

Valleys to Peaks: Co-Creating Temporal Emotional Landscape Maps for Ugly Feelings Across Participatory Trajectories

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Abstract

Participatory design promises care and long-term responsibility, yet many projects leave participants feeling frustrated or cynical when implementation lags. These “ugly feelings” are often dismissed as inconveniences to be managed in brief workshops, rather than recognised as diagnostic signals of structural friction across a project’s lifecycle. This article explores how “emotional trajectories”—the way feelings rise, fall, and settle over time—can be collectively traced and interpreted. We introduce the Temporal Emotional Landscape Map (TELM), a protocol for mapping and collectively interpreting these shifts. Tested across five participatory design projects in Belgium and Türkiye, TELM combines initial interviews with joint “landscape readings,” completed in four of the five cases, allowing interviewees to refine the maps, contest timelines, and reflect on whose experiences are visible. Integrating affect theory and participatory mapping, TELM uses a flexible vocabulary of landscape terms—such as peaks, valleys, and bogs—to analyse group and institutional dynamics. Rather than using fixed scales, its scoring is interpretive, positioning events by participants’ own descriptors. Across the four co-read cases, co-reading produced a repertoire of distinct corrections—re-grounding a baseline, re-timing an origin, requalifying interpretive categories, and, across the co-read cases, both softening a researcher-drafted rupture into a slope, and steepening a researcher-drafted flat into a decline—suggesting that it functions as calibration rather than validation. Ultimately, TELM offers a way of reading emotional trajectories as evidence of misaligned timelines and structural frictions rather than personal deficits; its possible role as a low-tech, digitally compatible complement to existing forms of urban-intervention evaluation is outlined as future work.

Keywords

affective mapping; participatory design; project lifecycle; urban interventions

1. Introduction

1.1. *Ugly Feelings in Participatory Design*

Participatory design is often promoted as democratising design (Bratteteig & Wagner, 2016; Vines et al., 2013), yet the emotional experiences that participatory projects generate frequently reveal tensions between participatory ideals and institutional realities (Huybrechts et al., 2017), making emotions central to how participatory design works rather than peripheral atmosphere (Light & Akama, 2012).

Facilitators often “read the room” to maintain a workable atmosphere during two- to four-hour workshops (Light & Akama, 2014). However, feelings do not vanish after a session; they can sediment and compound as projects progress, especially when institutional dependencies remain opaque or tensions are left unresolved. Certain emotions are “turned ugly” when denied expression and sidelined as diagnostics: Reframing anger as “passionate feedback” or flattening ambivalence into reportable categories can exclude feelings that register deeper project misalignments (Costanza-Chock, 2020; Ehn, 2008; Light & Akama, 2014).

Shifting focus from session-level to trajectory-level coherence (Devisch & De Blust, 2025) helps clarify the blind spots where emotions turned ugly. Session-level coherence concerns how emotions are held within a single meeting, while trajectory-level coherence concerns how emotional experiences evolve across months or years as projects move through changing political and institutional conditions. Existing emotional mapping tools largely operate at the session level, capturing how people feel “here and now” but offering fewer resources for tracing how (ugly) feelings accumulate or transform across project lifecycles. We therefore treat ugly feelings as infrastructural evidence rather than noise: patterned testimonies that, when read collectively, can point toward how power relations, institutional timelines, and role asymmetries are being experienced.

1.2. *Research Questions and Contributions*

This article introduces a practice-based protocol to collectively map the emotional landscape of participatory trajectories. It treats ugly feelings as signals of obstructed agency rather than individual deficit, and relates this to epistemic-justice debates: Emotional trajectories should be named and read in ways that redistribute interpretive authority, so those most affected by a project can take part in interpreting it rather than having their experience inferred solely through expert categories. The protocol does not claim emotions are structural indicators in a technical sense; rather, it visualises correlations between emotional trajectories and known structural conditions, opening space for collective interpretation of where misalignments or exclusions may be occurring.

This study asks two interrelated questions:

RQ1—Mapping Trajectories: How can we collectively trace and interpret emotional trajectories in participatory design, paying particular attention to “ugly feelings”?

RQ2—Relational Patterns: How can we collectively identify and interpret patterns of emotional accumulation and asymmetry as indicators of epistemic (in)justice?

By “trajectories” we mean longitudinal patterns of emotional change across a project’s lifecycle, moving beyond “here and now” snapshots (Devisch & De Blust, 2025). “Ugly feelings” refer to persistent, low-intensity states that signal obstructed agency or structural friction rather than personal pathology (Ngai, 2005); in the trajectories studied here these surface primarily as frustration, cynicism, and resignation. We interpret epistemic (in)justice as the (un)fair distribution of credibility and interpretive resources, determining whose experiences count and who takes part in interpreting them (Fricker, 2007).

To answer these, we introduce the Temporal Emotional Landscape Map (TELM), a protocol combining dimensional affect models with participatory mapping. The term “map” is used deliberately in a metaphorical and temporal sense, building on traditions of emotional cartography and imaginary geographies that treat maps as narrative itineraries rather than spatial coordinate systems (Bruno, 2002; Manguel & Guadalupi, 2000; Nold, 2009; Schalansky, 2010).

Section 2 positions our research questions within existing approaches to emotional mapping. Section 3 introduces the TELM protocol as a five-step procedure. Section 4 describes how we tested the protocol retrospectively across five participatory trajectories in Belgium and Türkiye. Section 5 presents the resulting case-level maps. The article makes three main contributions—the TELM protocol itself (Section 3), a shared but adaptable landscape vocabulary (Sections 3 and 5), and an initial empirical demonstration that two-phase co-reading calibrates draft trajectories (Sections 5 and 6)—which directly address RQ1 and RQ2 and to which we return, along with limitations, in Section 6. Section 7 concludes with implications for participatory design and citizen-centric urban planning.

2. Literature Review

This section reviews existing methods for mapping emotions over time and assesses their ability to reveal ugly feelings and emotional trajectories in participatory design. It focuses on two broad approaches to emotional mapping—structured affective measurement and participatory emotional cartography.

Across these approaches, three blind spots recur: how emotional trajectories are traced collectively over time, how patterns compare across projects, and how feelings link to institutional arrangements rather than individual deficits.

2.1. Structured Affective Measurement

Structured affective measurement relies on quantitative protocols. Russell’s circumplex model of affect locates feelings along continuous valence and arousal axes, enabling systematic comparison without rigid categories (Russell, 1980). Affective chronometry extends this by analysing episodes through parameters such as rise time, peak, and duration, shifting attention from static states to time-courses (Davidson, 1998). In urban studies, valence-based sentiment analysis and sensor streams have been used to map citizens’ responses to interventions at scale (Resch et al., 2016; Resch & Szell, 2019). These approaches tend to score highly on rigour and temporal precision, but often rely on de-contextualised data points and technical vocabularies that offer limited opportunities for participants to collectively interpret their trajectories; interpretation is typically mediated by expert analysis.

2.2. Participatory Emotional Cartography

Participatory emotional cartography, in contrast to structured affective measurement, emphasises situated, collective mapping. Certain practices invite participants to use drawings and metaphors—often landscape-like forms—to make feelings publicly negotiable and spatially anchored (Deitz et al., 2018; Nold, 2009). Emotional traces are annotated onto project spaces, highlighting relational dynamics and everyday affective experience. These approaches excel in accessibility and relational nuance, but are often short-term, qualitatively rich, and difficult to compare across multiple projects or over longer temporal spans. Emotional cartography, atlases, and imaginary geographies extend this tradition by treating maps as itineraries where meaning accumulates over time rather than as single snapshots (Bruno, 2002; Manguel & Guadalupi, 2000; Schalansky, 2010)—conceptual inspirations for thinking about emotional landscapes rather than direct examples of ugly-feelings analysis, discussed further in Appendix 1 (Supplementary File). A parallel body of systematic longitudinal research on wellbeing, stress, and satisfaction underpins the dimensional measurement and chronometry tools discussed above, even without landscape metaphors (Lin & Nawijn, 2020; Šimáček et al., 2020).

Emotion-mapping techniques combining spatial tracking and self-report have produced fine-grained spatial-temporal profiles of experience in built and leisure environments, sometimes integrating physiological monitoring (e.g., Mitas et al., 2026; Shoval et al., 2018). Within civic engagement, geo-participatory platforms allow citizens to pin localised emotional perceptions of safety and environmental quality to influence municipal planning (Pánek, 2018).

2.3. Gaps and Design Criteria

Comparing both approaches, we identify three recurring blind spots:

- **Collective Trajectories:** Most methods fail to track how emotions like frustration or cynicism evolve collectively across project phases. Protocols typically focus on isolated individual states or single-session moods, offering little guidance for tracing how “ugly feelings” accumulate or transform over time.
- **Cross-Project Comparability:** Current tools favour either rich local metaphors (sacrificing comparability) or standardised metrics (sacrificing nuance). This makes it difficult to compare emotional landscapes across different projects while respecting their situated specificity.
- **Relational and Institutional Patterning:** While theory links ugly feelings to blocked agency and institutional friction, few methods make these correlations empirically visible. There is a lack of tools that help participants see how emotions shift in response to changes in funding, political will, or infrastructural decisions—and thus raise these patterns as matters of epistemic (in)justice, in which some actors’ emotional testimony is systematically discounted (Ahmed, 2014; Fricker, 2007).

These gaps are methodological and empirical rather than theoretical. As such, they motivated us to explore an approach that integrates the strengths of both broad approaches. To address RQ1 and RQ2, the next section introduces the TELM—a protocol blending structured and accessible metaphorical cartography.

3. The TELM Protocol

The TELM is a protocol designed for collectively tracing emotional trajectories in participatory design. Rather than a single visual artefact, TELM is a five-step analytical and participatory procedure that produces temporal emotional trajectories which are then read as landscapes. It translates structured affective measurements and participatory cartography into an accessible mapping language focused on ugly feelings, temporality, and epistemic (in)justice. This section specifies what TELM is and how it is designed to work; Section 4 describes how it was tested and refined in practice.

3.1. Five Analytical Steps

TELM operationalises emotional analysis through five steps applicable to ongoing or completed trajectories. Steps 1 and 2 focus on data collection, reconstructing events and identifying whose trajectories are being traced. Step 3 provides an interpretive, semi-structured visualisation of emotional trajectories. Steps 4 and 5 are analytic and comparative, adding shared metaphors and enabling cross-case reading.

3.1.1. Step 1: Temporal Reconstruction

Participants collectively identify key moments, decisions, and events—such as “when did you feel tempted to withdraw?”—to build an agreed-upon timeline, using group discussion or visual aids. Rather than an exhaustive record, the goal is to surface moments of affective and political significance as a shared scaffold for the mapping that follows.

3.1.2. Step 2: Actor Identification

The protocol maps key roles and relational constellations (e.g., facilitators, children, residents) to make explicit whose emotional trajectories are being traced. Grounded in design-justice literature (Costanza-Chock, 2020), this step aims to keep parallel experiences visible rather than collapsed into a single collective line.

3.1.3. Step 3: Scoring and Plotting Valence and Volatility

TELM Step 3 adapts “structured affective measurement” approaches, such as the circumplex model (Russell, 1980) for trajectory-level, participatory use. In a classic circumplex model, affect is plotted along two continuous axes—valence (pleasant–unpleasant) and arousal (activated–deactivated; Russell, 1980). In TELM, valence retains its conventional meaning and is scored from 1 (*strongly negative*) to 9 (*strongly positive*), applied to segments of a trajectory rather than isolated moments.

Arousal is operationalised as volatility, conceptually derived from arousal dynamics and affective chronometry (Davidson, 1998). It emphasises how much emotional tone swings or oscillates over time rather than momentary activation as is the case with arousal. Participants are introduced to the axis through everyday descriptors—calm vs. intense, steady vs. turbulent—with “volatility” used mainly as shared analytic shorthand, positioned on the same interpretive 1 (*steady*) to 9 (*highly turbulent*) range as valence. High volatility corresponds to frequent or sharp affect shifts (often including high-arousal episodes); low volatility indicates relatively steady segments, even when valence is negative—for example, a long, flat period of quiet resignation.

Scoring is interpretive. During Phase 1 (data collection and researcher drafting), the researchers assign provisional valence and volatility scores based on coded interview descriptors and project documents, clustering participants' own phrases into bands of similar affective tone and positioning each cluster on the axes to create draft lines. In Phase 2 (participant co-reading and annotation), these drafts are collaboratively revised alongside participants (Figure 1; see Section 4.1 for the full breakdown of steps and phases). These placements are treated as shared interpretations anchored in participants' language, not as psychometric measurements.

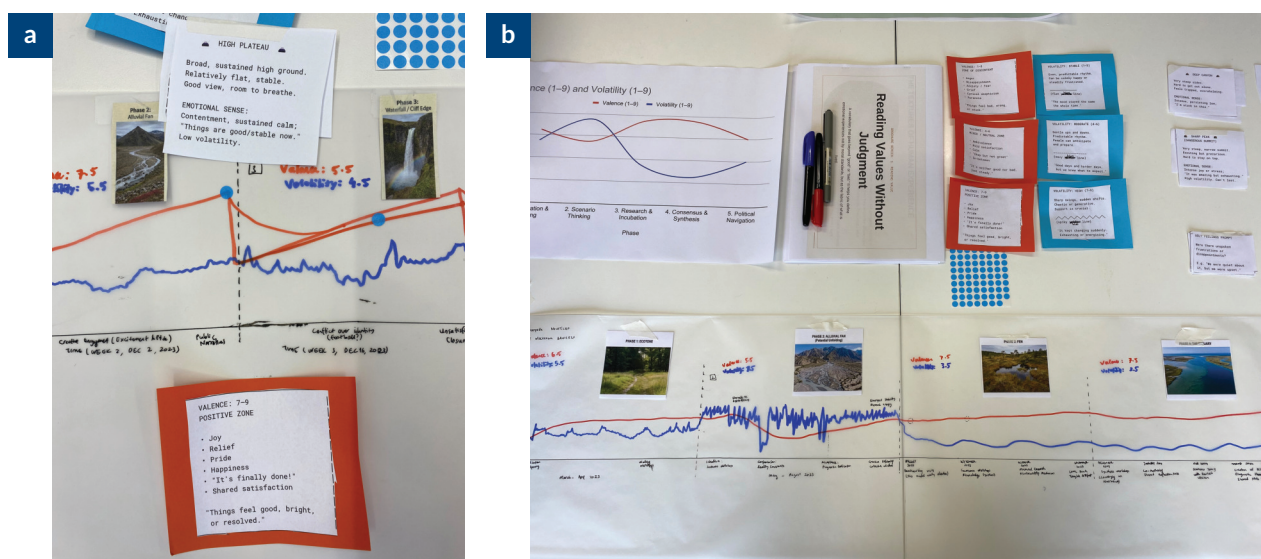


Figure 1. TELM in the Phase-2 session with Case 2: (a) valence (red) and volatility (blue) lines simultaneously argued and redrawn during co-reading (Step 3); (b) the paper-based mapping setup with the geomorphological card deck and pamphlets used for annotation (Step 4).

3.1.4. Step 4: Geomorphological Annotation

TELM's Step 4 draws primarily on the "participatory emotional cartography" approach and develops a geomorphological vocabulary for naming recurrent shapes in emotional trajectories. This is attached—in dialogue with stakeholders—to segments that participants recognise as capturing the shape of their experience; features are named first within cases and only later compared across them, giving participants a jointly negotiated legend for their emotional terrains. Six archetypal features recur across cases: peaks (sharp rises into high valence, often marking public achievements); valleys (dips associated with crises or demanding learning processes); flatscapes and bogs (extended low-movement stretches—either stabilising plateaus or "thickening bogs" of blocked potential); stable foundations (modestly positive, low-volatility segments grounded in reliable relationships or infrastructure); flux zones (heightened volatility around mixed or uncertain valence); and resilient infrastructures (negative episodes buffered by structures that prevent collapse into deep canyons or bogs).

More specific subtypes also emerge: "necessary valleys of learning" (temporary dips that later enable higher plateaus), "descending bogs of delay" (slow erosion of hope and trust during extended delays), "canyons of structural witnessing" (sudden plunges triggered by encounters with injustice or exclusion), and "suspended-sediment estuaries" (end states of unresolved awareness rather than closure).

These terms are not a fixed typology. The vocabulary is empirically emergent: Features are first named within cases through dialogue with participants, who choose metaphors that feel accurate for particular segments (e.g., “this part is more like a swamp than a valley”), and labels are compared across cases only after such within-case negotiation. Researchers and participants are encouraged to adapt, simplify, or replace the vocabulary as needed (Appendix 2, Supplementary File); the interpretive power lies in recognising shapes and dynamics—steep plunges, slow erosions, buffered shocks—rather than in any particular metaphor.

During a second phase, draft scores and trajectories are discussed with the interviewee for collaborative co-reading. Interviewees confirm, adjust, or contest plotted points—sometimes re-reading what initially appeared as a sudden “cliff” as a longer “slope” into a valley, or, conversely, steepening a segment the draft had rendered too flat—or propose different bands for specific segments. Disagreements and revisions are logged and may appear as ranges or alternative lines rather than being collapsed into a single curve. Scores remain revisable, negotiated interpretations: The axes provide enough structure for trajectory-level comparison while leaving room for participants to reshape the maps in light of lived experience.

To help participants read, draw, and contest the maps, the protocol includes three short pamphlets translating its visual grammar into everyday language: one explaining the axes (“how good or bad did it feel?”, “how steady or turbulent?”) through a gamified card deck; one reframing ugly feelings as signals of obstructed agency linked to structural conditions rather than personal deficits; and one introducing the geomorphological metaphors, stressing that no feature is inherently “bad.”

By placing these tools directly in participants’ hands, the pamphlets support a modest, primary-narrator version of collective vocabulary: Emotional testimony becomes shared evidence about the organisation of participation over time, rather than data extracted for external diagnosis.

3.1.5. Step 5: Comparative Narrative (Small Multiples)

Once draft TELMs have been refined through co-reading, the researchers compare them with the TELMs of other participatory trajectories using a small-multiples framework (Tufte, 1990): Time runs on the x-axis, with valence and volatility shown as parallel rows of small multiples (see Figure 2).

This interpretive scoring distinguishes TELM from mechanical applications of the circumplex model: TELM embeds scoring within a protocol that foregrounds co-reading, geomorphological annotation, and cross-case analysis.

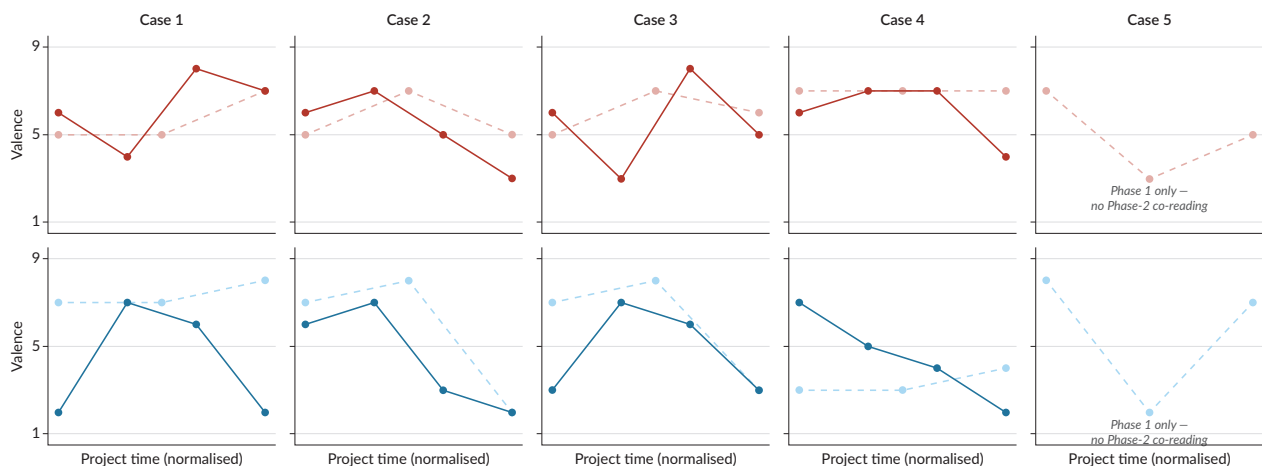


Figure 2. Small-multiples draft-to-revision overlay comparing Phase 1 and Phase 2 trajectories across the five case-level TELMs. Notes: Phase 1 drafting is researcher-scored, while Phase 2’s revisions are conducted through co-reading; each column represents one case, displaying valence, shown with red (top row) and volatility, shown with blue (bottom row); Phase 1 initial drafts (dashed lines) are overlaid beneath Phase 2 co-read revisions (solid lines); * Case 4 Phase 2 reflects a successor review by a second facilitator; Case 5 displays the Phase 1 draft only, as no Phase 2 co-reading took place (Section 4.1).

4. Testing the Protocol

To test our protocol, we decided, for ethical reasons, to apply it retrospectively to five “concluded” participatory trajectories, relying on interviews rather than in-situ emotion logging. This section describes the research design, our ethical positioning, and the case selection.

4.1. Research Design

All five cases had concluded or reached advanced stages. This allowed us to distribute the protocol steps over two phases, in between which we could evaluate and calibrate the protocol. Phase 1 covered Steps 1–3: temporal reconstruction and actor identification through desktop research and a narrator interview, followed by researcher-drafted scoring, supported by a digital mapping app (see Figure 3). Phase 2 revisited the Step-3 scores through co-reading and carried out Step 4, supported by paper-based mapping and the geomorphological card deck (see Figure 1). Step 5, the comparative small-multiples reading, was conducted by the researchers after both phases, without the participants.

Phase 1 centres on a primary narrator per case—a person who had followed most or all of the trajectory and who coordinated activities or mediated between institutions and participants (e.g., a municipal project coordinator, a design facilitator, or a scriptwriter). In Case 1, two further contextual interviews complemented the facilitator’s account, and in Case 2 both Phase-1 interviews were held with the same facilitator (see Table 1); the trajectory lines themselves are nonetheless anchored in one narrator’s account per case. As a pilot implementation, the present study therefore traces emotional trajectories only through the primary narrators’ accounts, without directly eliciting parallel lines drawn by other actor groups themselves. The actor-identification step (Step 2) is nonetheless retained in the protocol, as future iterations are intended to incorporate fully co-constructed parallel trajectories.

Phase 1 started with desktop research, not involving the primary narrator, scanning project websites, reports, internal documents, and, in the Belgian cases, site visits and neighbourhood walks that included informal pavement and doorstep conversations with residents, as well as conversations with municipal workers. This research resulted in a draft temporal reconstruction (Step 1) and actor identification (Step 2) and helped to kickstart the Phase-1 interview.

First, during the Phase-1 interviews, we transcribed and open-coded inductively (Charmaz, 2014), using participants' own temporal and emotional descriptors as documented in the interview analysis sheets (e.g., "it kind of stopped," "more hope than frustration in that session," "I felt like an architect"). Second, these descriptors were clustered into salient moments along each trajectory. Third, researchers assigned provisional valence–volatility scores to these moments and drafted initial TELM maps annotated with events, roles, and emerging metaphors. The Phase-2 coding scheme, a worked example, and a full inventory of empirical materials per case are provided in Appendix 3 (Supplementary File).



Figure 3. TELM's digital visual figures from the Phase 1 Case 2 Interview.

In Phase 2, the interviewee reviewed these draft maps—confirming, adjusting, or contesting timings, line shapes, and scores (revisiting Step 3)—and annotated segments with geomorphological metaphors using the card deck (Step 4). Phase 2 was completed for four of the five cases (Case 1, Case 2, Case 3, and Case 4). In Cases 1–3, Phase 2 was conducted with the same interviewee as Phase 1; in Case 4, the draft map was reviewed by the organisation's director, who oversees all of its projects but was not involved in this trajectory's day-to-day facilitation, so Phase 2 functioned as an expert review at organisational distance rather than the same narrator revisiting their own account (see Section 5.4). In Case 5, practical and ethical constraints prevented a Phase-2 co-reading session with a continuity participant, leaving the TELM map as a researcher-constructed trajectory based on the available interview and documentation.

4.2. Ethical Positioning

Two ethical commitments shape how TELM is applied. First, the study relies on retrospective accounts rather than in-situ emotion logging. This avoids continuous real-time emotional reporting, creating a temporal distance between experience and reflection while still producing sufficiently detailed accounts to reconstruct patterns of change over time (Brandman et al., 2022). Second, TELM treats emotional testimony as structurally and relationally meaningful, not as a resource to be mined for individual diagnosis. The protocol and companion pamphlets explicitly frame ugly feelings as evidence of epistemic (in)justice (Ahmed, 2014; Fricker, 2007).

Across the five cases, all interviewees participated as informed collaborators, retaining the right to correct, withdraw, or anonymise material; maps were co-produced in ways that foregrounded their interpretive authority over their own trajectories. The analysis acknowledges the partiality of these perspectives; we return to what this means for the study's claims in the Limitations (Section 6.3), where we also outline the staged pathway we envisage toward retrospective testing with participants themselves and, eventually, in-situ or near-real-time TELM cycles.

Quotations from Turkish are translated into English; several interviews were machine-transcribed, and quoted wording has been checked against the recordings where discrepancies arose. To balance interpretive richness with confidentiality, locations are anonymised in the text and visuals using a consistent convention. Cases are referred to as “Case 1–5,” with project contexts indicated in general terms (e.g., “Energy transition, City A,” “Peri-urban coalition, City B”) rather than naming specific neighbourhoods or institutions. Istanbul is named for the two Turkish cases because its metropolitan scale itself affords a degree of anonymity, whereas the Belgian cases are referred to as City A and City B; Figure 2 follows the same convention, presenting the small-multiples comparative visualisation in anonymised form aligned with Table 1.

4.3. Case Selection

The five cases (Table 1) were selected for their diversity in domain, institutional constellation, and project length, while sharing a commitment to participatory design and documented experiences of tension or difficulty. Together, they provide a heterogeneous but coherent set of trajectories in which to trial TELM and examine how ugly feelings move across participatory projects. The aim of the case selection was therefore not statistical representativeness, but analytical variation: The cases differ enough to test whether TELM can travel across distinct participatory settings, while remaining comparable in their reliance on facilitation, collaboration, and prolonged implementation dynamics. City A denotes the same Belgian city in Cases 2 and 5; City B denotes a different Belgian city.

Table 1. Overview of cases and interview sample.

Case	Context	Interviews & interviewees	Other key roles	Temporal scale
Case 1	Youth playground, Istanbul	3 interviews in Phase 1 + 1 co-reading in Phase 2—Architect-facilitator E. (primary narrator, both phases)	Facilitators, children, teachers	~1 year prior curricular work + ~10 weeks + legacy
Case 2	Energy transition, City A	2 interviews in Phase 1, both with design facilitator N. + 1 co-reading in Phase 2 (same facilitator)	Facilitator, residents, youth	~4 workshops + ~1 year delay
Case 3	Documentary, Istanbul	1 interview in Phase 1 + 1 co-reading in Phase 2—Scriptwriter-editor B. (both phases)	Filmmaker(s), children, families	~1 year production
Case 4	Peri-urban coalition, City B	1 interview in Phase 1 + 1 review in Phase 2—Facilitator L. (Phase 1) and Director J. (Phase 2 expert review at organisational distance)	Designers, farmers, administration	Multi-year
Case 5	Social housing, City A	1 interview and 1 supplementary doorstep conversation in Phase 1 + no Phase 2—Architect C. (design lead) and Resident A	Architects, residents, city	Multi-year

5. Case Analyses

The case analyses below should be read as case-level TELMs anchored primarily in the accounts of the interviewees for each trajectory, and refined through Phase-2 co-reading where possible. To map each trajectory chronologically, parenthetical timestamps (Time 1, Time 2, etc., aligned with Table 2) denote sequential milestones along a project's lifecycle, distinguishing these timeline markers from the protocol's methodological steps (Steps 1–5). To preserve both holistic trajectory tracking and visual legibility of granular annotations, case figures present (a) the complete macro-trajectory alongside (b) a magnified detail of the case's central affective inflection point.

5.1. Case 1: Youth Playground Project—Necessary Valleys and Resilient Shoulders

Case 1 is a youth-led playground design project in Türkiye, involving children, facilitators, and local authorities. The trajectory includes prior curricular engagement (Time 1), co-design workshops (Time 2), construction (Time 3), and post-occupancy reflection (Time 4).

The TELM for Case 1 (Figure 4a) opens with a “shoulder plateau”—modest positive valence, low volatility—grounded in a year of prior curricular work that had already assembled a motivated group. The facilitator insisted this starting point was “a strong start” rather than a neutral baseline: “If we had entered from zero, it would not have been such a high beginning.” After this plateau, the map dips into a “necessary valley of learning” triggered by an intense period of co-design workshops (Time 2) seen in Figure 4b. The facilitator described this co-design work as inherently “painful” for schoolchildren and architecture students alike, and

recalled children's weekly reflections oscillating within the same week: Some wrote excited entries while others wrote, "I couldn't do this, I couldn't manage it." That oscillation, visible in the written reports themselves, grounds the volatility scoring for this stage. The co-design was followed by a period of construction (Time 3). This period rises into what the facilitator endorsed as a "modest peak" rather than an "exuberant summit," flowing into a "stabilising plateau of ownership" as children appropriate the space (Time 4). Reviewing the full draft map six years after the project, the facilitator's overall verdict was recognition: "Yes, quite—it felt right."

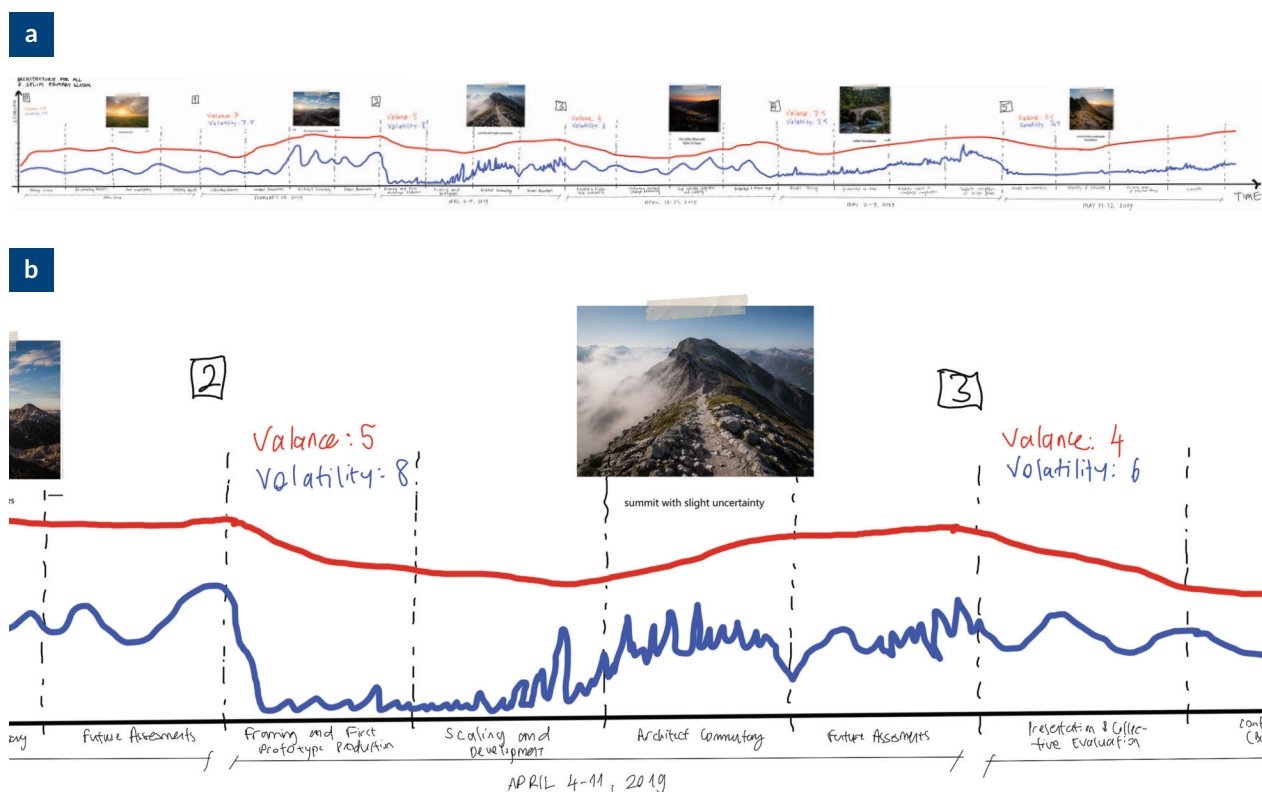


Figure 4. TELM visual for Case 1: (a) full-trajectory overview across Times 0-5; (b) magnified detail of the Time 2 to 3 illustrating growth through changing landscapes.

Case 1 illustrates how TELM differentiates negative phases that should not be smoothed away from genuinely erosive ones, and how early resilient infrastructures—relationships, prior collaborations, material supports—buffer turbulence.

5.2. Case 2: Energy Transition Workshops—Descending Bogs of Delay

Case 2 is an energy-transition project in Belgium bringing municipalities, researchers, and citizens together around decarbonisation scenarios. The trajectory spans visioning (Time 1), workshop-based co-creation (Time 2), and a prolonged period of institutional waiting (Time 3). In the workshops, participants created individual posters reflecting their neighbourhood from an energy perspective; these were consolidated into one collective poster, later printed as a mural on a solar panel, which served as an installation.

The TELM for Case 2 (Figure 5a) shows an early phase of mixed but hopeful valence, in which residents voiced vulnerabilities around energy poverty, inadequate housing, and climate anxiety, and this expression was heard and validated. The poster workshops (Time 2) form a modest peak of collective achievement. The third workshop, where no concrete timeline or location for the installation could be given, was described in Phase 1 as a moment where things “kind of stopped,” marked by a lack of closure rather than open frustration. The subsequent waiting (Time 3)—over a year before the installation was realised—was referred to as “a really, really long flat,” with participants growing detached.

Phase-2 co-reading revised this reading in both directions. The researchers had drafted the third workshop as a sudden “cliff”; the facilitator contested this, recalling that the group was “able and willing to get past...the cynical skepticism,” and the rupture was relocated forward into the waiting period as a steep slope into a valley rather than a sheer drop. The drafted waiting line itself, however, moved in a direction the protocol did not anticipate: Rather than softening it, the facilitator steepened it. Reviewing the drafted flat waiting line (Figure 5b), they judged that discontent was not static: “a small increase in that discontent...a sort of disappointment. And a cynical skepticism—it would probably also grow.” The line was redrawn as a gently descending slope, and the facilitator confirmed the revision: “It feels more correct.” Case 2 thus foregrounds

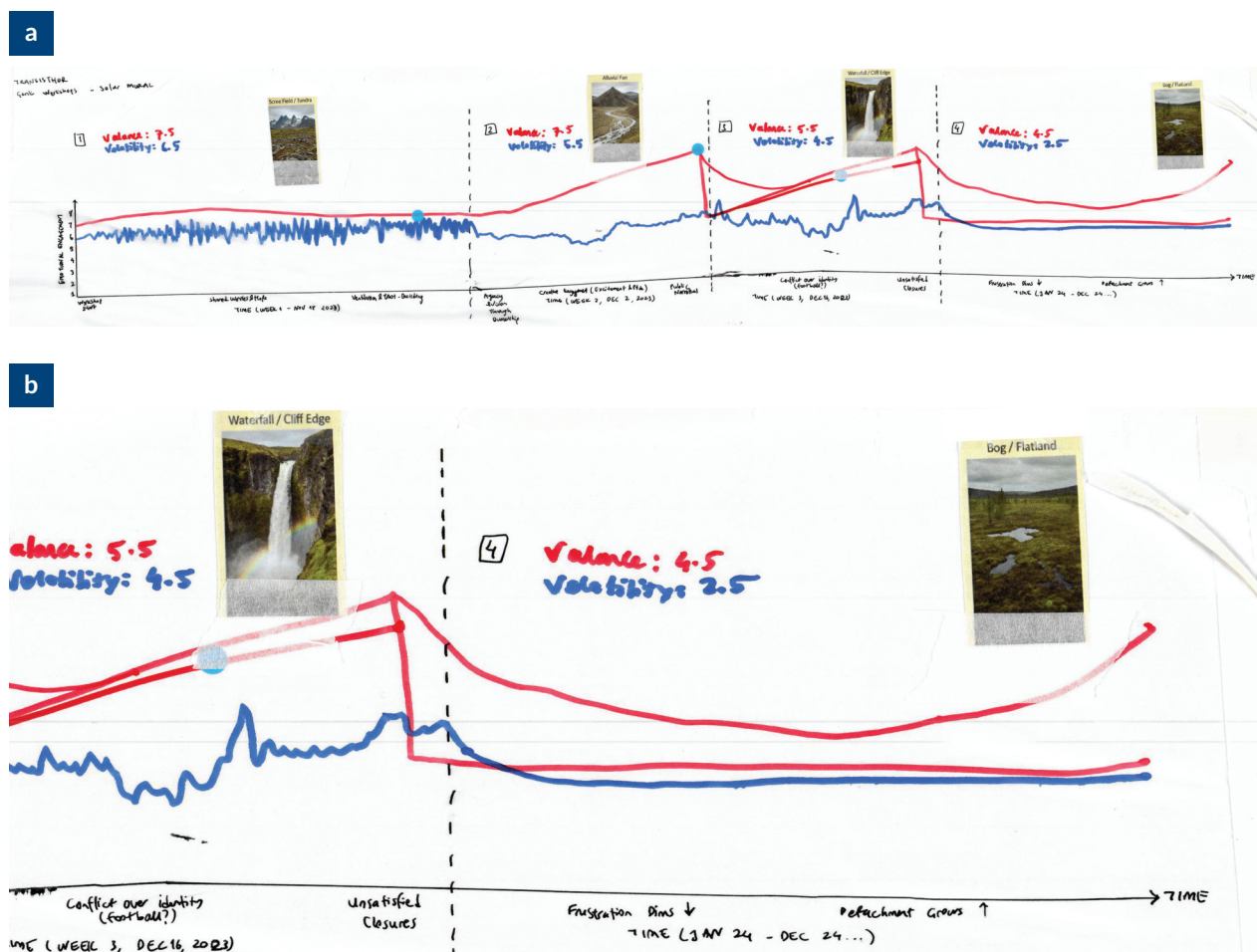


Figure 5. TELM visual for Case 2: (a) full-trajectory overview across Times 1–4; (b) magnified detail of the Time 4 illustrating the long flatscape towards the end with double red lines, was added during co-reading in Phase 2.

how low-volatility phases can hide the slow sedimentation of ugly feelings when institutional dependencies remain opaque—and how, within a single co-reading session, one segment can be softened, while another is made more negative, like the steepening calm, as the participant judges the researcher’s version too dramatic in one place and too kind in another.

5.3. Case 3: Documentary Project—Canyon of Structural Witnessing

Case 3 is a documentary project on children and the city in Istanbul. Children and families collaborated with a filmmaker to produce a film shot partly from a child’s eye-level perspective, foregrounding experiences of urban exclusion and everyday injustice. The trajectory spans the founding encounter and concept development (Time 1), filming (Time 2), editing (Time 3), and screenings and release (Time 4).

The TELM for Case 3 (Figure 6a) begins not with calm but with its trigger: witnessing children’s distress in the city (Time 1) was the project’s founding encounter, opening a “canyon of structural witnessing” (Figure 6b) whose origin the interviewee re-timed, in co-reading, to before the production work began. Through concept development, the line settles onto a working “shoulder plateau,” but the canyon’s strain persists through filming (Time 2): Reviewing footage of children from sharply different socio-economic positions, the scriptwriter-editor confronted what they called the children’s invisible infrastructures—the unseen conditions shaping each child’s mobility and play. As they put it in Phase 2, “Even if it is systemically invisible, the film makes it visible.” In co-reading, they also re-timed this witnessing: Encountering children’s distress was not a mid-project rupture but the project’s founding trigger, present from before the editing work began—a correction that moved the canyon’s origin earlier on the map.

The intensive editing period (Time 3) is mapped as a “peak of creative liberation,” (Figure 6c) where narrative threads crystallise through deliberately cinematic devices—the filmmaker’s own vocabulary of climax, montage, and catharsis shapes how this segment is named. Notably, when presented with the vocabulary’s differentiated peak types, the interviewee singled out the “modest peak” as “maybe the more ideal one...a sustainable peak”—an instance of a participant actively working the vocabulary rather than receiving it. Yet the trajectory ends unresolved in the screenings and release period (Time 4), as a “suspended-sediment estuary”: surface calm after release, with the ethical sediments of what the film shows carried forward rather than settled.

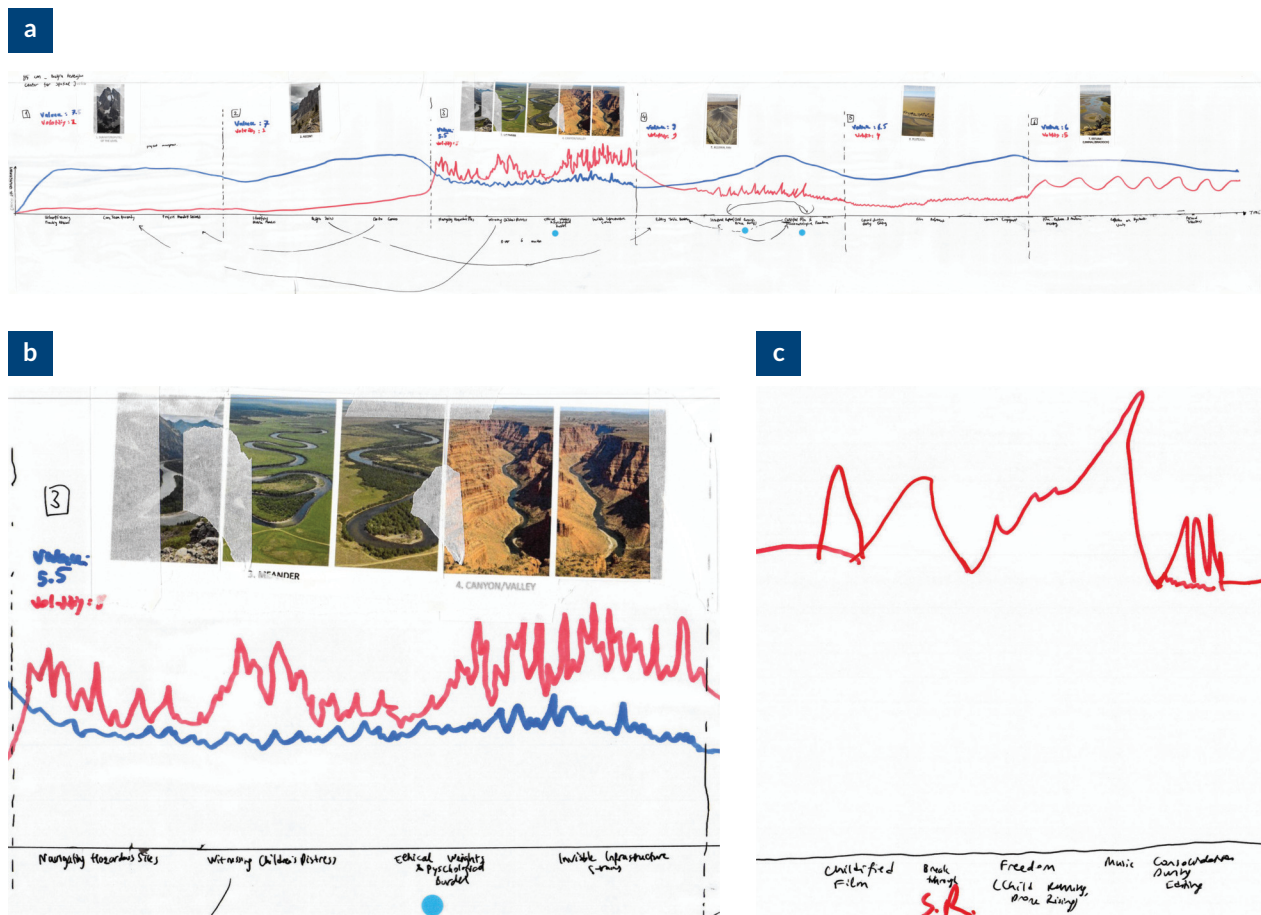


Figure 6. TELM visual for Case 3: (a) full-trajectory overview across Times 1–6; (b) magnified details, on the left, of Time 3 illustrating the early “canyon of structural witnessing”; (c) magnified details, on the right, redrawn red lines with reconstructed timeline, which were added during co-reading in Phase 2, illustrating “peak of creative liberation” of the editing phase.

5.4. Case 4: Peri-Urban Coalition—Generative Turbulence and Thickening Bogs

Case 4 is a multi-year territorial coalition around open space in City B, involving designers, farmers, NGOs, and public administrations. The trajectory spans coalition building through guided walks (Time 1), scenario development (Time 2), action planning and pilot actions (Time 3), waiting for political and institutional follow-through (Time 4), and renewed political mobilisation (Time 5).

The TELM for Case 4 (Figure 7a) shows early phases of mixed valence and moderate volatility: the guided walks (Time 1) brought diverse actors—older and younger farmers, residents, associations, municipal staff—into recognition of shared frustrations and common ground, alongside frictions over aesthetics (Figure 7b) and uses of the landscape that were navigated rather than confronted. A genuinely difficult stretch appears around the collective action-planning session (Time 3), which the facilitator recalled candidly: “That was a more difficult session....I think that we maybe overestimated the imaginary capacity of the participants,” with newly arrived participants pressing for immediate fixes—“this is annoying, I want this solved”—rather than building something common. The facilitator’s own summary of the whole trajectory is spontaneously geomorphological: “It’s really one hill in the sense that we built up something. Maybe it’s a hill

and then a plateau...and then a small hill again” during renewed political mobilisation (Time 5). The later plateau (Time 4) is calm on the surface but politically blocked: Waiting was described not as hopeless but as suspended, while the decisive constraint sat elsewhere—as the Phase-2 reviewer put it, “The political backing to make that for real was not sufficiently there.”

During Phase 2, he declined to redraw (“no, no....I would maybe requalfify certain connections you made”), instead contesting the implicit coding of stability as success and volatility as problem: Early chaos, in his reading, is expected and productive—“in a beginning always chaos, and then if it becomes generative it’s good”—while stability “can also be boring, can be doing nothing.” The asymmetry that this case makes visible is therefore between the local coalition, which invested heavily and built shared future images, and political decision-makers whose backing did not follow—a distribution of waiting in which those furthest from decisions carry the longest suspension.

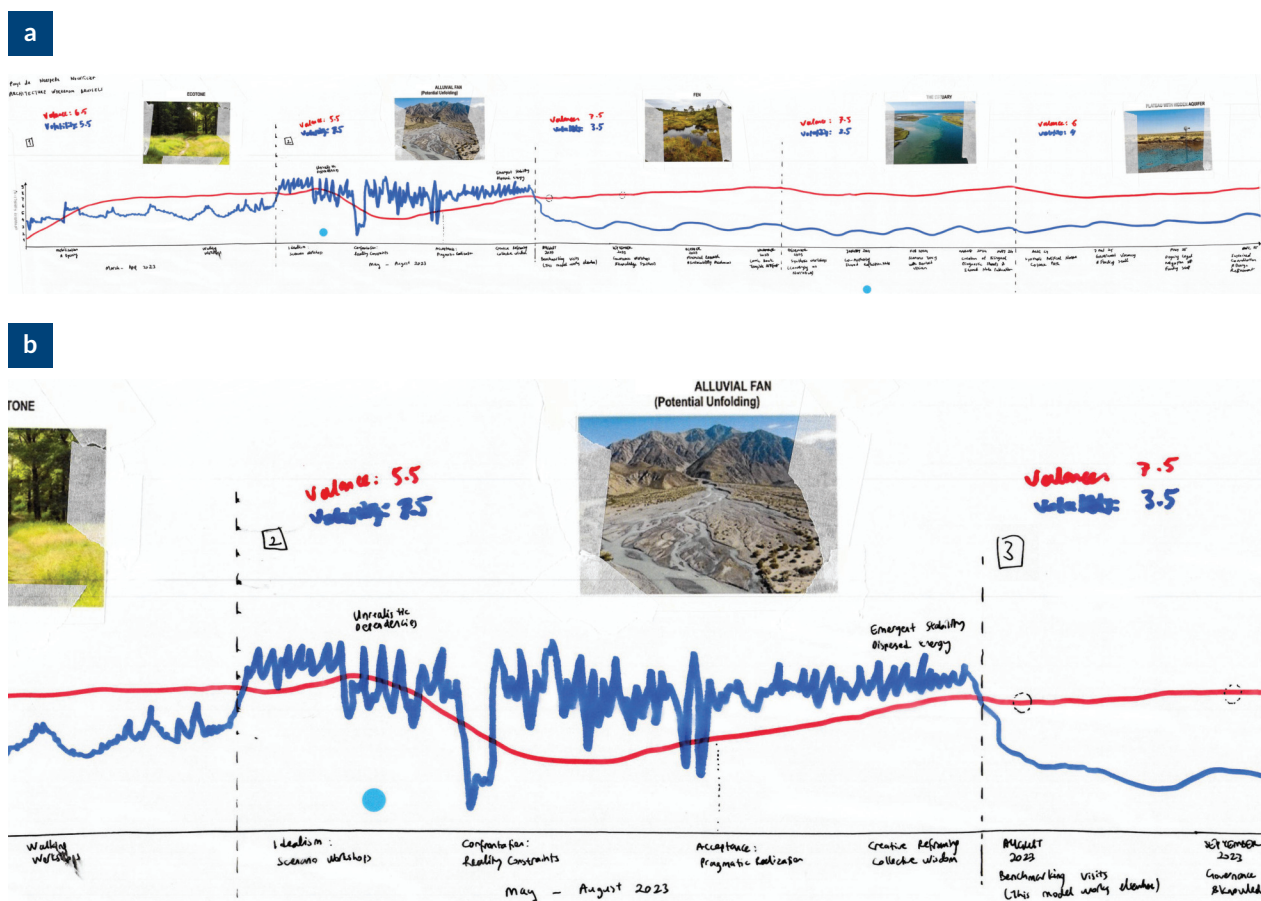


Figure 7. TELM visual for Case 4: (a) full-trajectory overview across Times 1–5; (b) magnified detail of Time 2 illustrating oscillations in the blue line, which indicate periods of rapid emotional shift as “alluvial fan” rather than simply “strong” feeling.

5.5. Case 5: Social Housing Renovation—Relational Canyon and Ethical Culmination

Case 5 concerns deep renovation of social housing in City A, where architects, residents, and city officials negotiate occupied renovation and its emotional consequences, alongside significant technical coordination

(BIM, Lean planning) and contested communication about timelines and rights. The trajectory spans technical preparation and planning (Time 1), occupied renovation works (Time 2), and a contested aftermath of complaints, negotiation, and partial repair (Time 3).

Residents' anger and mistrust are grounded in concrete experiences, documented during the doorstep conversations conducted by the researcher. A., a migraine sufferer, described being unable to tolerate the loud noise of the new heat-pump system, for which maintenance visits brought only partial relief ("they said there is nothing they can do"). She had understood the rooftop solar panels as belonging to the residents—"I thought solar energy would belong to us"—and discovered instead that the energy was not theirs to use while her bills rose; the discovery left her, in her words, shocked and "very disappointed."

The TELM for Case 5 (Figure 8a) shows these accounts as a long stretch of low valence with modest volatility—a thickening bog where frustration and resignation accumulate without major peaks, reflecting slow erosion of trust rather than a single crisis.

The architect's line is the one TELM directly traces: an initial "confident flatscape," grounded in technical preparation and optimistic framing, giving way to only partial recovery as disruptions accumulate. The residents' anger documented above is not a second drawn line but testimony running against this one—a "canyon of grief" escalating (Figure 8b), in the project's own documentation, toward the confrontation around another resident's stated wish to withdraw from the renovation entirely—the rupture recorded in Table 2 as a "relational canyon," followed by only partial repair. Because no Phase-2 co-reading was possible in Case 5, this contrast was never brought back to the architect. As Case 2 shows, co-reading can darken a draft as much as soften it—and here that darkening is precisely what the missing Phase 2 leaves undone. Case 5 therefore appears in the cross-case comparison as both a culmination of the ethical arc and a demonstration of TELM's limits when co-reading cannot take place.

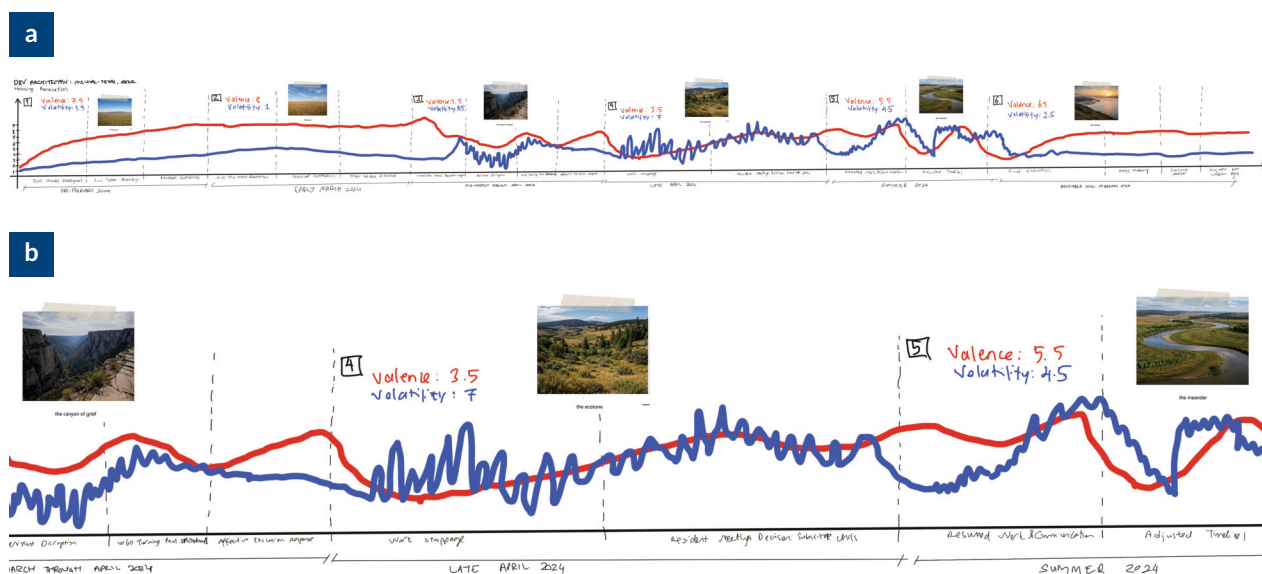


Figure 8. TELM visual for Case 4: (a) full-trajectory overview across Times 1–6; (b) TELM analogue visual for Case 5, illustrating a trajectory escalating into a “canyon of grief” (Time 3) marked by relational rupture, before transitioning into a winding “meander” (Time 5).

5.6. Cross-Case Landscape Features

Reading the five TELMs side by side (Tufte, 1990) reveals a repertoire of features cutting across contexts, summarised in Table 2. A “necessary valley of learning” appears where dips in valence are buffered by time and care infrastructure (Case 1), suggesting not all negative phases should be smoothed away. “Descending bogs” occur wherever institutional timelines slip (Cases 2 and 4, and in residents’ documented experience in Case 5), showing how low-volatility “flat” periods can mask slow erosion of hope and trust. “Canyons” of

Table 2. Activities and landscape features per case, in project time (in chronological order from Time 1 to Time 5).

Case	Attribute	Time 1	Time 2	Time 3	Time 4	Time 5
1 – Youth playground	Activity	prior curricular work	co-design workshops	construction	post-occupancy appropriation	—
	Feature	“shoulder PLATEAU”	“necessary VALLEY of learning”	“modest PEAK”	“stabilising PLATEAU of ownership”	—
2 – Energy transition	Activity	visioning & first workshop	poster workshops → mural	third workshop (no timeline)	post-workshop waiting	—
	Feature	“hopeful shoulder PLATEAU”	“modest PEAK”	“slope into VALLEY”	“descending BOG of delay”	—
3 – Documentary	Activity	founding encounter & concept	filming	editing	screenings & release	—
	Feature	CANYON origin → shoulder PLATEAU	sustained “CANYON of structural witnessing”	“PEAK of creative liberation”	“suspended-sediment ESTUARY”	—
4 – Peri-urban coalition	Activity	guided walks	scenario development	action-planning session & pilots	waiting for follow-through	renewed mobilisation
	Feature	FLUX ZONE	“hill of built common ground (PEAK)”	dip (VALLEY)	“politically blocked PLATEAU”	small PEAK
5 – Social housing	Activity	technical preparation	occupied renovation works	contested aftermath	—	—
	Feature	confident PLATEAU (architect)	“thickening BOG” (residents, documented)	“relational CANYON” → partial recovery	—	—

Notes: Capitals mark the six archetypes (Section 3); quoted terms are case-specific subtypes; Case 5’s resident features derive from documentation and desktop research rather than an elicited line; dashes indicate no further mapped phase in that case’s trajectory.

structural witnessing and relational rupture mark sustained encounters with injustice or betrayal (Cases 3 and 5) that reconfigure how participants see both the project and its institutional environment.

Peaks and plateaus are likewise not equivalent forms: Some peaks mark genuine collective achievement (Cases 1 and 3), others reflect short-lived intensifications with no structural follow-through (Case 2, where the poster peak preceded a year of delay before realisation); some plateaus signal stable foundations (Case 1), while others resemble descending bogs in which frustration slowly sediments beneath a calm surface (Cases 4 and 5).

Taken together, these cross-case comparisons address RQ2 by showing where ugly feelings tend to cluster along participatory trajectories and how these clusters correlate with institutional arrangements. By mapping these features across diverse settings, TELM offers a shared but flexible vocabulary for reading relational patterns—who carries turbulence, who is buffered, and where stabilising foundations exist or fail—without claiming universal laws.

6. Discussion

This section revisits the research questions by asking what the TELM protocol did in practice. It is organised around two sub-questions that operationalise RQ1 and RQ2 in evaluative form—whether the protocol can co-construct emotional trajectories and identify ugly feelings, and whether it helps identify patterns and discuss epistemic (in)justice—followed by limitations.

6.1. Can the Protocol Co-Construct Emotional Trajectories and Identify Ugly Feelings (RQ1)?

Across the four cases with Phase-2 review, co-reading did not simply validate the draft trajectories—it corrected them, and no two corrections were of the same kind. The Case 1 facilitator recognised the overall map (“it felt right”) but re-grounded its opening, insisting the project began from “a strong start” built on prior work rather than from a neutral baseline. The Case 3 interviewee re-timed the canyon of structural witnessing, relocating the encounter with children’s distress from a mid-project rupture to the project’s founding trigger, and endorsed the modest peak over more dramatic summit types. The Case 4 reviewer declined to redraw the line, instead requalifying the categories beneath it—contesting any equation of stability with success and reading early chaos as generative. Case 2 alone moved in both directions within a single session: The facilitator softened a segment the researchers had drafted as a sudden “cliff,” relocating the rupture forward into the waiting period as a slope, and then steepened the waiting phase itself, judging the drafted flat too kind—“a small increase in that discontent...a cynical skepticism, it would probably also grow”—a revision redrawn as a gentle descent and confirmed: “It feels more correct.”

This heterogeneity matters methodologically. Had every revision softened the drafts, co-reading could be dismissed as retrospective smoothing or social desirability; had every revision darkened them, as researcher timidity. That the four reviews instead produced a repertoire of distinct corrections—re-grounding a baseline, re-timing an origin, requalifying interpretive categories, and, within one case, both softening a drafted rupture and steepening an over-generous flat—suggests that Phase 2 functioned as calibration rather than comfort: Participants used their interpretive authority to make the maps more accurate by their own lights, in whichever direction accuracy lay. This is the operational content of the claim that draft TELMs work as boundary objects

(Star & Griesemer, 1989), and it is the study's most direct answer to RQ1: Trajectories are co-constructed in the specific sense that researcher drafts fail in identifiable ways, and the protocol makes those errors visible and revisable. Given three participant co-readings and one expert review at organisational distance, this pattern is indicative rather than general; notably, the narrators calibrated the shapes of their own maps, while the expert independently targeted the protocol's interpretive categories.

6.2. Does the Protocol Help to Identify Patterns and Discuss Epistemic (In)justice (RQ2)?

TELM encourages participants and researchers to read ugly feelings as structural diagnostics rather than personal deficits. Across cases, frustration, cynicism, anxiety, and resignation emerged not as idiosyncratic reactions but as patterned responses to structural triggers—such as demanding co-design without adequate scaffolding (Case 1), timeline opacity and prolonged institutional waiting (Cases 2 and 4), encounters with structural inequality (Case 3), or misalignment between technical planning and residents' expectations (Case 5). The Phase-2 re-readings explicitly discussed ugly feelings as signals of obstructed agency and misaligned temporalities rather than as individual failings, reinforcing TELM's diagnostic role.

This diagnostic stance is not the managerial reframing criticised in Section 1.1: TELM interprets too, but to preserve the difficult quality of feelings by linking them to institutional arrangements, role asymmetries, and blocked agency—not to smooth them over. It does not mean researchers or interviewees assign the final meaning of emotions on participants' behalf—Phase 2 creates space to contest labels, retain uncomfortable terms, and ask whether apparently “manageable” descriptions have obscured deeper tensions.

The two cross-case patterns stand out. First, divergent emotional lines: Ugly feelings cluster differently for different people in the same project—architect C.'s confident optimism against resident A.'s anger in Case 5, or the facilitator's trajectory-spanning account against the children's workshop-anchored experience in Case 1. We therefore suggest refining Step 2 so that it explicitly elicits separate lines for key roles rather than compressing everyone into a single curve (Figure 9); in the present primary-narrator study this potential is only partially realised.

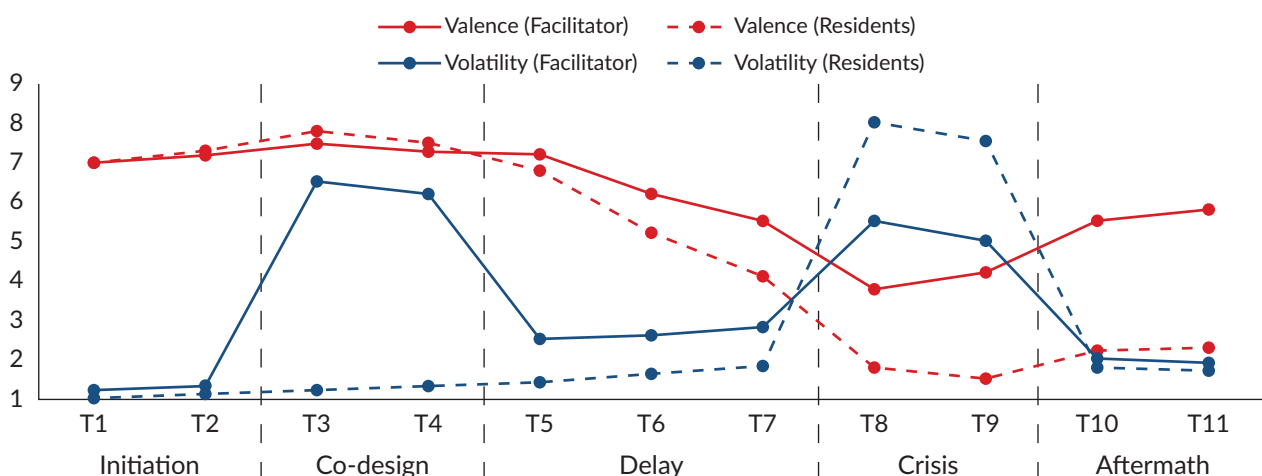


Figure 9. Illustrating schematically how parallel role lines could appear in future work.

Second, sedimentation in low-volatility phases: “Quiet” periods that look emotionally flat on the surface—such as long stretches of waiting in Cases 2 and 4—gradually eroded people’s hope and trust. We call these descending bogs of delay: situations where nothing dramatic happens, but small disappointments and postponed decisions slowly accumulate.

This practical relevance is not limited to planners: TELM may also help interviewees, participants, facilitators, and other collaborators articulate when affective strain is becoming structurally patterned rather than individually borne. These two patterns are where TELM connects to epistemic (in)justice. Whose emotional line gets drawn, and whose is left as an annotation on someone else’s, is itself a distribution of interpretive authority: In Case 5 the architect’s trajectory is elicited directly while residents’ anger survives only as documentation, and in Case 1 the children’s experience is legible mainly through the facilitator’s account. Read this way, the divergent-lines pattern is not only a design refinement but a diagnostic of testimonial injustice—a mapping in which some actors are positioned as narrators of the trajectory and others as objects within it (Fricker, 2007). The sedimentation pattern names a quieter, hermeneutical variant: In the “descending bogs” of Cases 2 and 4, those with least control over institutional timelines also had the fewest resources to make their slow erosion of hope legible as anything other than passive waiting. TELM’s contribution here is modest but specific—it does not redistribute authority on its own, but by making these asymmetries plottable it gives participants a shared object through which to name and contest them, which is a precondition for addressing them.

6.3. Limitations and Future Work

This study has a defined scope—a retrospective, primary-narrator trial of TELM across five participatory trajectories—and three limitations follow from it. First, the maps are primary-narrator: Trajectories of children, residents, and farmers are mediated through the main narrators’ accounts, project documents, and desktop research rather than elicited directly, so the divergent-role lines the protocol is designed to hold remain only partially realised. Second, the depth of co-reading varies across cases: Case 4’s Phase 2 was an expert review at organisational distance, and Case 5 lacks Phase-2 co-reading altogether, leaving its map a partially reconstructed trajectory (Sections 4.1 and 5.5). The retrospective distance also varies—in Case 1 the co-reading took place six years after the project—although co-reading addresses the narrator’s present interpretation of the trajectory rather than the accuracy of recall alone. Third, the geomorphological vocabulary is empirically emergent and case-bound; some terms may prove too complex or context-specific to travel, and would need to be simplified, translated, or co-developed with participants elsewhere. Underlying all three is a deliberate boundary on what TELM claims to be: It does not replace other forms of evaluation or planning analytics, and its contribution is the narrower one of rendering emotional trajectories—particularly ugly feelings—discussable and comparable.

These limitations set the agenda for future work. The most immediate step is to move beyond the primary narrator by eliciting parallel role-lines directly, so that the asymmetries currently visible only as annotations (Section 6.2) can be drawn and contested by those who live them. Rather than jumping from retrospective, facilitator-centred mapping to real-time work with more vulnerable groups, we envisage a staged pathway: retrospective cycles with main narrators, as here; then retrospective cycles with participants themselves—children, residents, farmers—using adapted prompts and materials; and only then carefully designed near-real-time cycles at selected project milestones, attentive throughout to emotional surveillance, consent (Lupton, 2019), and the distribution of care responsibilities.

Looking further ahead, TELM may also speak to citizen-centric urban planning debates on emotion data and “people as sensors,” offering a low-tech but digitally compatible protocol for trajectory-level evaluation of urban interventions. The present cases use no social media sentiment, physiological measures, or digital layers, so this remains conceptual rather than demonstrated: Future work might use TELM maps to locate meaningful time windows for comparison against such datasets, or bring anomalies in a digital affective dataset back into a TELM co-reading session to ask how participants interpret them (Fathullah & Willis, 2018; Resch et al., 2016; Resch & Szell, 2019).

7. Conclusion

This article has introduced the TELM as a protocol for co-constructing emotional trajectories in participatory design, treating ugly feelings as infrastructural evidence rather than personal pathology. Integrating “structured affective measurement” with “participatory emotional cartography” approaches, it contributes a protocol, a shared vocabulary, and an initial empirical demonstration—across five small, retrospective case studies in Belgium and Türkiye—that institutional delays and blocked agency leave traceable marks on how emotional trajectories are narrated and mapped over time. Its clearest demonstrated result is that two-phase co-reading operates as calibration: Interviewees corrected researcher drafts in distinct ways—re-grounding a baseline, re-timing an origin, requalifying interpretive categories, and, within one case, both softening a drafted rupture and steepening an over-generous flat—making the maps more accurate by their own lights. These contributions come with clear limits: The maps are retrospective and rely on a primary narrator across five cases, one of them without co-reading. In future work, this leads to a staged pathway toward a multi-participant-led mapping process—one that will more clearly articulate the different roles within a shared trajectory as the next steps.

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Conflict of Interests

The authors declare no conflict of interests.

Data Availability

Key empirical inventories and coding frameworks are included in the Supplementary Materials. Full qualitative interview transcripts and raw TELM session documentation may be provided upon reasonable request to the corresponding author, provided the request complies with GDPR requirements and participant confidentiality agreements.

LLMs Disclosure

During the preparation of this manuscript, the authors used Grammarly for copyediting (spelling, punctuation, and basic grammar). Claude was utilized to improve sentence flow, enhance stylistic consistency, and generate code for the interactive digital mapping application (Figure 3). The authors accept full responsibility for the final text and verified all AI-assisted outputs.

Supplementary Material

Supplementary material for this article is available online in the format provided by the authors (unedited).

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