolini, 2019) of the so-called "Multi-Level Perspective" (MLP, see *Appendix i*). This prominent heuristic posits that transitions come about through interaction processes within and among three analytical levels: niches, socio-technical regimes (explained above), and a socio-technical landscape (Geels, 2010). Speaking to the idea of "going across," urban experimentation seeks to enable actors and institutions to go beyond business as usual and foster innovation and agency towards more sustainable regime configurations. Sub-fields that focus on how actors in these "niches" interact with the dominant "regime" include "Strategic Niche Management" (René Kemp et al., 1998) as well as "Transition Management" (Loorbach, 2007). They develop hands-on practices, tools, and techniques for how to create experimental places like "Transition Arenas." Mirrored by this prominence of managerial terminology, transitions scholars generally view experiments in the city as being purposefully created, designed, and constructed.

In terms of lead actors, the field foregrounds the role of public and private actors. While framing urban experimentation as a "multi-actor" process (Hölscher & Frantzeskaki, 2021), it argues along a "government-up-front-storyline" (Gross, 2019), where the municipality represents the central protagonist in a

[7] Following Geels (2019) the "systems"-unit of analysis is important because three socio-technical systems including "mobility (especially automobile and air transport), nutrition (especially meat and dairy), and domestic energy consumption (heating/cooling, lighting, washing, showering, appliances) account for 70–80% of environmental impacts in industrialized countries" (p. 188). The construction and in particular concrete sector furthermore adds another 9% of total global greenhouse gas emissions (ibid.).

narrative of collaborating partners seeking to ensure wellbeing and social justice in the city (Kronsell & Mukhtar-Landgren, 2018). Besides orchestrating collaborations and creating the enabling contexts for experimental approaches to take hold, public authorities are also portrayed to be potential primary obstructions to sustainability transitions, which reinforces transitions as a profoundly political process (Bulkeley et al., 2018). In more classical innovation and "smart-city" focused accounts, corporates in the engineering, consulting, computing, and digital technologies sector are seen as equally important partners. By developing business solutions, often in cooperation with academic research and development, they allow urban infrastructural transitions to scale (Baccarne et al., 2014; Bibri & Krogstie, 2017). In the literature, citizens have long been reduced to voluntary engagement in participatory planning, corporate innovation, and climate adaptation processes. Emerging concepts like "transition agents," however, point to a new recognition of "bottom-up" actors in the experimental sphere (Frantzeskaki & Rok, 2018). These actors are deemed particularly impactful when interacting with established political institutions under clear framework conditions, enforceable contracts, and trustworthy agreements (Mukhtar-Landgren et al., 2019).

The transitions literature offers important take-aways for the study of urban experimentation. Concepts like "urban living labs" (Bulkeley et al., 2016) or "real-world laboratories" (Schneidewind, 2014) highlight goals and values like participation, co-creation, scalability, engagement, long-term orientation, reflexivity, transdisciplinarity, and learning (Chronéer et al., 2019; McCormick & Hartmann, 2017; Steen & van Bueren, 2017). Moreover, the field has contributed to a better conceptual understanding of different functions of urban experiments including their role as "adaptive research infrastructures" (Wirth et al., 2019), "strategic action fields" (Canzler et al., 2017), "inter-boundary spaces" (Timo von Wirth et al., 2020), and "modes of urban governance" (Bulkeley et al., 2016). Scholarship has also fleshed out successful processes in terms of experimental design (Nesti, 2018), governance practices (Marvin, Bulkeley, Mai, McCormick, & Palgan, 2017), and impact strategies (Wirth et al., 2019), as well as more outcome-oriented insights about knowledge production (Frantzeskaki & Rok, 2018), institutional innovation (Raven et al., 2019b), and business models (Baccarne et al., 2016; Fratini et al., 2019). The field has also foregrounded the importance of factors beyond local contexts—including national governance styles and policy programs—to assess the degree to which urban experiments can create an impact on and beyond the city (Fuenfschilling et al., 2019). Institutional arrangements that "affect experimentation thus need to be understood as broader than the geographical boundaries of the urban" (ibid., p. 223).

However, the field exhibits important blind spots. As transitions perspectives tend to be rooted in positivistic epistemologies, the field has been critiqued for technocratic and managerial tendencies (J. K. Gibson-Graham, 2006; Koretskaya & Feola, 2020; Benedikt Schmid, 2020, 2021a) and a reluctance to engage

with the deeper, structural politics of capitalism in the city (Chatterton, 2016; Feola et al., 2021).[8] As a result, there is a dispute about the actual sustainability of the proposed sustainability transitions in their own right (Feola, 2020; Loewen, 2022). Moreover, the field has shown signs of a "spatial blindness," which has led to misconceptions of a vertically organized transformation landscape including "local" niches, "national" regimes, and "global" landscapes.[9] This lack of a solid geographical foundation implies urgent but largely understudied and undertheorized challenges (Bulkeley et al., 2016; Frantzeskaki et al., 2017).

2.1.2 Urban experimentation in Sustainability Transformation Research

Transformation scholars, in contrast, study urban experimentation from the perspectives of urban political economy (Kębłowski et al., 2020; Molotch, 1976), post-growth (Demaria et al., 2019; Hickel, 2019; Kallis et al., 2012), post-capitalism (Chatterton, 2016; J. K. Gibson-Graham, 1997; Roelvink et al., 2015), post-development (Demaria & Kothari, 2017; Escobar, 2017), urban geography (Benedikt Schmid, 2019), radical democracy (Barnett, 2017), commons and commoning (Dietz et al., 2003; Ostrom et al., 1999; Williams, 2018), as well as feminist perspectives on care (Fitz, 2019), craft (Graham & Thrift, 2007; Holmes, 2019; Johns & Hall, 2020), and creativity (Martí-Costa & Miquel, 2012). While covering a wide range of disciplines and discourses, all of these approaches criticize mainstream political, economic, and cultural practices that are based on increasingly severe encroachments in social and ecological systems and leading to the highly unequal destabilization of communities and ecosystems (Benedikt Schmid, 2020). The field relies on strong arguments that meeting social, ecological, and democratic goals *at the same time* seems implausible without drilling thoroughly into the unsustainability of capitalist relations and proposing more regenerative and redistributive alternatives (Klein, 2015; Raworth, 2018).

The transformation literature focuses more on *what* kind of changes sustainability necessitates. In this sense, transformation translates to "change in shape or form." Spanning across structural and post-structural perspectives, it views the city as both a tempo-spatial fix[10] to the inherent contradictions of capital accumulation and the social, psychological, economic, environmental, and political crises it produces (Harvey, 1981), as well as a site of possibility, hope, and imagination for post-capitalist futures (J.K. Gibson-Graham & Kelly Dombroski, 2020). That is, experimentation typically aims to produce profound changes

[8] To mention one of few notable exceptions, R. Kemp et al. (2018) indicate "the need for systemic change, not only in socio-technical systems, but also in the system of capitalism and the process of marketisation, which has been the dominant force of transformation in the last two centuries, together with emancipation and democratization" (p. 71).

[9] The MLP suffers from a hierarchical ontology of niche, regime, and landscape, which tends to obscure the fact that space and place are constituted by relations. For instance, Vandeventer et al. (2019) have convincingly conceptualized the degrowth movement as a "niche" vis-à-vis a capitalist growth "regime." However, as a highly spatially dispersed and heterogeneous community of practice and scholarship, degrowth is far from a territorially confined, local phenomenon; neither is capitalism with its networked, globalized, and opaque supply chains as well as its grounding in day-to-day practice confined to the nation state;

[10] The theory of the "tempo-spatial fix" implies that space is a "sink" for surplus capital. As local markets saturate over time, capital geographically expands to other localities which can absorb and "fix" the surplus capital and labor in new profitable, physical assets. From this perspective, urban spatial development plays an essential role in perpetuating, expanding, and saving the capitalist mode of production and consumption. One prominent example is the slow migration of venture capital from Detroit to Silicon Valley in the 1960s and the related processes of spatial reorganization in both places. Today, Silicon Valley is discussing its own "Detroit Moment": rising costs and decreasing demand have lowered revenue prospects and capital is leaving the city.

in the structure of socio-ecological relations beyond a narrow focus on (economic) profitability (Benedikt Schmid & Smith, 2021) by building "alternatives" within, beyond, next to, and against the structuring forces of globalized capitalism (Jonas, 2016; Leyshon et al., 2003). Viewing space, place, and power as constituted and constantly produced by local relations and practices (Massey, 2013) rather than to be "inherent" to the global nature of capitalism, transformation scholars adopt a much more "flat" understanding of space, which replaces the vertical hierarchies of the MLP with the horizontality of circulating practices and their links across different scales of reproduction. Thereby, the field rejects connotations of the "small" to be "helpless" and foregrounds the agency of local communities and networks of alterity.

With regard to key actors, the field places less faith in political or corporate responses. Constating a "widespread disillusionment with elite and nation state politics" (Chatterton, 2016, p. 411), it formulates a critique of local governments as the guardians of private property seeking to ensure a favorable investment climate for capital accumulation in the city. Conversely, transformation scholars highlight the role of radical grassroots experiments and the "significance of an explicit consideration of capitalism in helping to understand grassroots-led transitions" (Feola, 2020, p. 245). Special agency is attributed to social movements, NGOs, residents, and communities for their ability to force transparency onto opaque political processes and corporate decision-making (Milburn & Russell, 2019). Civic actors are cherished for their potential to raise the "political costs of 'business as usual' and open up new political possibilities" (ibid., p. 3). However, as Schmid argues, the point "is not to elide the role of top-down policy measures [or private businesses], but to revalorize the often-dismissed role of grassroots creativity in pro-environmental [and social] transitions" (Benedikt Schmid, 2021a, p. 204). In this sense, power imbalances between local authorities, private businesses, and community actors as well as related struggles are viewed as a defining characteristic and ongoing challenge shaping the experimental fabric of the city (Willems et al., 2020).

Transformations research offers rich insights into the phenomenon of urban experimentation. Prominent concepts like "autonomous spaces" (Vasudevan, 2015), "maker spaces" (Dale Dougherty, 2012), or "urban commons" (Williams, 2018) highlight values like autonomy, care, creativity, equity, hope, possibility, and justice, as well as the production of social and ecological (in addition to economic) value. By placing a strong emphasis on normativity and values, the field offers a wider, more radical critique of the ontological politics of rationalistic, human-centered Western development and its theories of knowledge in favor of a more "pluriversal[11]", processual, and relational understanding of constantly "being-in-common" with the human and-more than human world (Escobar, 2018; J. Gibson-Graham & Dombroski, 2020). Related empirical examinations have shed light on new forms of production (Dale Dougherty, 2012), consumption

[11] Rooted in post-development theory, the idea of the pluriverse rejects the universalizing tendencies of Western One-World thinking and its proposition of one future in favor of a pluriverse of worlds that leave space also for other ways of knowing and being such as vernacular wisdoms that restore our belonging to nature, see e.g. Escobar (2018).

(Carr & Gibson, 2016), ownership (Milburn & Russell, 2018), and exchange relations (Feola et al., 2021) in the city, and challenged deeply entrenched planning rationales and standards of valuation (Xue, 2021).

However, the sustainability transformation literature is not immune to critique. While demanding progressive post-growth futures, it often remains vague about the practicalities of social change and its actual realization (Benedikt Schmid, 2019, 2020). Scholarship on transformation is thus challenged to formulate how change beyond growth-dependent and capitalist modes of social organization might unfold. Moreover, while exposing spatiality as socially produced, the field still too often meanders between the extremes of a strong bottom-up bias in its theory of change and an overly pessimistic structural determinism in the face of an "promiscuously pervasive" capitalist structure that need overworking (Brenner & Schmid, 2015; Benedikt Schmid, 2020).

2.1.3 Setting the stage: Transitions need transformations, and *vice versa*

The above review shows that while *transition* perspectives tend to be premature in determining the pathways towards sustainability without critiquing dominant power structures and economic models, *transformation* leaves much room for diverse possibilities, ontologies, and directionalities for a world beyond capitalism—and may thereby address the root causes of unsustainability much more rigorously—but often at the cost of targeted organization and action. Schmid pointedly captures this duality: "Transition without transformation runs the risk of being apolitical or ontologically naïve. Transformation without transition, on the other hand, might lack practicability and clarity" (2020, p. 132). Clearly, a theory of urban experimental change needs to articulate both pathways and orientation while simultaneously negotiating and modifying them by reflecting the deep economic structures within which urban experiments are embedded. To provide scholarship with the required intellectual tools, the transitions and transformations community need to integrate different ontologies about the nature of social and socioecological change (e.g., Feola, 2020; Sunderlin, 1995) by acknowledging evidence and experiences from the other discipline, and *vice versa* (Feola et al., 2021).

Because they are grounded in different histories, ontologies, and epistemic assumptions, framing urban sustainability research around transitions *and* transformations approaches can generate multiple and innovative research avenues (Torrens et al., 2021). The newly founded "Research Network of Urban Transitions and Transformations" (UTT) seeks to invite a dialogue between both fields: "Strategic interdisciplinary reviews have an important role here in enabling focused explorations through conceptual or empirical studies" (ibid., p. 103). Even if there has been a recent push to bring transitions and transformation perspectives into conversation, their maps are yet to be superimposed onto the landscape of urban experimentation in a systematic way. Drawing together insights from the literatures on sustainability transitions and transformation, three interrelated processes appear to be central for any understanding of the workings of urban experimentation in the Anthropocene city:

(i) the "emergence" of urban experiments–the socio-historical background and place-based identities that underpin their initiation, as well as the imaginaries and visions through which they are enacted and mobilized;

(ii) the "functioning" of urban experiments—the institutional and cultural practices through which experiments are implemented and maintained on a day-to-day basis;

(iii) and the "tensions" of urban experiments—the frictions and constraints arising in the processes of enrolling the experiment within and beyond its specific context including the negotiation of strategy, scale, and impact.

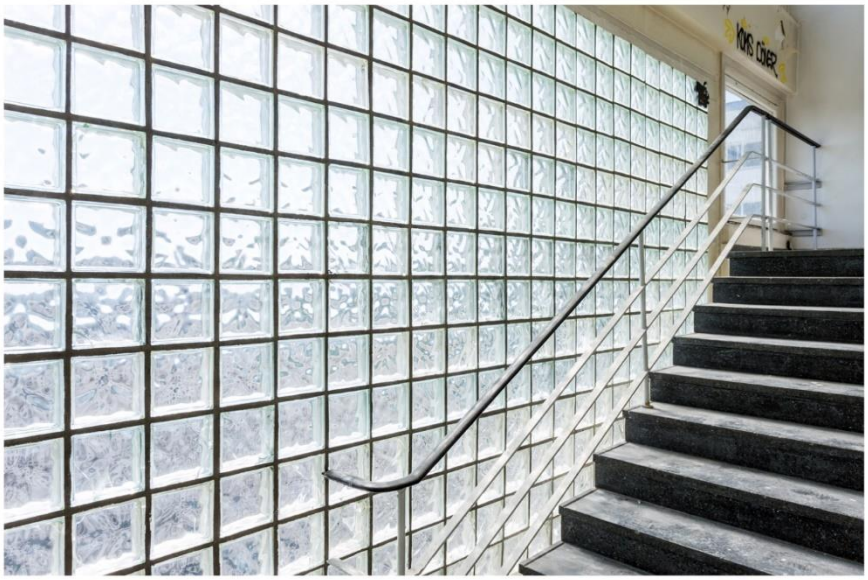
These three entry points serve to synthesize previously disconnected literature as a foundation to analyze the case study of the Haus der Statistik presented in this paper. They are a means to distinguish the special and new mode of urban experimentation through which the HdS takes effect relative to existing conceptualizations acknowledged by the transitions and transformation literature. Due to the broad scope and depth of the literature, the review may not be exhaustive but it provides a sufficiently accurate overview of the tendencies and lines of argumentation across the transitions and transformation scholarship.

2.2 The legacies and imaginaries of places: Embedding experimental emergence

In many ways, the city has "arguably, always been experimental" (Joshua Evans, 2016, p. 429) in that urban authorities have regularly "tested" urban knowledge in processes of attempting to improve the city. The evaluative twist in this paper is to specifically understand the background and visions shaping the emergence of urban experiments. This sections asks: "Which *background* did relevant actors mobilize to *envision* what type of change? This translates into two foci: (ii) background conditions and (iii) urban imaginaries.

2.2.1 The place-based historical roots of urban experimentation

Sustainability scholars have recently started to adopt an understanding of experimentation that takes account of the place-specific problems, histories, and identities of a city. However, in sustainability *transitions* research examinations of the ways in which the specific socio-spatial histories of a place influence its experimental environment have long remained scarce or overly simplified. Set in a linear genealogy, experimental techniques were seen to transmute from the research laboratories of corporate enterprises straight into the messy context of real-world urbanity (James Evans et al., 2016; e.g., McCrory et al., 2020). Understanding the urban to be a kind of petri dish that can be replicated and generalized, urban experiments would enable public-private-partnerships to develop methods for more open and rapid innovations around technological and digital services often linked to the smart and carbon-neutral city (Baccarne et al., 2014; Sanchez et al., 2014). Indeed, evidence shows that many projects labeled as urban experiments are implemented by corporate actors. However, the vast majority fails to include key principles such as co-creation or inclusivity, which suggests that the term is at risk of cooptation (Steen & van Bueren, 2017).



Haus der Statistik before structural restoration [© BIM GmbH]

The historically contingent path-dependencies, lock-ins, and infrastructural obduracy that complicate systemic change within the urban built environment have for long remained absent (Hommels, 2020). However, recent studies of urban experimentation have broadened their perspective to unpack the origin stories of experiments in relation to how place-based identities, attachments, and senses of belonging—often termed "place character" or "place tradition"—can inform, support, and accelerate the (re)emergence of experimental spaces (Smiley & Emerson, 2020). Using the example of the "institutional regeneration" of Dutch craft beer brewing, Kroezen and Heugens (2019), e.g., show that institutional logics that appear dead or decomposed "may never truly die" (p. 976). They leave remnants behind that actors in the field can rediscover, repurpose, and reuse at later stages in a dualistic process of restoring the "old" and blending it with contemporaneous elements of the "new." Yet, little has been done to link these dynamics of using the "existing" in "new" ways to the capitalist struggles over the city.

Transformation perspectives complement these insights by showing how urban experiments are influenced by the economic histories and trajectories of a place, which they also influence themselves (Harvey, 1978; Sassen, 2013). Typically, urban experimentation is seen to respond to wider global capitalist crises which are viewed as symptoms of the rationalistic Enlightenment tradition, which "carried with it into all world cultures the Trojan horse of the individual, destroying communal and place-based forms of relating" (Escobar, 2017, p. 6). Following an ethical imperative to counteract the isolationist geographies of contemporary cities, desirable urban experimentation flows from processes of (re)embedding, localizing, and contextualizing new economic systems to specific local conditions (Contu & Willmott, 2003; Polanyi, 1944). In the spirit of the Butlerian theorem that "discourse participates in constituting the reality it purports to represent" (Healy, 2009, p. 339), transformation scholars foreground the performative nature of language. They carefully explain, recognize, and strengthen experimental approaches by nesting them within semantics that emphasize relationality, locality, and interdependence. J. K. Gibson-Graham's (2006) idea of economic "being-in-common" as a way to "make other worlds possible" is a case in point.

For transformation scholars, experimentation is not just crucial for the institutionalization of novelty, but can also contribute to the deinstitutionalization of dominant, unsustainable configurations" (Fuenfschilling et al., 2019, p. 222). This focus on processes of disarticulation, exnovation, and deconstruction have recently emerged in response to a purported "innovation bias" in transitions studies , which has overly emphasized the emergence of "newness" and undertheorized processes of "unmaking" old (oftentimes explicitly capitalist) socio-economic configurations to "make space" for novelty in the first place (Feola et al., 2021). Frequently discussed examples include urban squatting scenes or the "Zapatista" movement in Mexico. Highlighting these elements of destabilization, Fuenfschilling et al. (2019) argue that "experimentation may indeed be a more apposite conceptualization to capture the creative destruction process at

play rather than the continuum of innovation" (p. 226). As place-based processes of creation and destruction, experiments are also influenced by other, more distant projects, ideas, discourses, and people in the sense of "counter-topographical networks" that extend far beyond the city (Katz, 2001).

2.2.2 The role of imaginaries in urban experimentation

Grounded in local spatial and historical contexts, the transition and transformation literature discuss different visions and roles for desirable urban futures as well as interpretations of how they come to shape the emergence of urban experiments. Transitions scholars explain the rise of urban experiments in response to an increasingly fragmented urban sustainability discourse and the related need for dialogue between different competing visions of desirable urban futures (Fuenfschilling et al., 2019). The literature identifies and discusses different socio-technical imaginaries (Jasanoff & Kim, 2015) including smart cities, urban resilience, and low-carbon cities, each one going beyond mere technological fixes and data-driven solutionism but nevertheless associated with dominant national innovation and urban employment priorities and related coalitions of interests, practices, and pathways, as well as ideas of which fields of action are strategically important. Instead of proposing a "singular concept of how the environment of the city needs to be reshaped" (Torrens et al., 2019, p. 213) they view experimental spaces as a response to the need for an arena in which the capacities for constructive exchange between multiple, unbundled, and co-existing urban imaginaries can be cultivated.

Far from conceptualizing experiments merely as spaces designed to bring into conversation heterogeneous (yet hegemonic) urban imaginaries, transition scholars also discuss experiments in relation to the ambition to turn urban imaginaries into reality. Urban experiments provide a vehicle for the translation of long-term visions into more short-term and concrete action and practices (Karvonen & van Heur, 2014). Empirical evidence shows that experiments pursue different purposes, goals, and imaginaries (Bulkeley et al., 2019): "sustainability is a dynamic, normative property, changing through the course of different labs [i.e., experiments] and encompassing emergent ambivalences and qualities" (Walker & Shove, 2007, p. 220). As urban history has demonstrated the risks of uniform, grandiose visions (Caprotti, 2007; Cugurullo, 2018)—modern cities were built through cruel processes including slum clearance, red-lining, and mass displacement, riddled with class struggles, racial violence, discrimination, and marginalization (Torrens et al., 2021)—this plurality can be viewed as a fruitful ground for multifaceted experimental interventions to emerge and compete for the best solutions in the city.

In contrast to these rather techno-scientific visions and the idea of "prototyping" urban futures, *transformational* approaches explain the beginnings and role of experimental projects in relation to a more confrontational recalibration and re-imagination of economic, political, and social institutions. Dominant imaginaries and paradigms of circular, healthy, and smart cities that obscure and perpetuate capitalist logics are not filling the sustainability gap (Fratini et al., 2019; Hajer & Versteeg, 2019; Jong et al., 2015). For

example, mounting evidence shows the infeasibility to decouple growth-oriented and dependent development from its intrinsically destructive impacts on the natural environment (Hickel & Kallis, 2020; T. Jackson, 2016; Raworth, 2018). Moreover, discussing the phenomenon of ecological restoration efforts that lead to "green" or "carbon" gentrification (Long & Rice, 2019), researchers reject tunnel-visioned interventions seeking to increase the city's competitive advantage at the cost of more systemic assessments of their broader impacts and ramifications (Béal, 2017). In this context, urban experiments are understood as condensation nuclei that respond to a need for alternatives beyond capitalism, accumulation, and growth (D'Alisa et al., 2015).

Urban experimentation plays a crucial role in bringing to life and materializing urban imaginaries that challenge the growth-based planning orthodoxy and its assumptions of what innovation is, could be, or should be. Aiming to broaden the scope for transition pathways, transformation scholars formulate post-capitalist visions that rest on relational ontologies, principles of autonomy, dignity, and sufficiency (e.g., Escobar, 2018; J. K. Gibson-Graham, 1997; Graeber, 2002; Holloway, 2005). They integrate systems perspectives (Kim & Mauborgne, 2019), and extend the scope of the objects of innovation to social innovation (Kleverbeck & Terstriep, 2017; Shadle et al., 2018), maintenance and repair (Graham & Thrift, 2007) and even ontological shifts that integrate more-than-human needs into urban design (Houston et al., 2018).[12] However, such efforts thus far have "failed to produce the necessary changes and imaginaries needed to scale" (Benedikt Schmid, 2020, p. 132).

2.2.3 Synthesizing insights on the emergence of urban experiments

The above review has detailed how specific background conditions and visions shape the emergence of urban experimentation, and *vice versa.* Rather than viewing experiments as de-historicized innovation laboratories in the smart city or as uniform nodes of resistance in a global capitalist system, research must pay attention to the *specific* spatial and historical context within which urban experiments evolve. Embracing this contextual dynamic not only requires recognizing how experiments are produced by the unique values and meanings of a city but that they themselves may become agents of change by drawing on local struggles and senses of place as a way to unmake old socio-economic imaginaries and generate new ones. As experiments can bring a pluralism of competing visions into a fruitful and targeted conversation, scholarship must better understand which imaginaries question the supposed inevitability of growth-oriented innovation in the city and how they expand the scope of possible urban futures to more-than-capitalist development pathways. Moreover, important insights are to be gained about whose imaginaries take precedence over others and how these imaginaries "land" and manifest in a concrete locality in ways that inform new institutional and cultural practices on the ground.

[12] For a structured overview of the shifting paradigms and conceptualizations of "innovation" see J. Chen et al. (2018).

2.3 Making experiments work: The practices of everyday functioning

From the governance techniques of the Greek "polis" to the jaywalking habits in the of early-automobile era, urban systems have always been shaped by changing institutional and cultural practices. Recognizing and strengthening sustainable forms of urban experimentation requires a detailed understanding of their constitutive practices, and how they are implemented into the pragmatics of everyday life. The question is: "Which *institutional* and *cultural* practices are key to understanding the day-to-day the functioning of urban experiments towards sustainable cities?" Again, this translates into two focus areas: (i) institutional innovations as well as (ii) cultural shifts.

2.3.1 Institutional and governance innovations in urban experimentation

While sustainability transitions and transformations scholarship both view experiments and institutions as closely interlinked and demand changes to orthodox institutional practices to satisfy basic needs such as food, housing, work, energy, and education in more sustainable ways, they foreground different qualities and approaches in this process. *Transition* perspectives understand institutions as "the rules of the game"—including organizational and governance structures—that enable or constrain experimental choices and action. They situate urban experiments within a broader shift in the nature of urban governance towards more reflexive, place-based, and participatory institutions (Walker & Shove, 2007). Bulkeley et al. (2016), e.g., view experiments as "an important new instrument of participatory governance that can elucidate the way different actors like community initiatives relate to and employ planning and policy contexts for working towards sustainable urban futures" (p. 14). Similarly, highlighting their role as intermediaries between pre-existing governance instruments and activities such as strategic planning and urban design, Timo von Wirth et al. (2020) view experiments as "inter-boundary spaces that negotiate, contest, and reconfigure the institutional logics and politics of urban place-making" (p. 143).

The literature specifies factors that successful urban experiments need to fulfill, including motivations (sustainable purpose, shared visions), resources (management structure, (co)financing, business models, ICT infrastructure), networks (alliances, partnerships, stakeholder engagement), capacity building (learning, knowledge production, application), as well as measurements (monitoring, evaluation, and the scalability of results) (Chronéer et al., 2018; McCormick & Hartmann, 2017; Voytenko et al., 2016). While these enabling conditions are well-researched, specifications of the politics involved in choices around the design of experiments have remained marginal at best. Observations like an "increased *sense of ownership* through mutual learning among affected publics" (Frantzeskaki & Rok, 2018, p. 49) are epitomic of tendencies to halt at the level of subjective experience and obscure deeper, more structural questions of *actual ownership* by affected publics, thereby limiting possibilities for transitions beyond capitalism and increasing vulnerability to cooptation. Indeed, evidence shows that without ownership titles, many initial "bottom-up" experiments over time become orchestrated in "top-down" ways (Fastenrath & Braun, 2018).

The *transformation* literature has asked for a more rigorous interrogation of the ways in which power, resources, and agency are orchestrated in urban experiments to produce particular outcomes and foreclose others. Grounded in practice-theoretical perspectives, institutions are understood to be "the rules of the practice." Practice theory, seeking to strike a balance between structural determinism and individual agency, understands the social as "a constellation of routinized behaviors [and] the interplay between human bodies, artefacts, meanings, and know-hows" (Benedikt Schmid & Smith, 2021, p. 255). Practices commonly associated with urban development are exposed as always social and political, thereby foregrounding delicate questions of how money, power, and control are embedded in everyday decisions and actions (Benedikt Schmid, 2019). In this sense, institutional change through urban experimentation can be understood as "the practice of changing the rules of the practice" (Dünckmann & Fladvad, 2016, p. 25).

Transformation scholars highlight the commons as promising institutional containers to interfere with these rules. Commons "build social and spatial formations [that] inhibit the accumulation of surplus value, individualization, commodification, and enclosure" (Chatterton, 2016, p. 410). They are always partial and coexisting with a myriad of other public and private forms of ownership governance. To safeguard the possibility for everyday practices of mutual ownership and use, the transformation literature highlights the need to normalize and strengthen urban commons as a "more-than-property" form of property by securing long-term user rights, land titles, and decision-making authority (Williams, 2018). In this context, e.g., the concept of public-civic-partnerships has emerged as a new form of distributed governance that—by design—engenders collective and solidaristic behavior as people are in "closer proximity to and control of the decisions that matter to them" (Milburn & Russell, 2018, p. 49).

2.3.2 Unpicking cultural change in urban experimentation

Since institutional and cultural change co-produce each other, questions of how experiments shape, and are shaped by, customs, norms, routines, traditions, attitudes, and motivations come to the fore. In this sense, the *transitions* literature asserts that often it is not "the institution or artefact that is particularly innovative [but the] ideas that underlie [their] application in different territorial contexts" (Hodson et al., 2017, p. 9). Therefore, accounting for "soft" (cultural) as opposed to "hard" (artefacts) niche innovations in the MLP is essential, "particularly in the urban context, where soft niche-innovations often form the basis for regulations and policies that lead to societal transition" (Larbi et al., 2021, p. 499). From the transitions perspective, cultural change through experimentation is about social learning. Taking ambiguity, complexity, and uncertainty as the starting points that complicate change in the city, social learning aims at lasting change in the interpretive frames, belief systems, cognitive biases, sense-making, underlying assumptions, and narratives of urban actors (Frantzeskaki & Rok, 2018; Wenger et al., 2010). Experimental learning is explicitly normative in seeking to strengthen sustainability values such as environmental integrity, societal cohesion, welfare, and intergenerational justice.

To succeed, social learning needs to fulfil specific conditions. These include time for reflection, mutual trust, and openness to each other's perspectives as well as the experimental process itself (Marvin, Bulkeley, Mai, McCormick, & Palgan, 2017). It thereby follows a cyclical model of problem analysis, visioning, agenda setting, actions, and evaluation (Ascione et al., 2021). This "iterative learning-by-doing and doing-by-learning process" (Fuenfschilling et al., 2019, p. 222) is closely linked to notions of empowerment because participants acquire new tacit, embodied, and local knowledge: "Knowledge co-production operating spaces show-case that cocreation enables collaborative learning, that in turn improves the use of knowledge in practice" (Frantzeskaki & Kabisch, 2016, p. 93). Moreover, creating space for contesting existing narratives of urban sustainability as part of collaborative dialogues "can progress policy development and planning and profoundly change decision-making structures on the ground" (Frantzeskaki & Rok, 2018, p. 49). While proposing hands-on suggestions for how to manage cultural change, the literature seems limited in explaining the deeper factors that underlie present ideas, lifestyles, and values in the Anthropocene city (Lachman, 2013).

The *transformations* literature tends to offer a more structural, socio-economic reading of cultural change seeking to stretch dominant ontological parameters in the "Western" city. Building off of historical work on "making sense" of the city, e.g., Smiley and Emerson (2020) introduce the notion of a "spirit of urban capitalism" to show how residents of cities develop patterns of cognition and action that justify, normalize, and make meaning out of local configurations of urban capitalism. Furthermore, Sievers-Glotzbach and Tschersich (2019) explicitly identify the need to challenge modern capitalist paradigms including "materialistic culture and growth," the "control and autonomy of humans over nature" and "expert knowledge and specialization" in order to pursue socio-ecological transformation in the city. In this vein, Feola (2020) critiques the lack of ontological pluralism in the transitions literature, which "has contributed to the rigidity of depoliticized techno-centric responses to global environmental change" (p. 246).

To move from the hegemony of "modernity's One-World ontology"—referred to as "rationalistic," "Cartesian," "objectivist," "mechanistic," "reductionistic", "positivistic," and "computationalist"—to a "pluriverse of socio-natural configurations" (Escobar, 2017), urban experiments ought to integrate and give voice to the contributions of subaltern and indigenous scholars and alternative knowledge systems. Countercultural narratives that center around relational ontologies and foreground broader paradigmatic shifts from ideas of "existence by itself" to "inter-existence" as well as from "independence" to "interdependence" (e.g., D. Haraway, 2015; Lovelock, 2016; Maturana & Varela, 2012) include current debates and struggles around "buen vivir," rights of nature, and communal logics (Feola et al., 2021). By making the "processes and structures that surround us intelligible and knowable" (Escobar, 2017, p. 25), experiments can provide the spaces in which these new economic subjects and ethical practices are cultivated. In this sense the larger project of "ontological design" is conceived to be "eminently user-centered, participatory, collaborative, and radically contextual" (ibid., p. 26).

2.3.3 Synthesizing insights about the functioning of urban experiments

Juxtaposition of transitions and transformation perspectives shows how urban experimentation shapes, and is shaped by, the dynamic and interlinked landscape of institutional and cultural practices in the city. Studying the functioning of urban experiments requires to carefully explore their relationship with traditional governance institutions including which types of processual and organizational innovations are piloted as well as how experiments can redistribute power, resources, and agency by pioneering and normalizing new forms of ownership and use that transgress deeply-entrenched binaries of private versus state control. The cultural shifts underpinning and driving these institutional changes warrant special attention. Explorations of urban experimentation must flesh out the ways in which experimental practices expand and diversify ontological categories beyond the dominant worldviews of (capitalocentric) modernity while simultaneously providing the procedural compass and hands-on skills for how to get there. It is through this interplay of transgressive philosophies and methodological competence that urban experiments can contribute to the cultural and institutional shifts required for what Milburn and Russell (2018) call a "new common-sense": a different everyday understanding of what constitutes possible and rational behavior in the workings of everyday life. By allowing urban dwellers to learn what it means take collective decisions over their common future, the success of urban experiments may not be measured by the institutions or cultures themselves but the empowerment and transformative politics they enable.

2.4 Staying with the trouble: Negotiating tensions in urban experimentation

To complete the synthesis of the theoretical landscape around urban experiments, the mapping of their emergence and practices has to be accompanied by the mapping of their tensions and constraints. This paper makes a conscious decision to "stay with the trouble" (D. J. Haraway, 2016) and leave no stone unturned when looking at limitations. It asks: "Which *tensions* arise in urban experiments and how are they *negotiated* in strategic ways?" This translates into two focus areas: (i) tensions and constraints as well as (ii) negotiation and impact strategies.

2.4.1 Towards a map of tensions and constraints in urban experimentation

While the urban sustainability literature widely acknowledges tensions *within* individual actor groups[13], it foregrounds tension at different levels either *between* or *beyond* urban experiments. The *transitions* community locates tensions *between* the highly modulated, open-ended, and inherently unpredictable processes of niche experimentation or the more conventional urban planning regime, which can be understood as a highly structured, regulated, and standardized approach to place-making that seeks to establish predictability, security, efficiency, and public order (Dear & Scott, 2020; Foglesong, 2014). Here, different state, civic, and private actors compete compete over planning cultures and practices, the purpose,

[13] As Forsyth 's (2018) research on group behavior shows, internal tensions are to be expected in any kind of team, be it in social movements, corporate environments, NGOs, academic institutions, start-ups, or governmental committees.

design, and governance of an experiment, as well as how success and impact is to be measured (Wirth et al., 2019). Transition scholars do not view tensions as an undesirable obstacle but embrace them as points of departure for a joint learning journey in which different parties can strive towards developing a better understanding of each other's possibilities and constraints (Frantzeskaki & Kabisch, 2016).

At the same time, the transitions literature acknowledges that tensions are key factors determining the impact and scalability of experimental projects. Generally, the extent to which experiments can develop a transformative momentum is believed to rest on the degree to which their learnings and practices diffuse more broadly (Sharp & Raven, 2021). In principle, experiments are deemed "predestinated for testing, trialing, demonstrating, and initiating the spread of knowledge, practices, and socio-technical solutions" (Fuenfschilling et al., 2019, p. 222). However, different authors elaborate on the difficulties experiments face in such processes of translation and bridge-building, including "unfavorable structures in their broader environment, many tensions caused by multi-faceted interests of different actors across various scales or a large bureaucracy of monitoring and evaluations" (Wirth et al., 2019, p. 232). Moreover, experiments are subject to the inherent paradox that they function best in locally-adapted niches but challenging dominant regime configurations requires more universal vehicles for broader change (ibid.). This tension between local embeddedness and translocal scaling implies the need to find ways to offset the contextual binding of urban experiments by means of modulated and abstractable outputs (ibid.).

The *transformations* literature relates conflict mainly to the capitalistic structures *beyond* urban experiments' immediate control. In the spirit of Lefebvre's (1968) "right to the city," experiments are about reclaiming the city as a co-created space, detached from the growing effects that commodification and capitalism are proposed to have had over social interaction and the rise of spatial inequalities throughout the last two centuries. Chatterton (2016) shows that while autonomous geographies—here understood as akin to urban experiments—exist *against* (in opposition to) and *next to* (as a prefiguration of alternative futures to) modern capitalist socio-ecological relations, they always exist "*within* the dominant (albeit not monolithic) capitalist system that they seek to overcome" (p. 411). As they navigate a for-profit world, experimental alternatives face daily struggles over their existence and obstacles to maintain coherence within their own values and goals. Involved actors are oftentimes forced to adopt mindsets and practices clashing with their aspirations to create non-capitalist, egalitarian, and solidaristic forms of (more-than-) human co-existence (Benedikt Schmid, 2020). The complexity and opacity of globalized economic relations exerts pressure to constantly balance pragmatism and ambition, and negotiate contested positions on topics such as the degree of localization, radicality, individual freedom, as well as the relationship between state, market, and the community (Benedikt Schmid, 2021a).

However, while they understand capitalism to be diffused, networked, and decentralized in the economic realm, in the political realm transformation scholars see capitalism as manifested in more concrete,

territorially organized power structures. Legislative processes and their legal implementation generally play out in bordered entities and have a fundamental role in the reproduction of existing social relations. In Oosterlynck and González's (2013) words: "As we start to see a variety of urban responses unfold across the world, we must ask whether they serve to reinforce ongoing neoliberal urban restructuring or effectively produce new, post-neoliberal, urban governance rationalities" (p. 1076). If local governments are largely operating according to a growth logic—as it is evident in mainstream accounting indicators, policy rationales, and taxation systems (Raworth, 2018; Xue, 2021)—urban experimenters encounter frictions whenever their practices and standards of valuation clash with official measures and goals. Grey zones of regulation and taxation provide important exceptions and discretionary scope for counterhegemonic groups and socio-ecological organizations to do things differently.

2.4.2 Negotiating strategy and impact in urban experimentation

To navigate the tensions *within*, *between*, and *beyond* experiments while shaping broader systemic configurations requires tactical and strategic maneuvering. *Transition* concepts that frame urban experiments as "intermediaries" or "inter-boundary spaces" (Timo von Wirth et al., 2020) suggest that their very nature may be about providing a space to deliberate, negotiate, and reinvigorate contested visions, practices, and needs *within* and *between* different actors groups (Bulkeley et al., 2019; Kronsell & Mukhtar-Landgren, 2018). Related sub-fields like "Transition Management" or "Strategic Niche Management" develop hands-on tools for successful learning processes, including a focus on moderation and mediation competences (Loorbach, 2007). From this perspective, urban experiments appear to be providers of facilitation services in a wider landscape of competing interests, positions, and values in the city. In relation to questions of scaling, Fuenfschilling et al. (2019) argue that "experimentalist governance [...] is only meaningful in a multi-level architecture as this allows for monitoring, evaluating, and translating lessons learned from local experiments beyond their own territorial context" (p. 223). The question arises which types of strategies would be necessary to harvest and disseminate the innovations brought about by local experiments. An empirical analysis of the underlying processes through which urban experiments seek to diffuse new socio-technical configurations beyond their immediate spatial, temporal, and sectoral boundaries by Wirth et al. (2019) indicate three interlinked approaches:

(i) The "embedding" of an experiment implies the adoption and integration of its design, approach, or outcomes into existing local structures and/or communities of practice. This includes practices of transformative place-making and the activation of network partners. Evidence on embeddedness shows that many experiments are met with distrust by local public authorities and hence do not receive the necessary support to establish long-term structures and build-up impactful partner networks.

(ii) The "translation" of an experiment refers to the horizontal diffusion processes by which constitutive elements of an experiment are being replicated and reproduced elsewhere. This including the replication of the lab structure as well as education and training. Here, new actor constellations, including supra-urban governance structures (e.g., C40 Cities or ICLEI), may be needed in order to coordinate and further support the adoption of individual experiments within broader transition schemes in and beyond the city.

(iii) The "scaling" of an experiment refers to the vertical process of internal development and growth. This implies the stimulation of entrepreneurial growth in terms of members, supporters, or users of a single transition initiative, and to spread new ways of thinking, organizing, and practicing through impact narratives. In this context, the literature critiques a lack of involvement of private partners and attention for business models as their absence is deemed to foreclose the long-term sustainability and economic value creation of urban experiments.

The *transformation* community equally stresses the need for a strategic orientation to push for a social-ecological transformation (Benedikt Schmid, 2021b). Generally, the embeddedness of urban experiments into capitalism implies a mixture of "confrontation and creation" (ibid., p. 412): experimentation is simultaneously about dislodging capitalism from its dominant position and constituting new post-capitalist spaces. In this context, Benedikt Schmid (2021a) observes "a constant trading-off and balancing [of] resource acquisition and social mission, leading to tactics such as compromising, avoiding, denying, and manipulating [...] to respond to competing external demands [...] and deleting, compartmentalizing, aggregating, and synthesizing to cope with internal identity struggles" (p. 203). Captured by the idiom of "hybrid infrastructures," he suggest that bottom-up initiatives reflectively accept and engage with short-term setbacks, dilemmas, and compromises as part of a more purposeful and far-sighted strategy that allows them to trigger an inverted, transformative dynamic towards grassroots governance. Seeking to specify how these politics of hybridity unfold, Benedikt Schmid (2021b) introduces three spatially informed post-growth transformation strategies, which are based on Wright's (2010) seminal distinction between symbiotic, ruptural, and interstitial approaches:

(i) "Symbiotic" strategies "aim to strengthen emancipatory transformation processes within existing power structures by striving to achieve synergies between socio-ecological aspects and the objectives of dominant interest groups. Symbiotic strategies pursue a largely reformist policy and attempt to fundamentally change socio-ecological conditions in cooperation with existing institutions" (Benedikt Schmid, 2021b, p. 67). Schmid recommends symbiotic strategies in relation to territorially organized political power and coordinative institutions of urban placemaking which "formally preclude the option of interstitial spaces in which alternative forms of bureaucracy, administration and legislation could be tested and implemented" (ibid., p. 77). However, there is a thin line between synergistic strategies and their

instrumentalization and cooptation, which may ultimately contribute to the stabilization of existing conditions (ibid.).

(ii) "Ruptural" strategies focus on "revolutionary notions of transformation and try to attain change through direct confrontation, protest, and resistance" (Benedikt Schmid, 2021b, p. 66). They are by definition antagonistic, seek to harmonize ends and means, and abstain from compromise, following a logic of "breaking with existing conditions first and creating alternatives second" (ibid., p. 75). Periodic episodes involving elements of ruptural strategy may be valuable if creating alternatives requires breaking with existing conditions first, e.g., vis-à-vis a territorially organized state that is resistant to change. However, ruptural approaches tend to reinforce existing divisions by distinguishing between "us" and "them," often leading to aggressive accusations, entrenched positions, and a deepening of opposition rather than the joint tackling of socio-ecological wrongs.

(iii) "Interstitial" strategies are based on "producing alternatives in in-between spaces of the incumbent order. Instead of cooperation with politically and economically influential actors, interstitial activities, projects, and organizations remain largely outside (and often under the radar) of capitalist institutions. Compromises are replaced by the (anarchist-inspired) principle of prefiguration—the anticipation of desired relations in the here and now" (Benedikt Schmid, 2021b, p. 66). Hence, the goal is to establish parallel economic structures through self-expanding circuits of value in the form of commons to replace exploitative and unsustainable economic relations and find a decentralized answer to the "structural irresponsibility of capitalist [...] value chains." (ibid., p. 73). Interstitial strategies make most sense in opposition to a geographically diffused capitalistic economy where there is no clearly identifiable center against which to direct resistance.

2.4.3 Synthesizing insights on tensions in urban experimentation

Sober examination and engagement with the tensions as well as negotiation and impact strategies becomes critical for understanding experimentation in the city. The literature suggests that experiments are never fully complete and always weaved into contestations between place specificity and broader impact as well embeddedness into capitalism and the quest for post-capitalist alternatives. Being in conflict with the orthodox planning regime may be a defining but no less desirable characteristic of urban experiments. In fact, truly sustainable experiments may thrive within an environment of contradictory impulses which they productively use to merge previously fragmented logics in new ways. Here, understanding the different strategic possibilities that urban experiments have at hand can help to inform more comprehensive explorations of the ways in which they navigate emerging tensions and enable wider impacts. The distinctive vocabulary of embedding, translating, and scaling, as well as interstitial, symbiotic, and ruptural strategies can serve to lift the lid of the oftentimes complex black box of experimental strategy.

3. Research design: Collaborative and multi-modal urban ethnography

3.1 Methods, data, and ethics

The exploratory inquiry into the Haus der Statistik relies on a method that can be described as collaborative and multi-modal architectural, urban ethnography. If personal positionalities, biases, and other limitations are thoroughly reflected, this type of action research can represent a more transformative, comprehensive, and ethical form of scientific inquiry than orthodox social science research. The following sections introduce the (i) collaborative methods and (ii) multi-modal data collection procedure of this study, complemented by a discussion of (iii) the underlying research ethics.

3.1.1 Participatory action research

The collaborative method understands ethnographic research itself as an active practice that is explicitly oriented toward social change (Kemmis et al., 2014). Grounded in the normative yet empirically substantiated position that the current state of the world demands engagement, the researcher transgresses the traditional role as a passive observer in favor of generating knowledge about societal formations and transformations from the perspective of the everyday practices of the actors involved (Kindon et al., 2007). Following D. Haraway (1988), research is always a view from somewhere, that is, value-neutral, objective, and universal knowledge produced and disseminated detached from a particular spatial, temporal, and social position is an illusory "god trick" that has brittle epistemological foundations. Her concept of "situated knowledge" implies that knowledge production can, and sometimes should, include bodily immersion as well as sensual and emotional experience.

Taking this perspective, activist-scholar or "scientivist" approaches seek to transgress the oftentimes hierarchical and extractive modes of traditional research with the aim to generate relevant and emancipatory knowledge for the stakeholder community itself (Kemmis et al., 2014). Exemplary ways through which this reciprocal exchange was manifested include hands-on support (e.g., by taking over care work responsibilities), mutual irritations (by challenging strategic approaches or ontological assumptions), and critical reflection of the projects themselves as well as social change and transformation dynamics more generally (e.g., through the organization of an open research conference about the Haus der Statistik where different researchers and the community jointly discuss relevant findings).

3.1.2 Capturing multiplicity

To allow for a dense, comprehensive description of the case, multi-modal research methods were used. These include participant observation, informal interviews, desk research, netnography, multi-species ethnography, and survey data. For a thick description of social life by means of participant observation and informal interviews, there was "no alternative to hanging out with, joining in with, talking to and watching, and getting together the people concerned" (Schatzki, 2012, p. 16). Based in and around an

office desk at the "Werkstatt"—the planning bureau of the initiative's core team where architects, designers, and artists work together—over the course of 4+ months countless events, strategy meetings, plena, jour fixes, visitations, and workshops were attended, documented in an ethnographic field book, and thoroughly reflected.

The desk research and netnographic data include 250+ newspaper articles, 6+ research papers about the HdS, in-house publications, and historical archive data, as well as newsletters, social media posts, podcasts, project websites, film contributions, and YouTube videos. Multi-species ethnography seeks to study and include the lives and points of view of other-than-human actors into ethnographic analysis (Kirksey & Helmreich, 2010). Applied to the city, it sheds light on the complex entanglements of urban nature within the institutional, technological, and cultural fabric of the city, laying the foundation for more planet- rather than human-centered urban design interventions. Coming to grips with the abundance, behavior, and needs of wild and plant life in the district was possible thanks to two guided tours by botanists and urban ecologists. Lastly, the data includes 40 survey responses about the capacities, challenges, and visions of the pioneers users at the HdS.

3.1.3 The ethics of involvement

The collaborative and multi-modal character does not make participatory action research a "sloppy social science" (Bradbury-Huang, 2010, p. 104) that ignores systematic and rigorous procedures. Reflexivity, transparency, and comprehensibility of positionalities, biases, and ethical concerns become all the more crucial throughout data collection and analysis. While the planning team at ZKB was predominantly white, able-bodied and well-educated, the pioneering users and neighbors exhibited great diversity in terms of race, class, and gender. As a white, male, able-bodied researcher with German nationality and a non-precarious background, sensitivity to intersectional perspectives on power, privilege, and positionality was key. Taking over responsibility for structurally maldistributed care work activities like cooking, cleaning, and emotional support was as much part of this process as more operational tasks, including protocol writing, moderation, research activities, or video editing.

In light of personal sympathies for the rebellious thrust of HdS, there was a risk of exaggerating the transformative potential of specific discourses and practices by "going native." To avoid losing "critical external perspective [...] and unquestioningly adopt the viewpoints shared in the field" (Flick, 2014, p. 315) the conceptual framework was redesigned to give more prominence to restraints, paradoxes, and tensions. Moreover, critical distance was established through a "spiral of self-reflective cycles" (Benedikt Schmid, 2020, p. 134) in the sense of conscious movement between participation and reflection. Moreover, for triangulation purposes, the results were discussed with people active in the development of HdS as well as external academics. The power over the final interpretation of findings remained in the hands of the researcher. Instead of instrumentalizing community bonds for strategic purposes—as normalized by

much ethnographic literature in the context of building "rapport"—the research was guided by an attitude of gratitude and indebtedness to the protagonists who took much valuable time to share information. In this sense, meaningful relationships are seen as a valuable outcome of the fieldwork.

3.2 Analytical approach

Just as the sampling technique was designed to maximize the diversity of perspectives, the analysis technique was structured to capture that diversity. To analyze the data, a digital "Zettelkasten" (slip box) system was adopted for hybrid coding. This section details the (i) Zettelkasten system, (ii) analytical procedure, and (iii) specifics of this novel approach.

3.2.1 Building a second brain

The analysis was based on a novel application of the Zettelkasten system. Pioneered by the German sociologist and systems theorist Niklas Luhman, the Zettelkasten is a networked tool for scientific note-taking that has recently gained prominence as an innovative method for knowledge production (Ahrens, 2022). Mimicking the workings of the brain that does not store information in silos but in a rhizomatic network of interlinked chunks of knowledge, the Zettelkasten enhances thinking and memory retention while allowing to create creative linkages between previously disconnected pieces of information, theory, and evidence. The Zettelkasten was originally an analogue technology but there are digital versions available today. The use of Zettelkasten software was made possible through a stipend by the US-based company "RoamResearch."

3.2.2 Data processing

The Zettelkasten was applied according to the following procedure: individual data points, e.g., ideas, expressions, and quotes from the field book entries or website sources, were transcribed onto individual notes (tickets) of the Zettelkasten system. To make the individual notes stored within the Zettelkasten analytically tractable, they were coded and clustered into similar pockets of meaning according to the logics of qualitative content analysis (Elo et al., 2014). Content analysis is "a search method for the subjective interpretation of text data through the systematic classification process of coding and identifying themes or patterns" (Hsieh & Shannon, 2005, p. 1278). Guided by the concept of "hybrid coding" (Minero et al., 2015), *a priori* coding, focused on a coding frame that includes categories derived from exiting theory (captured in the framework introduced above) were combined with a grounded approach, leaving space for the researchers own logical reasoning and insights to emerge from the data itself.

3.2.3 Points of reflection

In the process of data evaluation, explanatory power was related to the frequency of occurrence per code as well as the level of detail and depth captured by the respective piece of evidence. It is important to note that in a Zettelkasten system different sources of evidence, e.g., interviews and participatory observation,

are not hierarchically discriminated against. Horizontally stored as individual notes in the same Zettelkasten database, different types of empirical insight and also theoretical and bibliographic notes were seamlessly brought into dynamic conversation, jointly informing the results. The individual code clusters were then organized according to the research question's three foci, i.e., forms of *re-envisioning*, *practicing*, and *negotiating* urban experimentation. The related, separate presentation of the projects' emergence, functioning, and tensions is a theoretically-informed, heuristic construct for illustration purposes and shall not suggest clear-cut boundaries between them.

4. Results: An in-depth case study of the Haus der Statistik in Berlin

4.1 Emergence: Background and imaginaries

This section seeks to answer the question: "How did relevant actors *re-envision* the Haus der Statistik and what *background* did they mobilize to realize this vision?" In this sense, understanding the potentially novel character of the Haus der Statistik requires taking account of the (i) problems, histories, and identities of the place within which it is nested as well as (ii) how relevant actors mobilized these background conditions to craft a powerful imaginary of a different future.

4.1.1 Place-based historical roots: Between economic turmoil and dormant identities

Explaining the emergence of the Haus der Statistik requires an exploration of how the past has come to shape the cities contemporary developmental trajectory. Situated in the heart of Europe, Berlin has historically seen strong socio-economic instability, marked by periods of war, occupation, reunification, and foreign investment (Büsch, 2018). Founded in 1237 where trade routes crossed the river "Spree," during the Industrial Revolution of the 1870s the city quickly became a commercial hotspot, manufacturing luxury goods and military equipment. After suffering a series of disruptive events, including the German Hyperinflation of the 1920s, the Great Depression of the 1930s, World War II, and the political division during the Cold War, Berlin became a testbed for economic experimentation, letting industrial production decline, particularly in the East. After the fall of the Berlin Wall in 1989, many "free spaces" opened up in the city, either due to rampant abandonment or the reintegration of the old "Brachen[14]" back into the cityscape which were previously enclosed in the "death zone" along the wall. Squatters took over empty buildings and artist cooperatives seeded diverse cultural movements. "What made Berlin so interesting for people all over the world was this sense of improvisation, that you can do it yourself there" (Kil as cited in Berg, 2019, p. 10). In this kind of people-led city-making, subcultural and artistic scenes flourished and the "Kulturwirtschaft" (cultural economy) became a factor in urban planning.

[14] Prominent researchers from the TU Berlin such as Herbert Sukopp who studied the rich flora and fauna in the Berlin Brachen would later give birth to the pioneering field of urban ecology, see Kowarik (2020).

At the same time, many buildings and other East German state assets were quickly and chaotically privatized or demolished (Kadi et al., 2021). Teetering on the edge of bankruptcy in the late 1990s and early 2000s, Berlin's social democratic government sold off state-owned housing companies and estates to international investors that were attracted by the city's vibrant culture. More than 110,000 public apartments went private, turning the Federal housing policy into a housing *market* policy, whereby housing provision was replaced by instruments such as housing subsidies or housing cost reimbursements (Fields & Uffer, 2016)With the incorporation of the real estate sector into the sphere of financial investment, rents increased by more than 50 percent over the past five years—the most of any city in *Germany*; real estate prices also rose by 20.5 percent in 2017 alone—the most of any city in the *world*. . In a city in which 85% of residents rent rather than own apartments, rising rents have forced many artists and other vulnerable tenants out of their homes and workspaces. On the heels of frustration over a rent cap that was declared unconstitutional for procedural reasons, in 2021 more than one million Berliners (59%) voted to re-municipalize 200,000 apartments owned by corporate landlords (Drohsel, 2020). This radical fusion of capitalist and anti-capitalist practices and legacies constitutes a unique feature of the city's identity.

The contradictory spirits of "urban (anti-)capitalism" could perhaps not be better observed anywhere than along the historical lineages of the development of and around the city's infamous "Alexanderplatz," which includes the neighborhood of the Haus der Statistik. The Alexanderplatz has been subject to redevelopment several times throughout its history. After its complete destruction in World War II, it was turned into a pedestrian zone as part of the DDR's redevelopment of the city center during the 1960s, including the construction of notable structures like the "Fernsehturm" (TV Tower) and the Haus der Statistik. In competition with its pendant "City West" on the other side of the wall, the Alexanderplatz in many ways was the hub of East Berlin. The buildings were "new and gleaming to show that the proletarian workers' state could be progressive and forward-looking" (Berg, 2019, p. 7). Aimed at an international and domestic audience alike, this symbolism ought to establish Berlin as a modernist world capital that was legitimized not only by its superior economic model but also by its architectural glamour.

Those who had the fortune to be assigned an apartment in one of the prefabricated concrete blocks around the Haus der Statistik—many of which are "first-wave" tenants who still live in the district today—lived good lives. The area was well-equipped with schools, kindergartens, playgrounds, public swimming pools, restaurants, community centers, hospitals, washing saloons, and cultural facilities. The ground floor of the HdS accommodated "Natasha," a store that offered popular products from the USSR. Located across the no less famous "Café Moscow," the "Mokka-Milch-Eisbar" (mockermilk ice cream bar) was a well-known social meeting point; Thomas Natschinski even dedicated his own "Schlager" song to it, a locally-born success that permeated through the musical consciousness of an entire nation and beyond. However, like across the entire nation life in the district was subject to the surveillance regime of the "Staatssicherheitsdienst" (state security service). The former manager of a hunting and fisheries supply

store on the ground floor of HdS reports that she was urged to spy on her customers, friends, and neighbors (Lutter, 2019). These entanglements of public luxury and autocratic panopticism created an ambivalent cocktail of belonging and distaste in the area that still represents a key feature of its character today.

During the "Peaceful Revolution," the Alexanderplatz became the center stage of an emerging emancipatory spirit. On 4 November 1989, more than 200,000 protestors called on the SED to step down and install a free press, open the borders, and allow international travel. What would become the largest demonstration in the history of the DDR left a profound, revolutionary mark in the collective memory of the area. After the fall of the Berlin Wall the Alexanderplatz again became a frame for the self-representation of the state and its face would quickly—perhaps too quickly—change. In 1993 the architects Hans Kollhoff and Helga Timmermann won a design competition with a bombastic masterplan, which envisioned thirteen high-rise towers in and around the square, each over 150 meters high. The so-called "Kollhoff-Plan" was grounded in both a new faith in the free-market urban development paradigm and a deeply-entrenched revisionist, anti-modernist stance that sought to erase real existing Soviet cultural legacies instead of seeking critical engagement with them (Gefroi, 2020). The plan laid dormant for a long time: the foreign investors that would build for foreign customers (mostly luxury apartments and office buildings) were repelled by the low returns on investment in the German capital. Nevertheless, Alexanderplatz would become a commercial center, accommodating various global franchises, shopping malls, and department stores that still attract thousands of tourists and commuters every day.

The large-scale privatizations after reunification were not to everyone's benefit. In a frustrated tone, critics constate the birth of a "stupid Western business capital" (Kil as cited in Berg, 2019, p. 5), lamenting the gleaming office towers, corporate coffee chains, and high-end condos. Moreover, although almost rendered invisible in the bustle of everyday consumerism, the place accommodates a large number of (especially young) homeless people, crime, and drug abuse. In the area around the Haus der Statistik, key social infrastructure has disappeared. Some parents report that they have to drive more than 5 kilometers for a kindergarten spot. Many mourn the cultural decay of the district and "dead" pedestrian areas after 6 pm, embodied by the now privately-owned Mokka-Milch-Eisbar which at times accommodates exclusive events. In light of these disruptions, many people's negative experience of the DDR regime turned into a more benevolent, nostalgic, and illustrious commemoration, highlighting long-gone qualities of solidarity, sharing, and equity. Perhaps today many people's emotional bonds and senses of attachment and belonging to the area and their past East German lifestyles are stronger than ever before.

4.1.2 Urban imaginaries: Envisioning an altogether different place

The initiators of the experiment at Haus der Statistik skillfully mobilized these historically and geographically contingent memories in pursuit of an imaginary that would create the necessary momentum for the project to take hold. In 2015, the Berlin housing boom suddenly made investments at Alexanderplatz

profitable again. The Kollhoff-Plan, which would still represent the legally binding framework for the area's redesign after lying dormant for more than 20 years, was reactivated. To make space for the towers, many buildings around the Alexanderplatz were destined to be demolished, including the HdS. However, this renaissance coincided with the "Summer of Migration," when German Chancellor Angela Merkel against great resistance chose to maintain open borders within the "Schengen" area of the European Union and provide a safe space for more than one million refugees fleeing the humanitarian crisis in Syria and beyond. As a debate around how to live well together emerged in the city, a lot of cheap accommodation was needed. Suddenly, assigning a different purpose to the Haus der Statistik became plausible.

Amidst the swelling of public opinion against gentrification, the dooming demolition of local cultural heritage, and the rise of the German "Willkommenskultur" (welcome culture) a group of concerned artists—organized under the umbrella of "AbBA" (Allianz bedrohter Berliner Atelierhäuser; English: alliance of threatened Berlin art studios)—affixed a large poster to the Haus der Statistik's exterior walls proclaiming that the space would be used for artistic, cultural, and social activities. Dressed in a neon orange safety vest and standing on top of a construction crane, only two artists were close enough to realize that the poster's "ö" in the German word "gefördert" (funded) was actually an "o," turning the message from "*funded* by Berlin, the EU, and the German government" into "*demanded* by Berlin, the EU and the German government" (see *Figure 1*). In a perfectly staged, officially-looking performance, it is only this delicate detail that exposes the hoax which would remain unnoticed by the large crowd of passersby, journalists, and policy officers. The artists elaborate on the vision underlying their protest: "We need a place that challenges this glossy shopping district with a piece of culture, a place for everyone" (Balcerowiak, 2018). As Berliners fought to define the soul of the city, the activists argued that luxury real estate development was incompatible with a free and independent city that welcomed people of all generations, classes, and ethnicities—a narrative that turned out to be more impactful than anticipated.

The idea of an utterly different urban future for the Alexanderplatz grounded in a concerted effort to resist capitalist development was contagious. Pointedly captured by the giant sign at the top of the building complex's eleven-story façade, the HdS was to become an ALLESANDERSPLATZ, a simple but ingenious pun that converts the Alexanderplatz form a square named after the Russian Tsar into an "altogether different place." Local, national, European, and even transatlantic media outlets picket up on the imaginary of the ALLESANDERSPLATZ, engaged with it in creative ways, and invented other illustrative circumscriptions for it. This colorful echo included appraisals of a "wellbeing island" (Lombard, 2015), "zone of hope" (Rieger, 2019), or "lighthouse demonstrator" (Hofmann, 2018) that would explore a "blueprint for the entire city" (Balcerowiak, 2018). Others crafted a more confrontational vision by taking reference to the project's opposite, that is, vested private interest. Examples include the major's visions of a "gentrification-proof island" (Christian Hanke as cited in Dörre, 2016) or "a blind spot on Berlin's monopoly pitch" (Messmer, 2021), as well as statements like the "the struggle is real estate" (Bieber et al., 2021). The

KOOP5 would itself describe the HdS as a "model project" (Ulrich, 2019). Its experimental character even prompted commentators from the architectural, design, and artistic sphere to draw parallels to the avantgardistic spirit of the influential "Bauhaus" movement (Maak, 2019). The imaginary fabric of HdS thus invites a different reading of resistance against capitalism: While the questioning of growth-based urban development is often interpreted as a sign of technophobia and a threat to the innovation-friendly climate sought after by governments (Felt, 2015), it could also be seen as an opening towards alternative understandings of the public good, not for or against development *per se* but for or against *particular* imagined forms of development.

Figure 1: Two artists stage a banner drop and press conference at the vacant Haus der Statistik, 2015

Source: Allianz bedrohter Berliner Atelierhäuser

With such strong tailwinds the artists successfully managed to turn their prank into reality. Teaming up with the Berlin-based architecture collectives "raumlabor" and "ZK/U" (Zentrum für Kunst und Urbanistik; Center for Art and Urbanistics), the "Berliner Architektenkammer" (Berlin Chamber of Architects), a broad alliance of NGOs working on topics of migration, and other out-of-the-box planners, they recycled the legal container of a no longer needed cooperative and renamed it "ZUsammenKUNFT Berlin eG" (ZKB), a play on words for "together" and "future." The initiative assessed the needs of the local population, drafted a feasibility study, and crafted a solid financial proposal, which would call on the State of Berlin to buy the abandoned HdS and co-develop it together with the civil society. Their concept was strikingly integrative: "We were shaping it in such a way that it was difficult for a politician to say no, basically. Almost

impossible. You would be saying no to public housing, no to administration, no to education, no to social infrastructure" (personal communication, November 2021). Leaving a building "vacant" is treated as a form of "Zweckentfremdung" (misappropriation) under German law, so the judicial system would likely support their endeavor. Before the State elections in 2016, a window of opportunity opened up and the left parties sent a series of supportive signals. In November 2017, following strong lobbying efforts and political pressure, the administration of the new "Red-Red-Green[15]" government coalition finally jumped on the train and agreed to buy the HdS from the Federal Government as part of the "Hauptstadtfinanzierungsvertrag" (capital financing agreement) in exchange for the Berlin "Gropiusbau" and the "Akademie der Künste." The "model project" HdS was born and would receive its own paragraph in the government's "Koalitionsvertrag" (coalition agreement).

It is important to note that the city's decision to support the artist's idea was not solely driven by altruistic sympathy but that it pursued its own strategic goals. The public and the city alike had become a victim of neoliberal doctrines. From 1989 to 2017, the city had privatized 21 million square meters of land which corresponds to the size of the entire "Friedrichshain-Kreuzberg" district. The revenue of five billion euros is dwarfed by the buildings' contemporary value and did not even suffice to cover the costs of the new "Berlin-Brandenburg Airport" (BER). Emblematic for this process which politicians today themselves interpret as a "big mistake" was the district Mitte's decision to sell its own city hall to the Hamburg-based real estate fund "Union Invest" for 87.4 million euros in 2018. Shortly after, the rent increased by more than 50 percent and the city realized it would need to change its development approach. Seeking an exit from past errors, the Council for Urban Development called for "a departure from the policy of selling off state-owned properties quickly towards property development grounded in foresight and preservation of urban identity" (T. K., 2015). In this sense, the new public-civic-partnership, first enshrined into a "Kooperationsvereinbarung" (cooperation agreement) in 2018, was not an unlikely alliance; it reflected a shared struggle against the burgeoning, structuring forces of global capital in the city.

To become a symbol of change, the Haus der Statistik crafted an imaginary that would reconcile and mobilize previously contradictory perspectives and memories on the Alexanderplatz and its historical context in ways that would build up a new place narrative. For long, the HdS triggered conflicting attitudes between blank-slate modernization and hard-headed historic preservation, a dualistic dead-end that had stymied Berlin urbanists, planners, and developers for decades. The place-based vision for the model project at HdS sought to retain many of the building's original features (e.g., the existing steel and concrete structure or the façade's modernist aesthetics) while carefully transforming it into a place of innovation, sustainability, and lived cooperation principles (e.g., changing the building's use, governance, and

[15] This government coalition includes the Social Democratic Party of German (SPD), the Socialist Party (die Linke), and the Green Party (die Grünen).

development process). This way, the initiative seemed weary of the past but neither obsessed with preservation in ways that a slightly older generation was nor seeking to demolish real existing history to obscure a controversial chapter of German history. This sensitivity did not come from anywhere: The initiators of the project were familiar with the building's legacy, regularly passing by its ruins as neighbors or on their way to work. Clearly, care for a building does not emerge out of nothing: it is rooted in personal, continuous exposure to a site, and ideally, also the experience of living in one place for a longer time to gain a feel for historical developments in the city as well as to be able to assess the reasons why they take place. In brief, the imaginary of the ALLESANDERSPLATZ created a feeling of solidarity—a "we" experience—with a shared history and common frames of reference that needed little further explanation. This model of injecting new life into the old demonstrates that people can directly shape their urban environment without ceding control to international developers or getting caught in historical traps (Maak, 2019).

4.2 Practices: Institutions and culture

Coming to grips with the novel character of HdS's experimental approach not only requires demonstrating how its undergirding imaginary reconciles opposing logics but also how relevant actors worked to translate this imaginary into a model for the everyday organization of urban place-making. This section asks: "Which *cultural* and *institutional* practices are key to understanding the day-to-day functioning of the Haus der Statistik?" In the following, relevant (i) institutional innovations and (ii) cultural shifts are depicted.

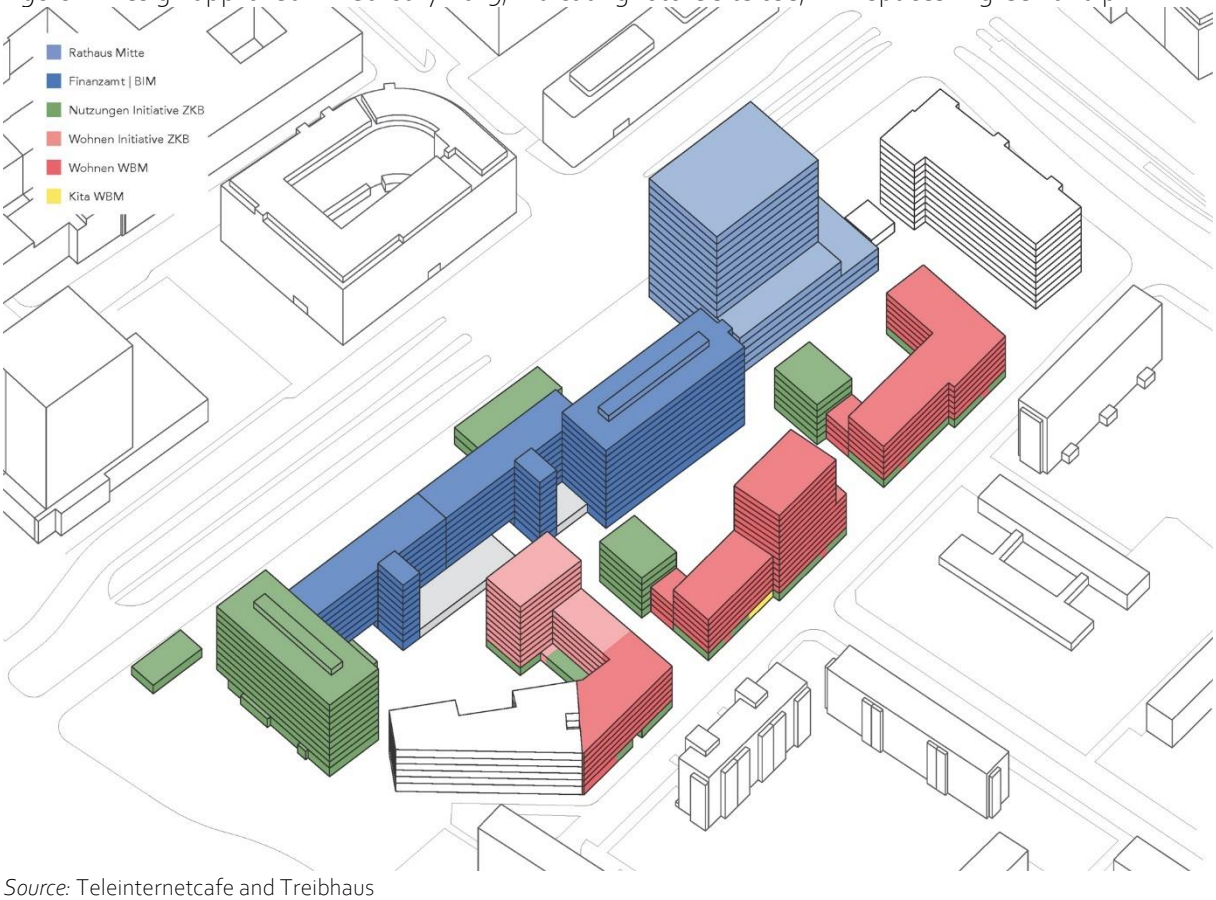
4.2.1 Innovating institutions towards civic cities

As an urban experiment that requires concerted action among multiple actors, the Haus der Statistik has created institutional innovations, distributed responsibility, and created ownership in ways that blur the boundaries between the civic and the public sphere in urban planning. In search for a suitable organizational framework for the project's development, in January 2018 the ZKB, SenSBW, Berlin-Mitte district, WBM, and BIM established the "KOOP5" as a partnership of five parties working towards the common goal of a community-oriented re-development of the HdS. This partnership is flanked by, and encoded into, a series of legal (albeit non-binding) documents, most importantly including different "Kooperationsvereinbarungen" (cooperation agreements), which outline a governance model, collaborative decision-making procedures, financing models, distinct areas of responsibility, and a long-term commitment to mutual engagement and learning, as well as collaboration beyond silos.

The most crucial aspect enabling sustained institutional collaboration concerns the distribution of ownership: "It's not architectural concepts, like housing for the subsistence level or technological progress, that will take us forward, but economically sound and broadly supported alternatives to a destructive real estate and financial economy" (Hofer, A. as cited in Schmidt et al., 2016, p. 3). Grounded in a fundamental critique of the ways in which the commodification and market-driven privatization of land to the highest bidder has led to speculation with a finite resource and a staggering increase of value *appropriation* without

value *creation* (Edenhofer et al., 2020; Mazzucato, 2018), preventing take-over by an investor was a key motivation for the civic actors initiating the project. The goal to secure access rights to the HdS no matter what the political composition in Berlin will be was part of the "professionalization" of the ZKB, which was seeking to take the step "vom *Besetzen* zum *Besitzen*" (from squatting to owning). To meet the different interests of the *KOOP5* partners, the back then finance Senator allocated roughly 20% of the Haus der Statistik's existing buildings to each of the five parties (see *Figure 2*). Moreover, the potential for new buildings on site was distributed among four of the five partners (SenSBW being the only partner that would not realize a programme of their own and merely oversee the development process of the site due its wider significance for the city). Thus, as the civic partner, the ZKB would develop 20% of the space in the existing building and most ground-level floors as well as 15,000 m² in new constructions for uses in the arts, culture, environmental, and social sector. The remaining area would accommodate public services including social housing, the "Rathaus der Zukunft" (city hall of the future), a kindergarten, and administrative offices.

Figure 2: Design approved in February 2019, indicating future site use; ZKB spaces in green and pink



Source: Teleinternetcafe and Treibhaus

Closely linked to this shared access structure are questions of how finance is organized to ensure the collaborative development of the site over a long duration. The primary source of funding for the project comes from the State of Berlin. As the sole owner of the complex, it paid roughly €70 million to buy the HdS and will invest at least another €350 million for refurbishment and new building segments. The ZKB

was first commissioned by the other four partners as part of the so-called "integriertes städtebauliches Werkstattverfahren" (integrated workshop procedure): a coordinated, multi-level, and (a)synchronous conglomerate of complementary participatory methods to develop an urban design for the quarter. In 2020, together with the SenSBW, the ZKB found a replicable way to finance parts of its own project development, too. The "Bedarfsplanung" (requirement planning) implies an assessment of budgetary needs and respective payments by the SenSBW for individual tasks, including early stage architectural planning as well as orchestrating the pioneer usages and the PR management. Other income sources for the ZKB include grant applications, e.g., €5 million[16] from the "Nationale Städtebauförderung" (National urban development funds) and rent form the pioneer users (albeit a negligible amount of three euros per m²). Paid by public authorities for injecting a creative spirit into what originally used to be official planning duties, the ZKB would become an "unofficial annex of the city planning department" (Berg, 2019, p. 3).

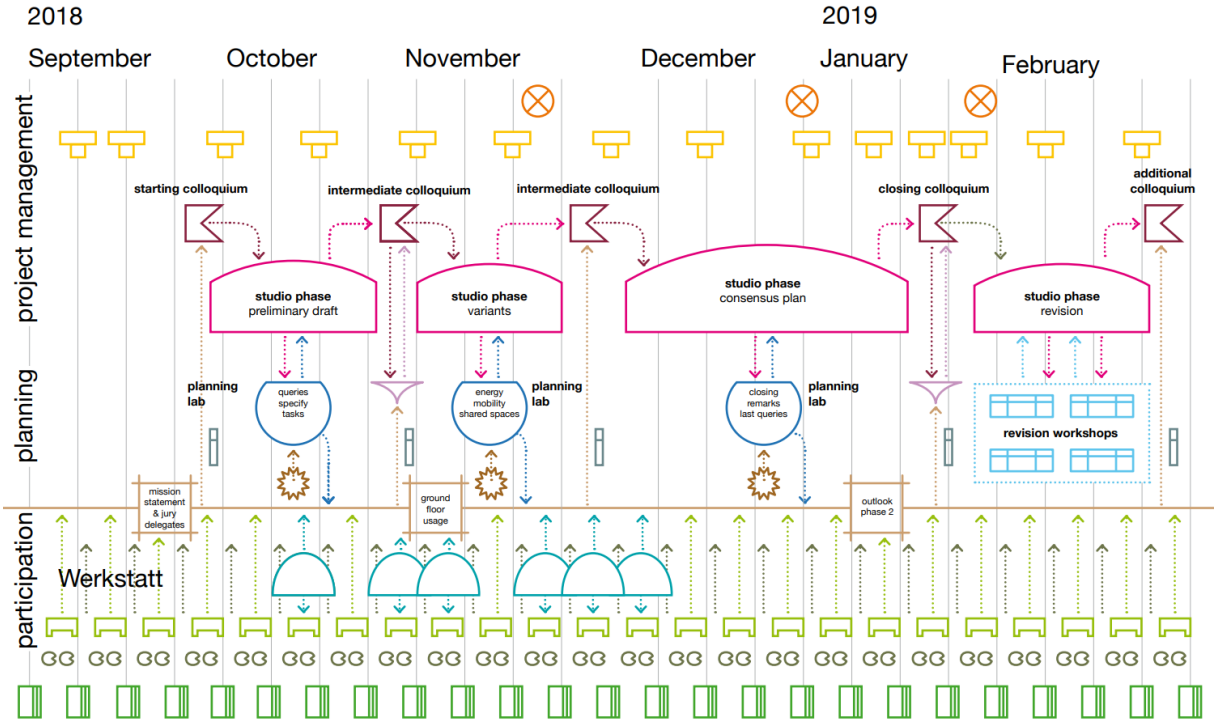
The Haus der Statistik has created a participatory architecture that enables both fruitful controversy and targeted compromise (much to the surprise of most urban planners who typically view the legal requirement to involve the public into design processes as a necessary evil that signifies extra costs and tiring discussions). The custom-designed "integriertes städtebauliches Werkstattverfahren" (see *Figure 3*) captured the opinions and ideas of the citizenry at a very early stage of development when they still have a large impact. The co-lead of the planning bureau "Teleinternetcafe," which together with the landscape architecture office "Treibhaus" won the call for the workshop tender and thereby decidedly influenced the development procedure, describes his approach as follows: "In short, look at what is already there and develop it creatively with the people." This implied to deliberate participation, planning, and steering competences by capturing the local knowledge of different stakeholder groups and feed it back into an iterative process of learning. The methods ranged from small-scale formats like the "Café Statistik," an informal chat over a coffee aimed at a neighborhood audience, over an intensive planning procedure in which different planning offices transparently and parallelly worked on the future zoning and urban planning for the quarter to weekly meetings of the KOOP5 in different subject-specific working groups as well as monthly steering meetings of key decision makers. These processes were characterized by a diversity of tools, openness to different results, methodological competence, clarity and transparency, accessibility in terms of language, place, and time, as well as binding results.

From this process flowed the commitment to let "pioneer users[17]" prototype different activities in the unrenovated existing buildings with the aim to secure atmospheric and programmatic diversity also in the long run. The "Nutzungsmischung" (user mix) at HdS was determined to at all times include initiatives

[16] However, €3 million go to the BiM and €1.5 million to internal retrofitting works; little can be used to compensate for wages.
[17] The neologism "Pioniernutzung" (pioneer usage) marks a deliberate departure from German "Zwischennutzung" (interim use), which typically implies that experimental uses are short-term; instead, the idea of "pioneer users" captures the ambition to perpetuate and safeguard the experimental uses as an integral component of the user mix in the finished quarter in the future.

from the fields of healthy living, democratic experimentation, learning and education, diversity and inclusivity, as well as circular economy. The pioneer users include a grand diversity of people from different backgrounds. They would not only bring life back the neighborhood but also lead to the establishment of governance structures which would allow them to shape the broader strategic development of the HdS themselves. As a key decision-making body, the "Quartiersgremium" (neighborhood board) is comprised of a mixed group of representatives including neighbors, planners, politicians, administrators, and the users themselves. Although the ground-floor rooms had no heating and were barely equipped with electricity, more than 700 projects applied to the first open call for pioneer users, demonstrating the high demand for affordable experimental spaces in the city. The pioneer users can be interpreted to have taken the democratic quality of urban development to new heights: from participation by *voicing* things to co-creation by actually *doing* things.

Figure 3: Structure of the integrated workshop procedure



Source: ZUsammenKUNFT Berlin eG

Viewing urban development as an iterative learning process grounded in radical reconfigurations of ownership, finance, and governance structures situated at the intersection of traditional top-down and creative bottom-up actors, the Haus der Statistik may indeed create a "new common-sense[18]" in the city (Milburn & Russell, 2018). Instead of prescribing a particular outcome, the project creates a safe institutional container in which different actors can productively disagree and engage in hands-on experimentation beyond capitalism, thereby creating new kinds of capacities and capabilities towards more sustainable

[18] The idea of a "new common-sense" holds a dual meaning that combines the notion of the "common" as the "normal" with the notion of the "common" as the urban "commons." This implies a call to elevate collective forms of ownership and governance to the new standard in urban planning.

cities. By combining different institutional logics that "sidestep the tensions between bottom up and top down approaches to innovation in favor of lateral partnerships" (Wirth et al., 2019, p. 249), the HdS stretches if not dissolves the conceptual boundaries between the city and the civic towards a more civic understanding of the city (Landry, 2018). This implies a shift in perspective towards revalorizing urban space as a public good that not only belongs to its citizens but is also co-produced by them through the practices of an everyday, reflexive democracy. As the co-founder of the tenant's rights association "Kotti & Co" put it in an interview: "It is important that Berliners realize that these are actually *their* buildings. That they do not belong to the SPD [the ruling party in Berlin]." The unique character of the public-civic-partnership for the common good at HdS is perhaps one of the most disruptive ideas to reach that goal.

4.2.2 Cultural shifts around the everyday politics of relating, knowing, and being

As the flipside of institutional innovation understanding how cultural shifts drive and stabilize urban experimental change involves taking stock of the relationships, subjectivities, and material practices that are being cultivated in the everyday routines of urban place-making. In the beginning of the project, the evolution of trust between the different actors of the KOOP5 was crucial to the functioning of the collaboration. As game theoretical perspectives suggest, the prospect of repeated interaction over time increases the willingness to cooperate and improves the quality of the interaction in the present (see, e.g., Manapat et al., 2013). By committing to a long-term partnership, the civil society and government authorities—all of which were accustomed to doing things differently—were gradually building trust into each other. In this vein, one interviewee notices: "In the beginning we were just activists but now we're partners" (personal communication, December 2021). As the building was secured and the project progressed, trust build the foundation for the possibility of productive disagreement. One interviewee asserts that while trust was important, dissent was the true game changer that allowed for "something *really* good to come into being" (personal communication, January 2022). The Haus der Statistik thus emerges as a cultural test bed in which previously separate actors can productively irritate and cross-fertilize each other.

The cooperation has led to learning on both sides. It pushed the ZKB and engaged pioneer users to navigate and better understand the complex landscape of urban bureaucracy and governance, as well as the regulatory frameworks by which politicians and civil servants are constrained. The "foreign minister", design thinking expert, and process architect at ZKB, for instance, emphasizes how working with public authorities towards a common goal made her empathize with the challenges characterizing decision-making authority and administrative duties. Conversely, the initiative pushed the municipality to dive into legal loopholes and exhaust unused discretionary powers, as well as to rethink contractual lock-ins and tendering procedures. Because processes that work for for-profit developers do not necessarily work for small arts collectives that work with completely different internal logics, hierarchies, and skills, the financial entanglements between the ZKB and the other KOOP5 partners also pushed the city to develop greater

flexibility around budgeting and public procurement, at times leading to drastically reduced costs. Clearly, close collaboration can produce important shifts towards a completely new way of city-making.

The day-to-day interactions within and between the ZKB and the pioneer users are infused with care, mutualism, friendship, solidarity, and gift relations. "What we are aiming for is not just a community that lives energy-neutrally but a mode of life, a model for what it means to become a citizen of the city" (personal communication, January 2022). Seeking to cultivate the required practices, habits, and norms for such an endeavor, the ZKB employs at least two professionals whose role could be described as process facilitators. They hold regular feedback and reflection sessions in which team members and pioneers can share emotions, wishes, needs, and ideas. Similarly, the pioneer users themselves also establish common rituals that enable mutual exchange and inspiration on eye-level. Examples include the "Waffeldienstag" where users and interested publics are invited to eat a freshly baked waffle and explore the Haus der Materialisierung or the monthly "Subbotnik," a day of unpaid volunteer work organized to collect garbage, recycle materials, or fix amenities. In this sense, they not only take care of a place but also take care of *the dynamics* of a place, which exposes urban space as fundamentally socially produced and culturally embedded.

Conscious of power dynamics, the HdS actively seeks to strengthen cultural perspectives, ethics of care, and ways of being that are typically rendered invisible or non-credible alternatives in Western knowledge systems. The pioneer project "SİNEMA TRANSTOPIA," organized by the Berlin-based art collective "bi'bak" (Turkish for "Look!"), e.g., is an independent cinema experiment that builds a bridge between urban practice and film. Seeking to decenter the Eurocentric gaze in the German movie culture, the project provides a space for transnational, post-migrant, and post-colonial narratives and their aesthetic dimensions. Moreover, benefitting from the availability of large, low-cost storage rooms, initiatives like "Syria Aid" have been able to send two container loads worth of clothing to war zones in the Middle East. Shortly after the Russian invasion of Ukraine and the giant "STOP WARS" graffiti across the HdS's top floor went viral on social media, the "CAFÉ UKRAINE" created a space for the arrival of Eastern European refugees, offering food, clothing, and language training. Non-human "others" also enter the stage of actors competing over the allocation of space in the city. After spotting the largest urban sea gull colony in Germany as well as an abundant swift population in and around the old ruins of Haus der Statistik, urban ecologists pushed for "bird-friendly" façades which included the installation of aviaries. Moreover, the value of the cryptocurrency "Beecoin"—an art project intended as a special-purpose money to organize the new district's economic relations—was designed such that it would reflect the wellbeing of a rooftop beehive. This dialogue with typically "othered" experiences contributes to destabilize the *de-facto* hegemony of Eurocentric forms of knowing and being in the city.

In addition to diversifying the number of viewpoints that shape urban design, the HdS also expands existing sensual avenues in which people can experience the city. Rejecting the productivist, digital, and

cognitive bias of most technology and urban planning scholarship and taking seriously the fragility of the human, material, and natural worlds, practices like the restoration of the existing building stock as well as the circular economy projects within the HdM foreground acts of breakdown, maintenance, and repair as central sites of creativity and innovation, knowledge and power, and a neglected ethics of care. As the participant of an upcycling workshop aptly states: "Once you start building things [...] you see a t-shirt, a building, or a street as an incredible piece of labor, time, and consideration, and it really changes the way you experience space" (personal communication, February 2022). The story behind the material matters: this is nicely captured by the slogan on the "Materialmafia's" (material mafia) business cards: "Müll ist Definitionsfrage" (waste is a matter of definition). In fact, most people do not solely come to the repair workshops at the Haus der Materialisierung (HdM) with the aspiration to maintain their stuff, but to upgrade it and create something new. "This is also a form of self-empowerment" asserts the owner of a woodwork café (personal communication, January 2022). By bringing repair and production back into the city, the HdS establishes the spaces of embodied learning characteristics of "broken world thinking" (S. J. Jackson, 2014). Based on pragmatist and phenomenological roots, this philosophy ties the human experience in the world to the things that surround them by stressing the importance of fixing, reconfiguration, and recombination. Thereby, it builds new and different forms of solidarity with objects in the sense of what Hildebrandt (2021) calls a "new object culture" (p. 3).

By providing an institutional shield that protects radical urban niche experiments from the structuring forces and deeply-entrenched worldviews of (capitalocentric) modernity, the Haus der Statistik contributes to sensitize urban relationships, knowledges, subjectivities, and ontologies towards more-than-Eurocentric and more-than-human ways of being. Not constrained to think of urban land and infrastructure as assets but recognizing their use value for different stakeholders as well as the social and environmental costs of blank-slate demolition, the Haus der Statistik cultivates social and spatial formations that "build commons [of] socially useful production and doing" (Chatterton, 2016, p. 407). At the same time, the project facilitates learning between different actors. Accounts of how the HdS is based on trust, motivated by generating community solutions, and fueled by values of sustainability and cooperation, contributes to "challenging hopelessness [which] is a key aspect in the development of alternatives" (Benedikt Schmid, 2020, p. 221). The project may thereby help raise questions, and perhaps upend expectations, about what development looks and feels like in the urban cores of the Global North.

4.3 Tensions: Negotiating constraints and impact

To understand the potential of urban experiments also means to understand the tensions which constrain their functioning and wider impact as well as how relevant actors in the field seek to overcome them. Therefore, this section explores the question: "Which *tensions* arise in the Haus der Statistik and how are

they *negotiated* in strategic ways?" In the following, major (i) tensions and constraints as well as related (ii) negotiation and impact strategies are explored.

4.3.1 The cracks within, between, and beyond urban experimentation

Observations of the everyday workings at Haus der Statistik expose a myriad of challenges *within, between,* and *beyond* the experiment. Looking at internal dynamics *within* the ZKB, team members regularly grapple with conflicts. Despite a general sense of "optimism," "good mood," "courage," "strong values," "blind trust," and "appreciation" in the team, its members wrangle over the allocation of responsibility and care work, the working and feedback culture, as well as opportunities for professional development. Moreover, some lament "being stuck in operational tasks with little time for more strategic thinking" (personal communication, January 2022). Internal conflicts also surface in other teams. The pioneers at the HdM, for instance, dispose of very different financial means, human resources, networks, room sizes, levels of expertise, and available time. It is therefore difficult to reach a consensus on the projects' common identity, including disagreement over the level of professionalization, joint business models, commitment and care for shared facilities, potential collaborations, the right balance between autonomy and central control, as well as how to sanction theft and sexist behavior. Moreover, there are also conflicts in the public actor groups, e.g., when siloed administrative departments fail to recognize synergies or the different parties of the government coalition disagree about the degree to which the HdS ought to be supported.

Between the partners many frictions evolve around the "hard" questions of ownership. The KOOP5 was in part established as an alliance seeking to contain the power of capital on the real estate market but with only one civic partner the distribution of property rights, control, and decision-making authority within the partnership seems highly unequal. Although the cooperation agreements guarantee the ZKB access to 20% of the existing building stock and roughly 25% of the new area at HdS, the nature of the contractual relationship with the city as the official owner remains unclear. Different options are on the table: the city prefers the idea of a "Generalnutzungvertrag" (general use contract) which would essentially make the artists tenants of the building; the ZKB in turn demands an "Erbbaurechtsvertrag[19]" (hereditary leasehold) which implies stronger claims to the site over a period of typically fourty to ninety-nine years. Establishing a "Trägermodell" (carrier model) that secures long-term access to the HdS is crucial for the ZKB because it shields the project from political mood shifts: "The present project has gotten as far as it has with the backing of the Berlin Senate, which is controlled by a coalition of the Social Democrats, Greens, and the Left Party. The next government may not be so sympathetic to this model of co-produced urban development" (personal communication, January 2022). In this sense, one pioneer user reports that there is always the risk that "it could all collapse": "If I'm honest, I have quite a stomachache—but that doesn't help"

[19] The legal instrument of a hereditary leasehold includes the right to build on a plot of land without owning it. The builder pays a regular ground rent for a term of at least fourty but most likely ninety-nine years.

(personal communication, January 2022). The Deputy City Councilor shares this concern: "If a different coalition would claim more space for administrative purposes, I think [the project] would become very boring very quickly and lose its appeal" (personal communication, December 2021).

The conflicts *between* the cooperating parties also include the "soft" dimensions of work ethics. While the BIM managing director originally described the atmosphere within the KOOP5 as "extraordinarily friendly" and "incredibly constructive" (Leimiss, S. as cited in Šustr, 2018, p. 4) as the project unfolds ZKB members increasingly detect a "cooperation crisis" (personal communication, January 2022). As the smallest partner, the team deplores having to do all "the dirty work", a regression to old antagonisms, and a lack of appreciation (e.g., while the HdS was mentioned with an entire paragraph in the coalition agreement of 2016-2021, the coalition of 2021-2026 would only mention the project in one sentence). One planner complains that "right now the attitude is more like 'nah', we don't let them show us how to do things differently"; another describes how "the cooperation is quite grueling" (personal communication, January 2022). Tensions also exist between the ZKB and the pioneer users. While the ZKB's two part-time employees who coordinate the activities of more than 40 pioneer projects often make the impossible possible, they also at times have to take and communicate unpopular decisions, e.g., if contracts with specific projects are to be cancelled because they do not sufficiently engage with community or violate the shared "Leitbild" (mission statement) in other ways. Moreover, the double city-state structure of the Berlin public administrations also leads to blockages between the public partners of the KOOP5. The SenSBW, for instance, strongly supports the model project; some even speak of "blind trust" (Šustr, 2018, p. 6). Conversely, as the technical implementation partner the BIM regularly steps on the breaks, cautioning against—and at times refusing to—"reinvent the wheel" (personal communication, May 2022). Without a proper mechanism of aligning different visions, practices, and goals, the project runs the risk of producing highly fragmented and square results, where little of the HdS's original charm is maintained. The immediacy of this danger at times produces a mode of constant firefighting in the ZKB's "Werkstatt" office.

The internal and multilateral conflict potential is complemented and exacerbated by the deeper structural forces of capitalism *beyond* the Haus der Statistik's immediate control. In an interview the former Senator for Urban Development cautions against exaggerated expectations of what a city can do in the face of a capitalist economic and social order: "To those disappointed by the red-red-green government [...], I can only say I can't stop everything, I can't abolish capitalism" (personal communication, December 2021). He continues to argue that the idea of an island outside the capitalist mode of production is "naïve and simplistic" and urges us to "raise systemic questions concerning the logic of speculation with real estate under capitalism." But the city is not only subject to and constrained by the capitalist commodification of land. Major public institutions themselves have have internalized the capitalist growth-doctrine. As one of the partner institutions in the KOOP5, the WBM has the mandate to build social housing but must at the same time make profits, which creates a constant state of limbo between accessibility, quality, and revenue

targets that also has ramifications for the wider co-production process at HdS. Moreover, capitalism also sneaks into the community-led activities at the HdS. While aiming to provide a space independent of capitalist valorization, the repair practices at HdM are firmly integrated into market economies and capitalist cheapening. One pioneer project, a bicycle store aspiring to become the first 100% circular of its kind, struggles to compete with market prizes because the labor costs incurred by repairing old things are much higher than simply buying and installing new ones. Similarly, an arts curator emphasizes the needed for artists to escape their involuntary role as gentrifiers. Art would need to be made collectively and beyond the rhythms of the art market—that is, to be as "unmarketable" as the Haus der Statistik itself once was.

One challenge that intersects these three levels is that of integrated urban planning. Meeting urban sustainability targets requires the alignment of social, ecological, and democratic goals across the many spheres that make up the urban: planning, transport, health, waste management, buildings, as well as green and blue infrastructure (Yigitcanlar & Teriman, 2015). Although the HdS aspires to dovetail different sustainability dimensions in a systemic way, their integration in practice remains difficult. For instance, despite small-scale successes at the HdM the wider project is far from implementing a truly regenerative design. When confronted with trade-offs, e.g., between rooftop space for building appliances, photovoltaics, rainwater retention, food production, and affordable rent for future users, current practices tends to prioritize social over ecological targets. "We are socially sustainable," asserts one of the activists: "We have so many challenges, [ecological] sustainability is simply not the focus" (personal communication, February 2022). Skyrocketing raw material prices for timber exacerbate the dilemma, which is why some argue that biogenic construction will only be possible with a CO2-tax. Moreover, integrated planning is complicated by rigid legal frameworks (e.g., highly standardized window measurements that preclude the possibility to reuse differently-sized windows from dismantled buildings elsewhere). Mundane tasks like getting a delivery permit for a truck packed with to-be-reused refugee containers can cost the civic planners hours of phone calls, frequently leading to furious outbursts over the "bureaucratic madness" they encounter. Public liabilities, building standards, and insurance laws lead to unnecessarily meticulous restoration efforts: Taking as an example the building's original façade that was almost entirely torn down, one of ZKB's chief planners bemoans the ways in which "Washed-out paint can create new aesthetic value but for the city it's simply *broken*, which leads to the unsustainable use of new rather than used materials" (personal communication, December 2021). Because "too few people in the administration have a background in applied fields" (personal communication, January 2022), they oftentimes lack the necessary understanding for the processes, possibilities, and needs on site. In an unfavorable economic and regulatory environment, there are obvious limits to the idea of "alles for alle" (everything for everyone), which is sprayed in small letters onto the building's exterior in a hidden rooftop corner.

The "pioneer users" at the Haus der Statistik and Haus der Materialisierung [via Initiative Haus der Statistik]

4.3.2 How the light gets in: Negotiation and impact strategies

Whether the HdS can thrive within a landscape of contradictory impulses and create an impact beyond the confines of its own vicinity will rest on its capacity for strategic responses that reconcile opposing logics in inventive ways. To tame the *internal* tensions within its teams, the HdS has adopted synergistic strategies that enable shared learning. Seeking to cultivate a professional feedback and conflict-resolution culture as well as to install measures to prevent conflicts in the first place, the ZKB has developed—and continues to iteratively streamline—a process of regular team meetings in which individual members can share their concerns, wishes, and ideas. Guided by agile moderation, facilitation, and non-violent communication techniques, this includes a weekly jour fixe, board meetings, and a three-monthly workshop to develop joint objectives and key results. For many, in particular those who have previously worked in the artistic and creative sphere, adopting such a structured approach to organizing has at first been unfamiliar but after years of "endlessly long plena and chaotic discussions" (personal communication, January 2022), most report a steep learning curve. Meanwhile, the pioneer users even actively demand an external third-party moderation for their bi-monthly gatherings, recognizing the benefits of "new work" methods in the oftentimes improvised sphere of grassroots organizing. Moreover, to sanction a rule-breaking member, the pioneers co-created a democratic arbitration procedure that strikes a balance between ensuring everyone's personal safety and maintaining openness to the offenders remorse, leading to a conciliatory outcome for both sides. Thus, internal conflicts are treated according to a synergistic and incremental logic of "change from within."

Symbiotic strategies grounded in proper process management are also adopted to address the disputes *between* different actor groups. The different actor groups meet in regular steering meetings that are facilitated by an external service provider to ensure an unbiased space for disagreement. Moreover, to "translate" between different views, key representatives engage in regular and informal bilateral conversations on the phone or in person. However, keeping up collaborative spirits not only requires open spaces in the form of moderated meetings but also open semantics in the form of a shared vocabulary that different parties can agree upon without necessarily meaning the same thing. Studying innovation processes in urban governance, Ignacio Farías and Claudia Mendes (2019) coined the notion of "smart equivocations." As univocal terms that invite ontological multiplicity, they enable collaboration without a common understanding of the nature of the shared work. From this perspective, the fact that the HdS frames its work around the conceptually stretchable notions of "Gemeinwohl" (common good), "Urbane Praxis" (urban practice), or "Ko-Produktion" (co-production) is no accident. By leaving open a space for interpretation over definitions, these smart equivocations hold the projects' complex ecologies of collaboration together while leaving open a space for a shared understanding to evolve over time. In this vein, the ZKB places careful attention on how to narrate their work. For example, there is an ongoing discussion about how to replace the idea of "professionalization" with a term that recognizes the possibility for ways of

making structures on the ground "work" that are not based on expertocratic principles. In sum, grounded in symbiotic strategies, the combination of processual and semantic openness has led to a success story, where originally diverging understandings of city-making have gradually converged and all involved parties highlight how "surprised they are that they have made it so far" (personal communication, May 2022).

In relation to the "harder" contestations over ownership rights and decision-making authority, the ZKB has pursued a rich mixture of strategies. The allocation of space to the different parties which was determined by the former Finance Senator grants the ZKB significant scope for realizing its own ideas. However, because without a contractual claim to the site the project could still collapse, the ZKB has fostered strategies of embedding the project into the neighborhood and wider city. By hosting regular events like the Ko-Markt, repair cafes, or panel discussions, the ZKB has weaved a tightly knit network of local support and sympathetic partners which can be activated in case the tides of governmental support should turn against it. Building social momentum has also gone hand-in-hand with translation strategies including education and training activities. Because they continuously (and successfully) fight for the extension of a budget for participatory formats, the ZKB can offer tours to students and private investors interested in the project, as well as hold presentations and exhibitions at international events and festivals. Moreover, the HdS regularly distils its own learnings and insights into editorial products like a three-volume biography of the project's genesis. In a way, through the production of modular and flexible elements, such products seek new ways to offset the contextual binding of the HdS, which not only contributes to spread its impact[20] but als serves as a justification for the project to exist in the first place.

In response to the logics of capitalism, the HdS tends to follow interstitial strategies aiming to create alternative circuits of value. Most importantly, this includes removing land in a central urban location from speculative processes and transferring it to public ownership amidst a time when zero interest rate policies have created a situation in which billions of euros are looking for investments. The strategic departure from the privatization of land to "buying everything we [the city] can get and selling nothing" (personal communication, May 2022) clearly indicates the attempt to create a network of commons which is not subject to the animal spirits of market prizing but can be developed according to ambitious socio-ecological targets. Similar tendencies to bypass the need for private financing and sidestep the mechanisms through which finance capital exercises its discipline over the economy are visible in relation to the pioneer users' maker spaces, repair cafes, and upcycling initiatives. The HdM provides a case in point: it provides an "interconnected [...] pool of common resources, including skills, knowledge, contacts and a workforce that can be tapped into in case of need" (Benedikt Schmid, 2020, p. 117). To erupt into broader

[20] However, simply buying land and translating one blueprint development model to other places has proven difficult. For instance, attempts to copy-past the Haus der Statistik's concept of the "integrated workshop procedure" to the "Rathausblock" in Berlin-Kreuzberg failed because the civil society that had already organized on site was not sufficiently involved in the "planning of the planning." In turn, the civic initiative at Rathausblock may itself for long have been constrained by its own "tight," if not dogmatic, value system which precluded any cooperation with the city in the sense of a "ruptural" approach.

realignments of practice with a postcapitalist orientation and anchor themselves in the everyday practices of Berliners, such circular centers need to diffuse more broadly. Indeed, the Berlin Senate's "Vision Zero Waste" aims to set up a second-hand hardware store in every district. At the same time, one pioneer clarifies that "upcycling private items cannot solve the waste problem" and that repair practices need to be scaled up to industrial processes, we well: "We need to make sure the idea is economically viable and could be conveyed to a start-up, for example" (Kellerhoff, S. as cited in Braun, 2021, p. 2). Thus, strategies of horizontally replicating existing structures are complemented by ambitions to vertically scale capacities.

To navigate the cross-cutting challenge of integrated, sustainable urban planning, the ZKB combines short-term, ruptural tactics with a longer-term interstitial strategy. Trying to navigate the regulatory jungle that complicates the ZKB's more circular, DIY-styled, modular, and flexible urbanism, the activists often take great risks by adopting an approach that could be described as "creating facts first, getting permission second." Here, they jokingly take reference to Elon Musk who for a long time had been building Europe's largest electric vehicle factory in "Grünheide" (district close to Berlin) without an official building permit.[21] "Once our utopia is established, it's harder to say: no, please build it back again!" (personal communication, January 2022). This includes exploiting legal loopholes, such as the "Genehmigungsfiktion" (fiction of approval), a clause in the German administrative law which implies that if a competent authority does not decide on a requested approval within a certain period (e.g., two weeks), the approval is deemed to have been granted. In addition to these emergent, ruptural strategies, which in Mintzberg et al.'s (2020) sense flow from a process of learning over time that makes strategy formulation and implementation indistinguishable, the ZKB also pursues more deliberate strategies to itself develop the organizational capabilities for integrated development practices. Many construction works are implemented by the ZKB itself instead of outsourcing them to third parties; not because they reject market transactions *per se* but because they simply do the job faster, cheaper, and they have more control over it: "We could do many construction works for half the prize" (personal communication, January 2022). As a way to confront the capitalist growth logic through the creation of localized, alternative, and expanding circuits of value, one of ZKB's board members explains his goal to "establish supply chains that are in civic-public hands and do not need to make profits—from timber procurement in the Brandenburg forest to construction activities on site" (ibid.). Think-and-do tanks like the "Bauhaus der Erde[22]" (Bauhaus Earth) understand the dormant potential for establishing a truly holistic lighthouse project at the HdS. At an informal visit, they voice interest in establishing their headquarters at the site to act as a catalyst that links social, democratic, *and* ecological perspectives.

[21] At the same time, the joke carries an envious and ironic undertone. The ZKB is well aware that in contrast to the richest man on the planet, their project has less of a legal, economic, and political leverage in case of doubt.
[22] Initiated by Prof. Joachim Schellnhuber, the initiative aims to reinvent the traditional Bauhaus idea as a powerful "Gesamtkunstwerk" for sustainable and inclusive construction in the 21st century.

Urban design for the Haus der Statistik [© Teleinternetcafe und Treibhaus]

5. Discussion: Towards a notion of Deep Experimentation in the city

5.1 Alles anders at Allesandersplatz? An attempt to take stock

This research project set out to understand how the HdS re-envisions, practices, and negotiates urban experimentation towards sustainable cities. To answer this question, it has reviewed relevant literature at the intersection of sustainability transitions and transformation research as a foundation for an in-depth case study. The transitions and transformations literature have exhibited important blind spots and by themselves proven inadequate to capture, conceptualize, and identify how urban experiments can bring about the profound reconfigurations needed for sustainable urban development. The proposed framework has synthesized perspectives from the two research communities and structured them along the three entry points of emergence, functioning, and tensions. Offering a different way to study urban experiments, it has proven to be a fruitful analytical envelope within which to inventory and analyze the complex workings of urban experiments seeking to strengthen sustainability in the Anthropocene city.

Based on a thick description, the study has unpacked the historical, spatial, cultural, and economic contingencies of an experiment in the center of a world city. The activists who staged a protest at an abandoned government building did not imagine they would end up leading a multimillion redevelopment project. Their demonstration completed a larger-scale, long-brewing revolt against privatization, rising rents, and the loss of Berlin's cultural character to gentrification all the while tapping into place-based histories and mobilizing dormant identities to craft a powerful narrative of an altogether different urban future. In an unlikely but timely alliance designed to challenge the power of capital in the city, civic and public partners teamed up to co-develop the district. Together they established an innovative institutional architecture that would streamline the joint but separate work of day-to-day planning, governance, and participation practices, grounded in a culture of trust, mutualism, and compromise. The cooperation partners negotiate emerging tensions in the spirit of a pragmatic idealism where different short- and long-term strategies overlap and concessions and compromises are made on all sides.

5.2 Filling in the blank space: A definition of Deep Experimentation

Although the story of the Haus der Statistik represents one singular empirical case, we can draw more general lessons from its example. As the HdS demonstrates, new forms of urban change can be both action-oriented, pragmatic, and targeted whilst striving towards a more radical, politicized and imaginative ontological politics beyond capitalism, thereby pushing the boundaries of the possible and probable in urban sustainability towards yet unknown territory. To make the ongoing fusion between transitional and transformative forms of urban experimentation analytically tractable, this paper proposes the idiom of "deep experimentation." Taking the theoretical and empirical contributions of this paper into account, deep experiments can be defined as historically contingent place-based interventions aimed at creating socially, ecologically, and democratically sustainable cities, which are animated by shared capitalist

struggles and imaginaries of new forms of urban life, attainable through strategic negotiation and institutionally stabilized by public-civic-partnerships.

Deep experimentation acknowledges the vulnerability of urban structures to social, environmental, and democratic risks while viewing this vulnerability as an opportunity in a moment of urgency. The concept cuts through the binary of structure and agency by acknowledging the complexity of agency and possibility within the hardness of capitalist economies and infrastructural systems, organizational behaviors, and political cultures. Deep experimentation recognizes that history matters but rejects the notion of path-dependent lock-ins in favor of a more deliberate, empowering, and open sense of agency and contingency in society's charting of capitalisms position in the Anthropocene city. It shows that the experimental and the political cannot be clearly demarcated in any reasonable manner: urban experiments are always agents of political production within the economic relations of urban capitalism. Thus, deep experiments that resist capitalist urban development also resist a mode of politics and culture that is imposed from outside rather than developed from within and driven by lobbies rather than by the ideal of the common good, striving to replace Eurocentric monotony with the ontological politics of the pluriversal.

5.3 Converging deeps: The position of Deep Experimentation in sustainability research

Deep experimentation builds upon, and extends, a rich legacy of "deep" scholarship in sustainability research, including "deep adaptation,[23]" "deep transitions,[24]" "deep ecology,[25]" and "deep design,[26]" as well as "deep" metaphors like the "iceberg model" (see *Appendix ii*) by J. Gibson-Graham and Dombroski (2020), a representation used to reveal the landscape of diverse economic activities ranging from household works to bartering to community care that are typically hidden underneath the more visible "tip" of capitalist enterprise in commodity markets. These notions of "depth" all advocate for profound reconfigurations of entrenched patterns of capitalist life and work, cognitive and material infrastructures, as well as distributions of benefits and burdens. The idiom of deep experimentation encapsulates the ambition to realize these "profound" changes through urban experimental approaches. The concept thereby contributes to "deepen" an ongoing shift in transitions research that has recently been striving to equip itself

[23] Based on mounting evidence that the vulnerability of human civilization has been underestimated, downplayed or suppressed, Bendell (2018) searches for alternative and–in a sense, more realistic perspectives—that prepare societies for the collapse of certain governance and infrastructure systems, and to see this as an opportunity for positive change.
[24] Following Schot and Kanger (2018), "deep transitions" adopt a long-wave and multi-regime perspective to explain the "emergence, acceleration, stabilization and directionally of sustainability transitions" (p. 12). Deep transitions are a series "of connected and sustained fundamental transformations of a wide range of sociotechnical systems in a similar direction. It represents an attempt to envision and explain sustainability transitions in a manner that does not take capitalism for granted, but rather considers the phenomenon explicitly and is equipped with an interdisciplinary, heterodox intellectual toolbox that includes political economy, historical sociology, political philosophy, human geography, ecological and institutional economics" (ibid.).
[25] Originating in 1972 with the Norwegian philosopher Arne Naess , deep ecology is an environmental philosophy and social movement based in the belief that humans must "radically change their relationship to nature from one that values nature solely for its usefulness to human beings to one that recognizes that nature has an inherent value" (p. 112).
[26] In the fields of architecture, city planning, engineering, and interior design, the goal of deep design is to appeal not only to material and technical qualities but also the sensual experience as well as to aiming for sustainability.

with the analytical and intellectual tools to address the influence of capitalism on sustainability transitions, and *vice versa*.

The concept of deep experimentation contributes less to the Weberian project of *Verstehen* (subjectively understanding how things fit together) than to advance the scientific goal of *Erklären* (explaining objectively how things come to be as they are) (distinction inspired by Jasanoff & Kim, 2015). Following Hempel and Oppenheim (1948), the concept does not merely serve as an *explanandum* (i.e., to answer the "what question"). It serves also as an *explanans* (i.e. to answer the "how question"). Deep experimentation therefore makes it possible to recognize *what* new forms of urban experimentation look like, and *how* they take effect. It explains that new forms of urban experimentation working towards socially, ecologically, and democratically sustainable cities emerge through combining modes of operation previously disconnected in discussions of the transitions and transformation literature, and function in response to, and under, the more general laws and conditions of capitalism.

5.4 How to study deeply experimental spaces

A theoretical term is worth little without demonstrating how it fits into the world, hence operationalization and method are indispensable. This paper has demonstrated the usefulness of collaborative and multimodal architectural, urban ethnography to recognize deep experiments and their constitutive components. Thick ethnographic description and analysis can probe the emergence, functioning, and tensions of deep experiments through inquiries into socio-historical and visionary background conditions, cultural and institutional practices, as well as negotiation and impact strategies. Although the methods adopted for this research (e.g., participant observation, qualitative interviews, desk research, netnography, multispecies ethnography, or survey data) are not specific to the analysis of deep experiments, they can be applied in ways that are particularly attuned to this concept by attending to the means by which deep experiments reconnect past and future times, (un)make place-based imaginaries of (post)capitalist urban worlds, challenge and naturalize ways of using, valuing, and institutionally embedding urban space, and navigate tensions and constraints in strategic ways.

It is important to stress that a deep experiment is neither cause nor effect in a classical sense but rather a continually rearticulated practice of resistance and creation in urban life, and a resulting commitment to that new order's continuity and coherence. Moreover, deep experiments not only demonstrate what visions of are practically attainable through experimental intervention but also suggest how urban worlds ought and ought not to be lived. The concept of deep experimentation does *not* claim that urban experimentation is a singular phenomenon that can or should be readily understood using one singular conceptual entry point. On the contrary, the concept seeks to make sense of *specific* developments in the experimental landscape of the city that can only be insufficiently captured by existing categories and hence

require new perspectives *in addition*, not opposition to, existing ones. Deep experimentation is thereby not confined to the Haus der Statistik but offers a new perspective to study urban experiments more generally.

6. Conclusion and outlook

6.1 Sketching future research avenues

The paper indicates significant scope for further research as deep experiments continue to reach for the transformation of urban spaces. While the ethnographic methods adopted in this study focused on the experiences of the civic actors, insights about the municipality as the "other side" of the civic-public partnership at Haus der Statistik will be key to mitigating constraining and strengthening enabling factors of deep experiments in the city. Relatedly, there are important lessons to be learned about what governance structures are actually needed to be able to implement such complex projects in the administration, including questions of how the knowledge produced in the experiment is accepted and disseminated within the wider political arena at precinct and municipal scale.

The Haus der Statistik is by no means the only experimental project in Berlin: the "Rathausblock," "Studentendorf Schlechtensee," "ExRotaprint," "Floating ~~University~~," "Aufbauhaus," "KINDL Areal," "Spreefeld Berlin," "Transformation Haus & Feld," "Holzmarkt," "Schumacher Quartier," "Markthalle 9," or "Blumengroßmarkt" equally seek to demonstrate that creative, inclusive, and self-organized urban development is possible. If "Berlin is Europe's largest city lab" (personal communication, January 2021), there is great potential to apply the concept of deep experimentation and explore the possibility of an emerging ecosystem or network of deep experiments in the city. Questions also arise as to how these experiments compare to the rest of the urban development plan in Berlin: are they cosmetic projects at a unique point in time that will never be possible again or do they offer blueprints that can unfold urban transformative capacity more broadly?

Another promising research avenue relates to whether there may be a chance for the private development community to launch similar projects without destroying or greenwashing the concept completely. How can private developers learn from the Haus der Statistik example in trying to allow civil society actors more involvement in determining how space is built and used, even in small sections of those projects, be it conventional housing, commercial office space, or circular economy hubs? What would be the particular power relations, driving interests, and underlying assumptions at play in such actor constellations, and how would they shape the acceptance, legitimacy, pace, and scalability of such projects? Under which conditions would private-civic-public partnerships be desirable and under which would they not? How can private businesses support the goals of deep experimentation?

Research suggests that urban experimentation makes particular sense in relation to supra-urban or networked governance structures as they allow for experimental learnings to disseminate more broadly.

Thus, there would be benefit from undertaking comparative work assessing the impact of deep experiments on urban sustainability between different cities. This could include comparison across all kinds of organizational variables: "political across nations and actors; historical through time; geographic in relation to space; economic across sectors; and cultural between groups and societies" (Jasanoff & Kim, 2015, p. 33). In addition, as the focus of this study was on wealthy an industrialized city, more studies on cities in the Global South are needed. In particular, a better understanding of experimental contributions not only to sustainability mitigation but also adaptation efforts will be an essential task to strengthen the resilience of those urban systems that are threatened by exacerbating global environmental changes the most.

6.2 Words of hope

Deep experiments foreground the importance of an explicit engagement with the dynamics of capitalism in urban sustainability research. They prove that whether "urban experiments are innovative methods of enabling sustainability transitions or whether they are an extension of existing techniques of urban governance that may lead to incremental improvements at best and the continuation of urban social inequality and environmental challenges at worst" (Bulkeley et al., 2019, p. 322), is a question concerning both hands-on processual competence and radical perspectives on post-capitalism. Therefore, this study follows Feola et al. (2021) and cautions against accusations of "ideological bias" directed at scholarship that explicates capitalism in the study of urban experimentation: "Capitalism should be explicitly considered and critically questioned. This is not a normative endeavor; indeed, it represents the opposite of such, as it is rather the presumption of neutrality toward capitalism that reflects a normative and uncritical, if implicit, assumption of its uniformity, dominance, and future persistence" (p. 104). A politics of deep experimentation that decenters capitalism in the definition of the urban economy holds the potential to significantly enlarge the range of experiences and sustainability transitions pathways that are considered valid and credible alternatives to what exists.

While the consolidation of experiments towards urban sustainability will entail processes of "destruction and construction, [...] refusal and proposition" (Feola et al., 2021, p. 105), the goal of this study was not to prescribe deep experiments as ready-made solutions to be transplanted indiscriminately from one place to the other. Instead, it suggests that the future quality of life in cities around the world will hinge on the extent to which communities can creatively and pragmatically replenish the liminal spaces opening up in the cracks between the disarticulation of the old and the dreamscapes of the not-here-yet. There is no master key for community-oriented urban development, all the more so spaces for experimentation are needed where resilient visions can unfold and new partnerships can emerge, without structural or mental constraints. To tune in with their own and unique identities, histories, and utopias, cities are well-advised to be patient with the processes of learning involved in these processes. After all, the city of our dreams is

created on the foundation of constant discourse. How do we want to live together in the future? What is the common good and who will take care of it? What can I contribute?

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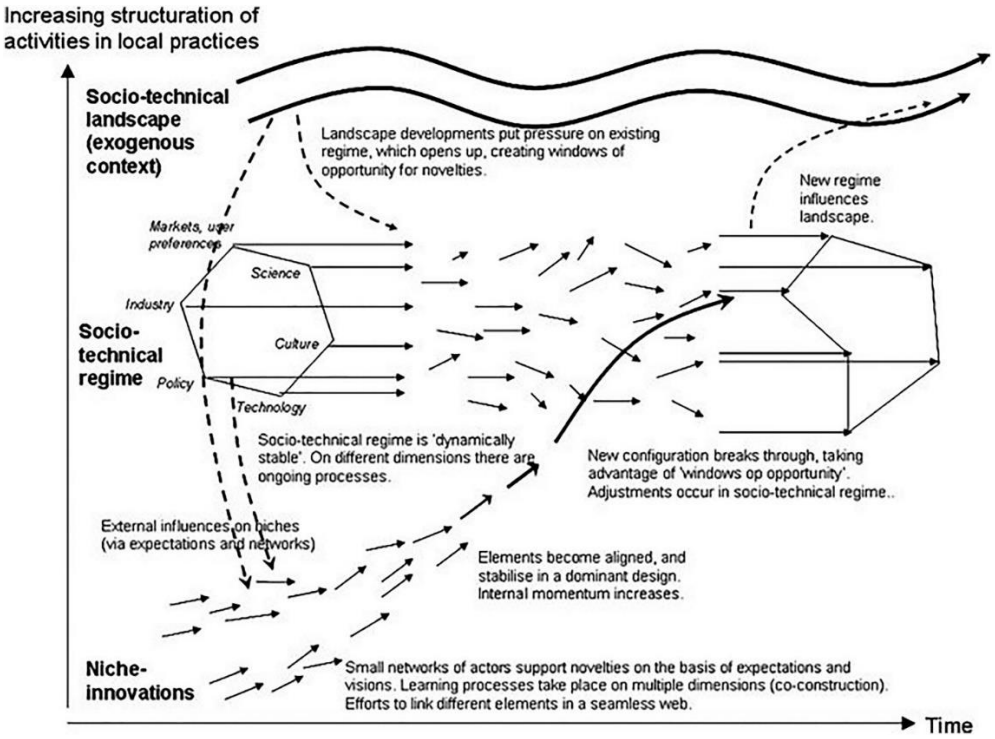
Appendix

Appendix i: The Multi-Level Perspective of Sustainability Transitions Research



Source: Sustainability Transitions Research (Geels, 2010).

Appendix ii: The economic "Iceberg" model of Diverse Economies

Source: Community Economies Network (Gibson-Graham, 2022)