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COMMENTARY

Tidal Cities: Pedagogical (Mis)adventures in Game-based Visualizations of Adaptation Planning and Urban Justice

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Abstract

Tidal Cities was an interdisciplinary, transnational experiment that brought together an environmental anthropologist, an urban geographer, and two landscape architects/artists. We aimed at co-creating a visualization-based pedagogical tool for contemplating and teaching manifold relations between the city and the sea, drawing on ethnographic material from Metro Manila and Jakarta. The project was designed during the COVID-19 pandemic, and its digital format integrated an immersive role play component to spark further debate among tertiary students. Players were encouraged to critically reflect on and engage with trajectories and contestations around coastal planning and urban placemaking, particularly in spaces of informality beset by recurrent flooding, tenurial insecurity, and dispossession. While engaging with the poetics and politics of 2D visual representation, we reflect on the thinking behind the game's pedagogical co-design and a number of paradoxes that arose from two test-runs with departmental students, researchers, and teaching faculty in Bremen, Germany.

Keywords: Immersive game development; coastal cities; infrastructural politics; power and planning; visualization and the politics of representation; Southeast Asia

Introduction

Within urbanist and environmental social sciences, the development of pedagogical material as research praxis and vice versa (digital or otherwise), remains an underexplored theme (see Pandian et al. 2009; Gunn and Løgstrup 2014). The COVID-19 pandemic, however, has re-centered attention towards remote teaching methods and modalities,

while heightening realities around intersectional inequality and inequity in accessing and engaging in/with virtual spaces of learning. Moreover, digital fatigue and inertia that settled on the academic community begged for fresh ways of engaging with and interacting in digital space.

In this context, experimenting with a novel, interactive, and virtual form of talking about transformations of coastal spaces has been a way of engaging audiences for the themes of our BlueUrban research project. Since 2019, project researchers have explored the diversity of coastal urbanities and the infrastructural politics of sea level change adaptation in island Southeast Asia. Developing and testing the immersive game Tidal Cities has been a way of addressing the emerging need for remote teaching formats.

Coastal cities stand to be read as peculiar socio-technical and nature-cultural assemblages, for they are sites of grounded concretized fixity and places of dynamic intertidal flux (Anand 2017; Bayes 2023). A great proportion of the world's cities are along seacoasts that remain precarious to the effects of slow-creep sea level change, shoreline abrasion, land subsidence, and liquefaction that are intrinsically political processes. Global coastal cities are also sites of extreme social inequality and inequity, as urban seacoasts continue to be overbuilt, enclosed, and gentrified as global waterfronts and as icons of state-building (Wade 2019).

Continuously fragmented spaces of unplanned urbanization further displace the urban littoral poor, who depend on the sea for a living, further into the hinterlands (Batubara et al. 2023). Moreover, diverse forms of coastal geo-engineering and placemaking weave together antithetical imaginaries of urban coastal futurities—some that embrace protective living away from water through extensive land reclamation and the armoring of land-sea interfaces through embankments, dykes, groynes, and seawalls, for example (see Dewan 2021; Siriwardane-de Zoysa 2020), while other rationalities that embrace more “amphibious” forms of infrastructural production as urban territorial-making expands out to sea (see Adams 2015; Herbeck and Flitner 2019; Simpson 2016).

Taken together, these different understandings and competing visions of the urban seacoast bring to the fore new forms of urbanity in which the city and sea are technoscientifically and politically integrated, often within market-led logics of late capitalism. Those visions and their materializations often re-configure not only socio-spatial and technical fabrics of built urban form, they also re-shape emerging kinds of sociality and co-habitation with more-than-human life at the interstices of land, water, air, and the subterranean.

To problematize these antipodal coastal urbanities (and imaginaries), we envisioned Tidal Cities as a digital visualization-based pedagogical tool that was provocatively informative, expansive, and playful at the same time. In the following, we will briefly situate our work in the broader debates around game-based teaching approaches and the role of design in them. We will then describe the development of our tool as a transdisciplinary

experience before exploring some of the first experiences made with it after two test runs in different academic settings in Bremen, Germany.

Urban Terra-aqueous on Canvas: Troubling Design and Game-based Approaches

At first glance, it was comforting to acknowledge the open-ended experimental nature of a pedagogical tool that prompted interdisciplinary co-creation. The inspiration we drew from conceptual currents bore broad and lively brushstrokes, be it decolonial writing on placemaking and counter-mapping, architectural and design anthropology and sociology (see Büsse 2020; Hunt and Stevenson, 2017; Murphy 2016; Tsing et al. 2020), cultural geographies of landscape and affect (see Rose and Wylie 2006), or approaches crosscutting landscape architecture, design activism, critical urban planning, and community-driven visualization praxes (Cuthill 2004; Julier 2013; Martínez 2021; Sheppard et al. 2008).

The four of us come with long histories of working between West Africa and South and Southeast Asia. Johannes Herbeck is an urban geographer with an interest in climate-related policy and transport mobilities. Rapti Siriwardane-de Zoysa is an environmental anthropologist who works on cultural histories of seacoasts, alongside the politics of placemaking and its more-than-human relations. Divya Rathod is a landscape architect with a penchant for exploring cultural waterscapes in her experimental activist-led illustrations. José Antonio Bimbao, a landscape architect with extensive experience across the Indo-Malay-Philippine archipelago, deepened our limited conceptual insights on landscape value, active mobility, and speculative biophilic design.

Johannes and Rapti had been asked to develop a session for a lecture series organized by the University of Bremen's *artec Sustainability Research Centre*, the university's *Institute for Anthropology and Cultural Research*, and the interdisciplinary and collaborative research platform the *NatureCulturesLab*. Departing from a classical presentation format, we chose to engage with a different pedagogical exercise and test a game-based approach that could be further sharpened and developed after the first dry-run in the lecture series. The game was mainly designed for students in the audience, and we expected mixed disciplinary backgrounds of the participants crosscutting human geography, anthropology, and the marine social sciences.

With a broad range of possible disciplinary backgrounds of participants, our first intention was to address transcultural expectations in this diverse setting by sparking debate around public space, privatization, and social justice in two Southeast Asian coastal megacities that German-based participants would find themselves familiar with, to differing degrees. We were cognizant of not making claims on what might seem typical to "southern" postcolonial port cities such as Jakarta or Manila. Yet, a

In line with broader debate around the infrastructural protection of urban coasts in the face of global climate change, we paid particular attention to the mix of so-called nature-based solutions, integrating grey, green, and “blue”/floating modular assets (e.g., seawalls, groynes, amphibious installations) in the mix. The “canvassing” of coastal protection and contested processes assembled on this digital whiteboard (as a mood board) proved challenging in several ways, as we will illustrate.

Tenuous Test-runs: Of Blind spots and Paradoxes

Our first test run was at a virtual public seminar at the University of Bremen in December 2021. The session started with a short content input by Rapti and Johannes describing and sharing some of the insights from a research project on coastal transformation and sea level change adaptation in urban Southeast Asia. Participants involved both students and faculty members from the Department of Geography and the Institute of Ethnology and Cultural Studies. After the short talk, participants were divided equally between two breakout rooms with ourselves as facilitators. The game was played virtually and the Players’ Guide, including a scenario statement of the particular coastal space and its contested politics, was shared with the participants.

The role-play component of the game enabled players to choose from a variety of diverse formal and less formal institutional roles. Each role was provided with a confidential “agenda” that also indicated who their likely allies might be, and these mission statements were shared independently with each player through Zoom’s chat function.

While the players in the two groups familiarized themselves with two separate yet identical Miro Whiteboard canvasses, we took the time to explain the budgetary considerations that formed the crucial parameters of the selection process. For the sake of simplification, each modular asset came with its own price tag, and a municipal budget limited how much could be spent on the entire exercise at coastal placemaking.

We further formulated several questions that prompted debate and sought to unpick competing narratives. Our focus was on the kinds of ruptures, fragmented meanings, and silences that materialized during such power-laden negotiations. Our discussion prompts were woven into the Facilitators’ Manual we had put together and plied at socio-temporal dimensions around the creation of normatively desirable spaces, efforts at invoking/integrating the “past” (if relevant), and reflections on the trajectory of the respective negotiation process, in particular:

1. How would you see this strip of coastline in a way that enables inclusive living for human and more-than-human communities?
2. Did you think of ways of integrating landscape memories and place attachments into the coastal setup and future? What were your challenges?
3. In your view, what would an inclusive process look like? How did you raise this in contestations around coastal transitions?

Both groups had half an hour to contest and co-construct a coastline based on unanimous decision-making, from images to their implementation. Socio-environmental justice, “sustainability,” and social inclusion were determined by the group as guiding values and principles that prompted the partial materialization of the virtual coast in its present form, yet participants were limited by time. In both groups, discussions took some time to take off, most probably also due to the high amount of information participants had to digest before actively engaging with the role people had chosen. Moreover, intersectional classed, racialized, gendered, and sexual identities that continually remake urban politics of in/exclusion, particularly in public spaces of fantasy and spectacle such as beaches and waterfronts (see Lobo 2014), are further left to be explored through such “adaptation”-led infrastructural stories.

In one group, one or two senior faculty members would be the first to start the deliberation around potential coastal futures and would in some way also set the tone for further debates. One of the players had chosen the role of property developer and would strongly defend respective positions from the very beginning, clearly aiming at pushing coastal real estate developments (such as a memorial park), while prioritizing the valorization of the existing coastline. The conversational turn gradually generated resistance from other participants who would argue, according to their respective roles, for consideration of livelihood struggles among local fisher communities, or for environmental or human rights aspects in re-planning the coast. After encountering some issues with accessing the whiteboard, it was used to simultaneously foster debate while undergirding which contrasting positions and views around redevelopment *ought* to take shape. Participants’ willingness to negotiate compromise was relatively minimal, and the more or less chaotic use of different visual elements on the virtual whiteboard reflected this: there was no attempt to re-organize the group or discussion; instead, everyone seemed intent on pursuing their own agendas while translating their aspirations into visual representations of a partially “remade” coastline.



Figure 2. A demo coastscape canvased on Miro (Source: Authors)

One of the successes of the test run could be attributed to the performative component of the game that brought to the surface conflicts around values and aspirations with respect to what a “desirable” urban shoreline was against an array of vested socio-economic, cultural, and political interests. It did not, anyhow, lead to internal agreements on certain “rules of the game,” i.e., attempts to organize the balancing of different interests among the groups. We also did not observe the emergence of interest coalitions that would outweigh the limited menu of solutions, for example through the very offensive strategies that single actors believed they had recourse to. Yet such creatively emergent aspects must be viewed in light of a very limited time for doing the exercise—in fact, after explaining the roles and distributing the agendas, and after everyone had acquainted themselves with the Miro board, time for the actual exchange had been rather limited.

Un/learning to Transgress: Between Dualisms and Generative Misadventures

Following both test runs at the University of Bremen and later at an institutional research setting at the Leibniz Institute of Tropical Marine Research (Bremen), participants were invited to share their own challenges and misgivings on the game’s pedagogical promises. One of the questions raised was how one might envision this exercise to unfold in a less scripted way. For example, would discussions have been more complex and richer if players were given the opportunity to do more in-depth reading on disparate urban contexts and the coastal dynamics at play? A participant during the first test-run began by expressing:

You are often left feeling skeptical of “games” like these where there’s a real danger of people performing what they already knew, and thus missing the opportunity to think expansively.

—Faculty member, Cultural Anthropology (Bremen)

Moreover, we asked what was lost in facilitating a discussion that provokes a rethinking of such planning binaries and what spaces for rupture existed. Indeed, while dualistic framing pervades much of coastal urban planning and their paradigmatic imaginaries, did this pedagogical exercise-as-game reinforce more binaries than they dismantled? Such weak spots were captured in planning-centric questions that were raised; for example, “what might be considered more vulnerable in the future of climate change: big infrastructural projects made of concrete or smaller homes built with different types of materials?”

Over the course of our discussion, as many as eight core planning dualisms were mentioned in such deliberative debates—questions around rewilding or domesticating waters and urban “nature,” coastal submergence/“managed retreat” versus active land reclamation, the politics of co-living better on either “dry” *terra firma* or on wet, fluid spaces, grey versus blue-green design, and the kinds of urban nature-cultures that were either reviled or desired, or rendered valuable by virtue of their extractability or “preservationist” aesthetic nature. Thus, the imaginaries of the terra-aqueous and indeed the imaginative interstices of land and sea were lost in our pedagogical forays.



Figure 3. Example from Group 2, “Working with the informal amphibious.”

Furthermore, students were critical of the fact that we framed modular assets as partial or half-baked “solutions” rather than as more-than-human networks or assemblages that could be anticipated. The pre-given nature and simplification of these solutions created their own gridlocks and path dependencies, a number of players argued. For example, as another architecture-trained participant critically questioned:

What is your end-game? Could you envision this turning into a decolonized board game that would sit antithetically to something like Monopoly? This could be super useful within certain African urban contexts as well, if it were made more open-ended. Could you for instance add in a second layer, for example different costs for sanitation models?

—Teaching staff, Architecture (Cape Town)

The closed versus open-ended nature of the game proved limiting in several ways. For example, how realistically could this assembled menu of solutions be treated in the light of their simplified pre-given trade-offs? It almost seemed as if these kinds of enactments warranted a (theatrical) willing suspension of disbelief, captured in the statement by a graduate student: “could we have considered just *half a dyke*?” Further critiques raised by participants pertained to the degree to which performative aspects of the role-play could be made behaviorally expansive, for example allowing for walk-outs and for other unexpected trajectories to unfold.

Finally, one of the key challenges that emerged was in its time constraints, for an hour was far too short a time with which participants could familiarize themselves with other’s roles, missions, and the game’s technical components. Ideally, the game would call for a preparation time of a week in which students could choose their roles and institutional agendas while thinking of creative ways of filling modular art assets with their own storied worlds and infrastructural (after)lives.

Conclusion

How did Tidal Cities, as a mode of game development for teaching, prompt us to think in new ways about the specificities of urban coastal placemaking, their historicity, and for theorizing the heterogeneity of coastal urbanity? As a material device, how did this visualization game spark engagements for multimodal teaching formats, and what new learning did we draw from this experimental interdisciplinary encounter?

Our hope while conceptualizing the game was that through the performative negotiations during the game, together with the very act of moving around art assets on the blank canvas, participants would collectively derive an embodied sense of contested coastal city-making as well as the emotional lives of municipal policymaking. More generatively, it proved to be a pedagogical exercise in “worlding” the redesign of a coastscape, in which the whiteboard itself could be metaphorically read and critiqued as a

tabula rasa, referencing the poetics and politics of socio-spatial and temporal erasure and rewriting.

Tellingly, the singularized role play scenario reproduces a hypermodernist urban planning milieu, while nevertheless closely mimicking experiences that Bim and Divya, as landscape architects, were all too familiar with in their own professional histories. Meanwhile, remade infrastructural collages betrayed a number of binary visions that haunt conceptualizations around contemporary coastal urbanity—in all their plurality, which we found challenging to teach *ourselves* to transgress (see hooks 1994). In Divya’s words, the “reconstructed panorama” came locked in with its own normative visions, and it was suggested that the pedagogical game might be far more suitable for unthinking questions around longer term-based value judgements of development interventions. Thus, the current format may prove counter-productive at times when exploring the messiness of top-down planning and deliberative participation, in which intertidal flux and flow both unmake and remake urban lifeworlds of the littoral city. For example, world-making paradigms that we sought to convey remained rigidly differentiated between protective living away from tidal incursions on the one hand, and living with/building on water on the other.

As a way forward, how might we interweave networked assemblages and the more-than-human agency of tides, sediments, plants, and animals—as urban architects in their own right—into the very fabric of this pedagogical game? Indeed, our own theorizations of/around coastal urbanities, as both figure and as method, leave us contemplating modes of being, belonging, and in/exclusion in which oceans are being increasingly urbanized through imaginaries of floating futures. At the very least, these new materialities upend the mythologies of geographic fixity and situatedness of the urban, while offering new ways of grappling with meanings, practices, and knowledge circulations that have often been rooted in and routed through recalcitrant flows of saltwater, entangling the atmospheric, deltaic, aquifer, and its riparian.

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