

When the Groundwater Kicks Back

Re-Drawing of Architectural Detail

sızıntı
mimari detay
çizim
faili gerçekçilik
madde
leakage
architectural detail
drawing
agential realism
matter

Bu çalışma, mimari detayları mimarlığın maddi-söylemsel pratiklerini şekillendiren güçlü bir unsur olarak ele alır. Detayı, çevre beşerî bilimlerinden gelen içgörüler ile bütünleştiren feminist, yeni-materyalist ve posthümanist bir bakış açısıyla yeniden çerçeveler. Araştırma, teknik çizimlerin nesnel ve kesin bilgi sağladığına dair geleneksel görüşe, maddi nesnellik varsayımlarını sorgulayarak meydan okur. Bunun yerine teknik çizimlerin ve detayların insan ve insan-dışı aktörlerin dolaşıklıkları içerisinde ilişkisel ve konumlu bilgi ürettiğini öne sürer (Haraway, 1988).

Karen Barad'ın Faili Gerçekçilik teorik çerçevesine (2007) dayanan çalışma, mimari çizimi gerçekliği aktif olarak şekillendiren ve epistemolojik sınırlar belirleyen bir aparatlar olarak kavramsallaştırır. Barad'ın terimiyle (2007), aparatlar mekan-zaman-maddeyi tekrar tekrar şekillendiren belirli maddi yeniden yapılandırmalardır. Bu anlamda teknik çizimler edilgen arka planlar değil, birleştirip/kesen (Barad,2018), hem belirli ilişkileri önemseyen hem de diğerlerini dışlayan epistemolojik sınırlar koyan aparatlardır.

Tartışma, İstanbul'un Karaköy semtinde bir inşaat vaka çalışmasına odaklanır. Bu çalışmada, temel detaylarının tasarım aşamasındaki çizimi ile sahadaki uygulaması arasındaki farklılık, başta yeraltı suyu olmak üzere insan-dışı etkenlerin etkileşimi yoluyla izlenir. Gözlemler, görüşmeler ve detayın (yeniden) çizilmesine dayanan araştırma, teknik çizimlerin "nesnel kesinliğini" sorgulamakta ve detayın, insan niyetleri, malzeme akışları ve çevresel güçler tarafından şekillendirilen ilişkisel bir performans işlevi gördüğünü göstermeyi amaçlar. Bu yaklaşımla mimari temel detay, madde-söylemsel bir bağlantı noktası; madde, bilgi ve etiğin iç içe geçtiği ipliklerdir. Son olarak, bu yaklaşım mimari inşaa süreçleri ve maddenin performativitesinin dolaş(n)ıklarını anlamak için bir başlangıç noktası sunar.

This study examines architectural detail as a powerful agent that shapes the material-discursive practices of architecture. It reframes the detail through a feminist, new materialist, and post-humanist perspective that integrates insights from environmental humanities. The research challenges the conventional view that technical drawings provide objective, finalized knowledge by interrogating assumptions of material objectivity. Instead, it argues that drawings and details generate relational, situated knowledge (Haraway, 1988) through entanglements of human and nonhuman agents.

Grounded in Karen Barad's theoretical framework of Agential Realism (2007), the work conceptualizes the architectural drawing as an apparatus that actively shapes reality and sets epistemological boundaries. In Barad's terms, apparatuses are material reconfigurations that iteratively shape space-time-matter. In this sense, technical drawings are not passive backgrounds but apparatuses that cut together-apart (Barad, 2018), instituting epistemological boundaries that both bring certain relations into mattering and relegate others to exclusion.

The discussion focuses on a construction case study in Istanbul's Karaköy district, where the divergence between the design-phase drawing of a foundation detail and its on-site implementation was traced through the encounter of nonhuman agents, mainly groundwater. Based on observations, interviews, and a (re)drawing of the detail, the research questions the objective certainty of technical drawings and aims to demonstrate that detail functions as a relational performance shaped by human intentions, material flows, and environmental forces. In that way, the architectural foundation detail is a material-discursive joint - a site of threads where matter, knowledge, and ethics intertwine. Finally, this perspective offers a starting point into understanding the entanglement of architectural construction practices and performativity of matter.

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INTRODUCTION

This article rethinks architectural knowledge of details as being situated (Haraway, 1988), embodied, and temporally grounded. Drawing from post-humanist feminism, new materialism, and environmental humanities, it presents a case study based on observations from a construction site in Karaköy, Istanbul. Within the scope of the study, architectural details are (re)framed as not only technical solutions but also as assemblages of material and discursive relations.

This study addresses a major challenge at the Karaköy construction site: leakage and dewatering issues encountered during foundation excavation due to groundwater emergence. This unexpected groundwater presence disrupted the standardized foundation details specified in the technical drawings. As Haraway (1988, p.581) warns against the "God trick" of seeing everything from nowhere, I argue that standardized details risk assuming a view detached from body, place, and time - a detached, disembodied perspective. In contrast, this article argues that technical detail produces knowledge that is inherently rooted in space-time-mattering (Barad, 2007). The selection of the foundation detail simultaneously brings together complex, multilayered systems - connected with urban infrastructure, geological conditions, and agencies. The foundation detail, though invisible once construction is complete, anchors the building to the ground and engages soil and material conditions - making visible its relational nature and showing that architectural details are inseparable from site-specific and material embodiments. Architectural design and detailed drawing should therefore be understood not as something that comes 'out of nowhere' but as a site-specific event that involves specific bodies and materials.

The case study in this article is precisely such an example of embedded knowledge production. In Haraway's words "*nothing comes*

without its world" (Haraway & Goodeve, 2018. p.xiii). Knowledge always comes within the context of a world and includes the responsibilities of that world. Through on-site observation, interviews with the architect and construction team, and analysis of construction documentation, the interactive process between drawing and construction works together. Being present on the construction site as a researcher, witnessing the transformations of the detail being drawn at the moment of its construction, deepens our understanding of that detail.

I argue that starting from the foundation detail, the detail begins to become a relational whole rather than a fixed solution; in this sense, objective certainty is impossible in architectural technical drawing. Emphasizing that design and drawing are not finished products, but part of an ongoing process offers a way to discover the components that construct this narrative. As Leatherbarrow (2009, p.46) notes, architecture has often been approached through paradigms that treat structure as passive and inert. However, meaning and performance in architecture are written over time through weathering, maintenance, and unexpected encounters. In Leatherbarrow's view (2009) architecture, then, is not the staging of a predetermined script but is continually rewritten as an 'unscripted performance.'

Similarly, Barad (2003, p.808), drawing on Butler's concept of 'materialization' and Haraway's concept of 'materialized refiguration,' views matter as performative, formed through iterative bodily acts. From an agential realist perspective, matter is an active participant in the world's process of becoming, rather than a passive one. Following Barad's framework of agential realism, the construction site can be framed as a phenomenon composed of entangled agencies - human labor, machines, materials, environmental forces, and nonhuman actors. Barad's (2007) ideas resonate with

Bennett's (2010) notion of vibrant matter, which foregrounds the lively and affective capacities of nonhuman agents. Both viewpoints encourage an understanding of matter as dynamic and undermine the distinction between humans and nonhuman beings. In this way, the architectural detail is a dynamic system of fluxes, interactions, and performances of matter rather than a static joint.

This brings up a key question: What can be learned about the relational ontology of architectural detailing and the (in)visible agents participating from the variation between a foundation detail on paper and its unfolding on-site?

GROUNDWATER, LEAKAGE AND DETAIL

Karen Barad (2007, p.215) argues that while social factors influence the construction of scientific knowledge, there is also a sense in which "*the world kicks back*." This highlights that material reality resists being entirely shaped by human intention or representation. This concept became tangible in the early stages of my fieldwork at the Karaköy construction site. The resistance of the groundwater during the excavation of the building's foundation gave material form to this 'kickback'.

Throughout my fieldwork at the Karaköy construction site from November 2024 to March 2025, I observed how unpredictable encounters with groundwater disrupted the originally designed foundation. These disruptions question the completeness and determinacy of technical drawing in architectural practices.

My research, accompanied by field notes, photographs, and conversations with the designers, site architects, and builders, positions groundwater not as a passive element but as an active matter, one that required new interventions and fostered alternative epistemologies based on material responsiveness (Fig.1).



Fig.1 - The fieldwork from Karaköy, Istanbul, highlights how architectural knowledge unfolds through entangled encounters on site. In this context, the relationships between different agents and Karaköy, as well as Istanbul's water system, are visualized. (Author, 2025)

As the excavation progressed, the presence of persistent groundwater not only impeded the implementation of the original foundation detail but also became a site of knowledge production. The subsequent interventions developed to manage the leakage reframed the water not merely as a problem to be solved but as a performative agent (Barad, 2007);

a trigger for rethinking the design process.

According to Turkey's construction regulations, a geological/geotechnical survey report must be prepared by certified engineers before construction begins. This report informs the structural principles underlying the foundation design. In the Karaköy case, the report specified a raft foundation

system, and technical drawings were prepared for a basement level with a 4.50-meter internal height. However, once excavation began, the flow rate and hydrostatic pressure of the groundwater significantly exceeded expectations. Despite continuous pumping efforts, the groundwater quickly returned to equilibrium once the pumps were turned off, stabilizing the water table



Fig.2 – Foundation drawings of the Karaköy project: the initial 2020 design (left) and the revised 2024 basement section (right), adapted after recurring encounters with groundwater. (Photos by HS Mimarlık, 2024)

at around -2.50 meters (Fig.2). The recurring presence of water nearly halted the construction process. Behaving like a performative agent, the water breached structural boundaries and required reactive interventions. The lead architect remarked on the project's progress: "I don't know where the water is coming from, but maybe it's the Marmara Sea." (Interview notes, February 3, 2024). I argue that this agent's unpredictability shows that architectural details are not purely subjects of representation or prediction; it is constantly negotiated with site-specific conditions.

Water infiltration, taking in water, can be understood as the way flows of matter infiltrate architecture and leave traces on its body. Drawing on Neimanis (2017), this paper frames such watery embodiment as more than metaphor. Neimanis (2017, p.29) argues for a rethinking of embodiment as watery, suggesting that such a perspective enables a "partaking in a hydrocommons of wet relations" (p.4) that connects humans with the hydrological cycles they are immersed in. In Neismasis's formulation, water is not merely an external natural element but an intrinsic component of bodily existence. She (2017, p.29) defines embodiment as both relational and relationally differentiated, reminding us that bodies of water are multiscalar, multigenerational, palimpsestic, and situated. In this sense, bodies of water reveal how spatial and material realities resist the closed system logic of

architectural representation.

In this perspective, rather than treating leakage as a technical failure, this paper approaches it as a generative fraction, an index of the body's porous relation to its environment. The trace of water thus becomes a minor rupture in the presumed closure of the drawing, surfacing the invisible agencies with which architecture is entangled. Moreover, on the Karaköy's foundation, the presence of groundwater not only testified physically but also disrupted regulatory and discursive processes. The leakage halted construction, necessitated amendments to official drawings, and forced a bureaucratic loop of re-submissions and re-approvals.

As Barad (2007, p.225) argues, phenomena are not pre-existing things that are merely observed; they are enacted through specific intra-actions. I propose that an encounter with groundwater as an intra-action (Barad, 2007) moment demonstrates how the resistance and persistence of groundwater (re) draw the boundaries of static design solutions, revealing the practical limits of representational certainty. In this context, the 'phenomenon' of the leaking foundation is not simply a condition to be recorded; it is a material-discursive joint that reconfigures the very nature of the architectural detail.

When groundwater first appeared on-site, the initial proposal was to change the construction technique to a pile foundation (Fig.3).

However, this was not a site-specific innovation but rather an attempt to reformulate a generic solution and retrofit standardized detailing onto unforeseen material conditions. As Katherine Shonfield (2000, p.37) claims, architectural details are generally discussed within a closed, scholastic framework that resists change and seems detached from material realities. She notes this tendency (2000, p.40) mirrors the scientific impulse to classify and control by reducing details to singular solutions for predefined problems. As this case demonstrates, however, real-world conditions rarely align with the abstract perfection of technical drawings. The unexpected emergence of groundwater on the site transformed the detail from a fixed technical entity into an adaptive field of situated knowledge. Thus, the appearance of groundwater was not merely a technical anomaly but also a challenge to the presumed stability and authority of the standardized detail.

When dewatering efforts proved insufficient, the construction team resorted to injecting cement slurry into the ground to block water flow. The site architect recalls, "You see the water - it's a real struggle!... A huge amount of cement was injected, though I can't recall how much. You send it down, and it disappears... I think we were basically pouring concrete into the sea." (Interview Notes, April 1, 2024)

This struggle was not merely technical; it was also corporeal and political. The bodies of engineers, architects, and workers became entangled in a material negotiation with a vibrant material agency (Bennet, 2010) that unsettled human intentions. As Bennett (2010, p.13) reminds us, in vibrant materialist ontologies, damaging one part of an ecological or infrastructural network is akin to harming oneself. In this sense, groundwater is an active part of the city's circulatory system, like blood running through the hidden arteries of urban life. Indeed, when the groundwater was temporarily halted on-site, it began to collect in

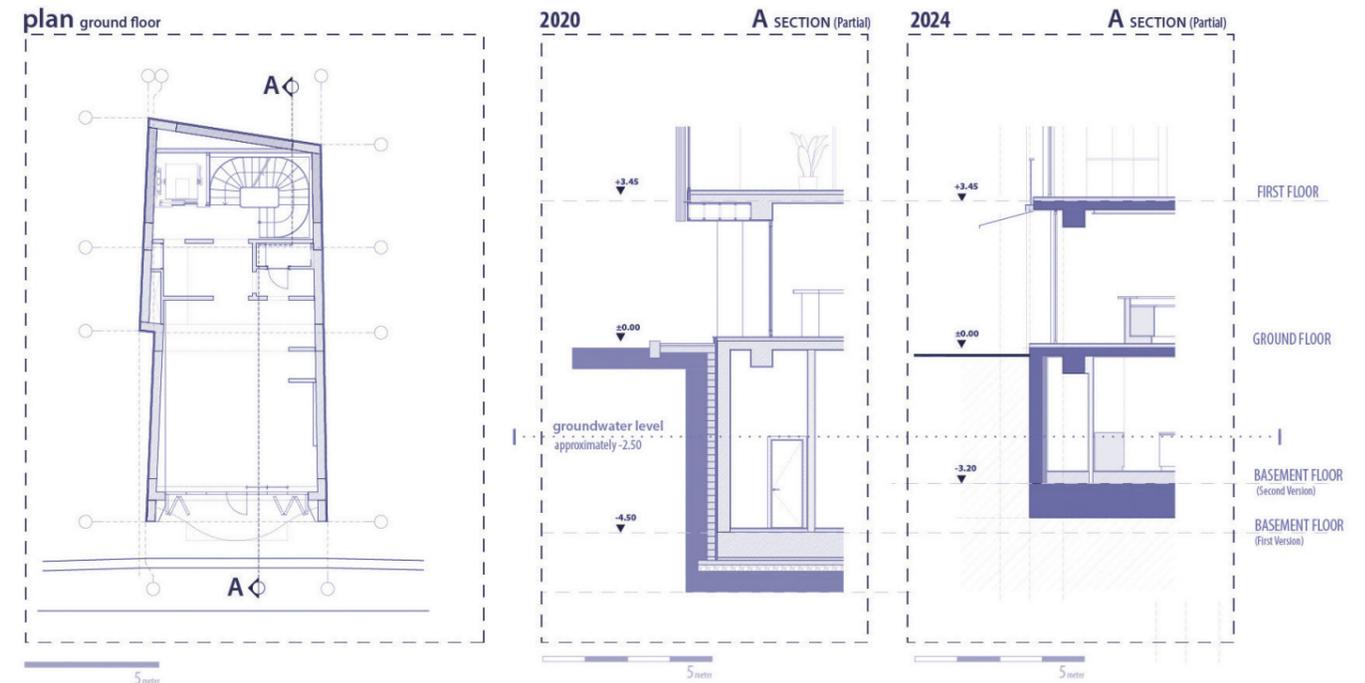


Fig.3 – Foundation drawings of the Karaköy project: the initial 2020 design (left) and the revised 2024 basement AA Section (right), adapted after recurring encounters with groundwater. (Author, 2025)

the basement of a building across the street where I was carrying out observations. The architect remarked that it behaved "just like the principle of communicating vessels." (Interview Notes, February 3, 2024)

As Pelletier (2015, p.101) notes, 19th-century urban sanitation projects buried waste and sewage beneath the surface to produce the illusion of a clean and orderly cityscape. In a similar way, the problem of groundwater at Karaköy was not resolved but entombed beneath cement injection, ensuring the building and its surface remained "clean," while the underlying flows were simply suppressed. As Barad (2007, p.206) reminds us, "apparatuses are not mere observing instruments but boundary-drawing practices - specific material (re)configurations of the world that come to matter". In this sense, the architectural detail itself functions as an apparatus of concealment, materializing a particular cut between visibility and invisibility. The drawing that translates this process is not a neutral representation but a technical and discursive device that participates in this concealment - transforming architecture's claim to resolution into a practice

of covering over instability. The cement injection, heterogeneous, unstable, and unruly, contrasts sharply with the clean sectional cut depicted in technical drawings. While the drawing continues to represent order through a flawless line, it renders the subterranean disorder invisible. Shonfield (2000, p.40) reminds us that architectural junctions, where designers strive hardest to define boundaries, are ironically the most vulnerable to "that most formless of elements, water." Instead of viewing this material intervention as merely a performance-based solution, I propose a more nuanced approach that considers the complexities of material flows and acknowledges the role of uncertainty and leakage.

(RE)CONFIGURING THE DETAIL

Tim Ingold (2016 [2025], p.242) draws a distinction between straight and non-straight lines, an opposition historically mapped onto the divide between culture and nature, or humanity and animality. He argues that (2016) the hegemony of the straight line aligns with the epistemologies of modernity. From this perspective, architectural detail is not just an epistemological

configuration but also a political one. The cement injection used to solve the groundwater issue is not merely a hydraulic intervention; it is an act of burying urban knowledge and responsibility beneath the surface. The language of 'ground improvement' or 'solve problem' builds a promise of structural solidity while simultaneously masking ecological damage and deferred responsibility. Barad argues that "language matters" (2007, p.132), insisting that material and discursive practices are not separate ontological domains but entangled through mutual intra-actions (2007, p.211). This perspective dissolves the supposed divide between discourse and materiality, revealing how language can have concrete effects on bodies, environments, and architectural forms. Seen in this way, the practice of injection is not simply a form of ground stabilisation but a technique for controlling flows and enforcing linearity. It reflects an anthropocentric epistemological desire to resolve material complexity through geometric clarity.

Katie Lloyd Thomas (2007, p.17) critiques the shift towards performance-based specification formats in architecture, in which

materials are defined not by their origin or the labor involved in producing them, but by their measurable performance. In this transformation, materials are disembodied from their contexts and redefined solely through quantitative performance metrics. She describes this as a shift towards an abstract, depoliticized "matter" and calls for a more politically conscious approach (p.17). As specifications increasingly conform to regulatory and market standards, materials are detached from their ecological and social contexts. This shift renders architectural knowledge incomplete and ethically compromised, privileging compliance over situated accountability. Malterre-Barthes (2021, p.89) similarly argues that the supposed technical neutrality of details conceals architecture's complicity in the destructive impacts of industrial systems. Standard detail applications, then, are not apolitical; they silence material

histories. The invisibility behind standard detail applications then opens a critical space to engage with detail not as a resolved fragment, but as an entangled, ethical-political knot. As she notes (2021, p.88), every architectural detail is a site where certain threads are tied and others cut; therefore, the architect's decisions entangle and exclude in equal measure.

Till and Wigglesworth (2001, p.8) critique the fetishization of detail in architectural discourse, especially within modernist traditions where "good architecture" is often equated with technical and aesthetic precision. They argue that this "atomized focus on detail" can produce a kind of technocratic autonomy (p.15), detaching architecture from its broader social, political, and environmental contexts. The risk, they note (2001), lies in the architect's retreat into detail to escape complexity, a withdrawal from the messiness of

real-world entanglements.

In the case of cement injection, the material interacts with microcracks and pores, creating new and unpredictable flow paths. Rather than sealing a void, the detail becomes porous and leaky, a phenomenon that resists closure and boundaries. The injection is not just a solution but a subterranean act of repression, concealing infrastructural crises beneath the urban skin. In Mah and Rivers's terms (2022, p.155), to recognize the unrepresented is itself a political act. Thus, the foundation detail emerges not just as an epistemological drawing but as political.

This reframing demands an ethical accounting: Where do construction materials come from? Who labors in their application? What forms of waste do they produce, and where do these go? What are the ecological and social costs embedded in the line of detail drawings?

APPARATUS AND NARRATIVE

Matter, as Coole and Frost (2010, p.10) describe, emerges as temporary patterns within a choreography of indeterminacy, continually forming and reforming in unexpected ways. Building on this perspective, Karen Barad's agential realism (2007) reframes indeterminacy not as a limitation but as epistemological and ontological productivity (Fig.4).

Every measurement, in my case every drawing, enacts certain possibilities while excluding others, yet the process remains open-ended (p.172). Within Barad's performative onto-epistemology, "apparatuses are boundary-making practices" (2007, p.148). This understanding reveals that a technical detail drawing cannot offer a complete script for what will unfold on-site. At best, it delineates certain boundaries, while material events develop in ways that remain unpredictable. To theorize architectural drawings as apparatuses is to acknowledge both their epistemological force (what counts as knowledge) and their ontological agency (what realities they help enact). Drawings, then, should not be understood as neutral or technical representations but as world-making practices that embed epistemic regimes, cultural codes, and regulatory constraints. As apparatuses, architectural drawings do more than record reality; they participate in shaping it. Even the lines of a foundation drawing are tied to the consistency of concrete building code regulations, workers' skilled labor, and environmental influences.

In this sense, detail drawings are not passive projections of a designer's ideas but material-discursive apparatuses that participate in the making of architecture. Co-produced by human and nonhuman agents, they not only delineate technical relations but also compose narrative boundaries - highlighting some connections while obscuring others. In doing so, drawings tell stories about what counts as

architecture and what is excluded from it. As Ursula K. Le Guin (1996, p.149) reminds us, "it is stories that change life" - and in architecture, it is through details that such stories are materially written.

Marco Frascari (1981, p.326) considers details to be the minimal units of meaning in architecture, not just small parts of a whole, but rather, joints where connections are created. From this perspective, details are more than technical markers of precision; they are storytellers that weave together material, spatial, and theoretical aspects. Through his well-known statement, "Details tell the tale" (1981; 1984), the Karaköy foundation detail can be seen not as a fixed solution, but as a relational joint and a site of agency where water, soil, and technical interventions intra-act. Encountering groundwater illustrates how drawings construct regimes of (in) visibility, framing human/nonhuman boundaries that are simultaneously fixed and blurred. Methodologically, this requires treating drawings and details with a posthumanist lens in which nonhuman agents must be recognized.

As Puig de la Bellacasa (2017, p.198) reminds us, following Haraway, knowing and thinking are always relations of care. Attending carefully to details, then, recognizes the invisible presences they unfold: groundwater, soil ecologies, laboring bodies, health risks, and waste flows. In this way, the architectural detail becomes not merely a technical or aesthetic exercise but a critical practice of inquiry.

The task is not to present drawings as completed representations but to examine the assumptions, exclusions, and constraints they carry. Reframed as apparatuses, drawings emerge as story-making agents within relational ecologies, shaping architectural worlds not only through what they describe but also through the narratives they construct, much like details that "tell the tale" (Frascari, 1981; 1984).

LEAKY FOUNDATION: DRAWING WITH WATER, CEMENT, AND SOIL

In this study, drawing is treated not merely as a technical and representational tool but as a situated method of knowledge production. The act of re-drawing the detail does not reproduce a fixed technical solution; rather, it operates as a speculative inquiry into the entangled relations of field observations, narratives, and material processes. Following Haraway's notion of situated knowledges (1988), the drawing emerges from multiple perspectives: architectural plans unfolded on site, gestures of workers, the narratives of designers, and the unruly flows of material.

As Ingold (2012, p.438) contends, the ontological existence of things is sustained by continuous matter interchange, arguing that "things can exist and persist only because they leak". Following his argument, material bodies are sustained through continual exchanges with their surroundings; their vitality is dependent on leaking across porous borders. Seen from this perspective, the construction site itself can be understood as a leaky body, where groundwater, cement, and human labor are intertwined. Every intervention, such as cement injection, opens new circulations that extend far beyond the controlled lines of the drawing.

Reframing the AA section drawing, this project moves beyond a static foundation detail to incorporate adjacent structures, infrastructural systems, and ecological flows. Through folding, annotations, and over-tracing, the drawing reveals itself not as a finished representation but as a negotiated surface, shaped by architects, engineers, site managers, and workers. Each fold or cut can be read, following Barad's notion of 'boundary-making practice', as generating new visibilities while instituting new boundaries and responsibilities. In this sense,

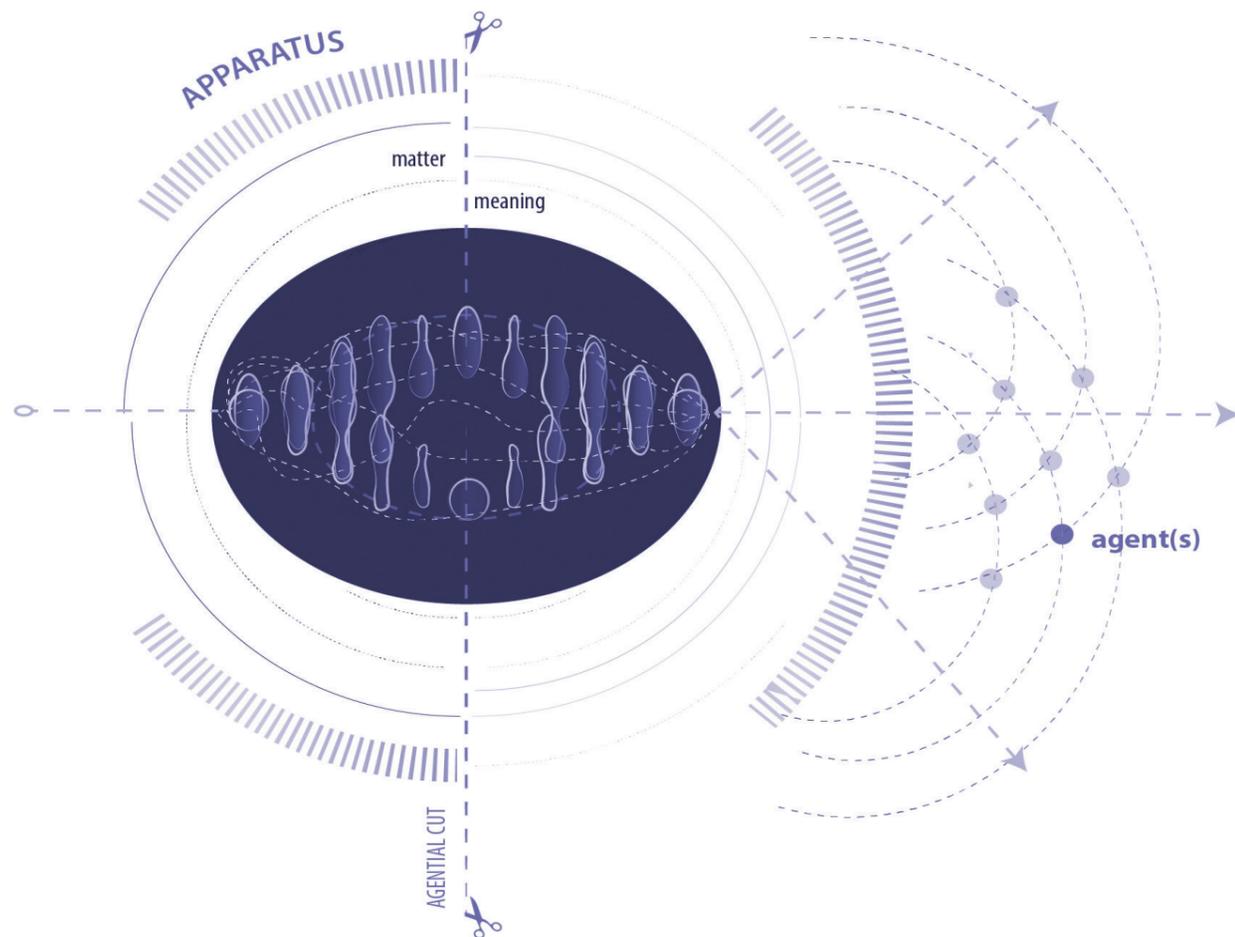


Fig.4 - Diagram illustrating Barad's concept of agential realism, where apparatuses enact agential cuts that configure matter and meaning. (Author, 2025)

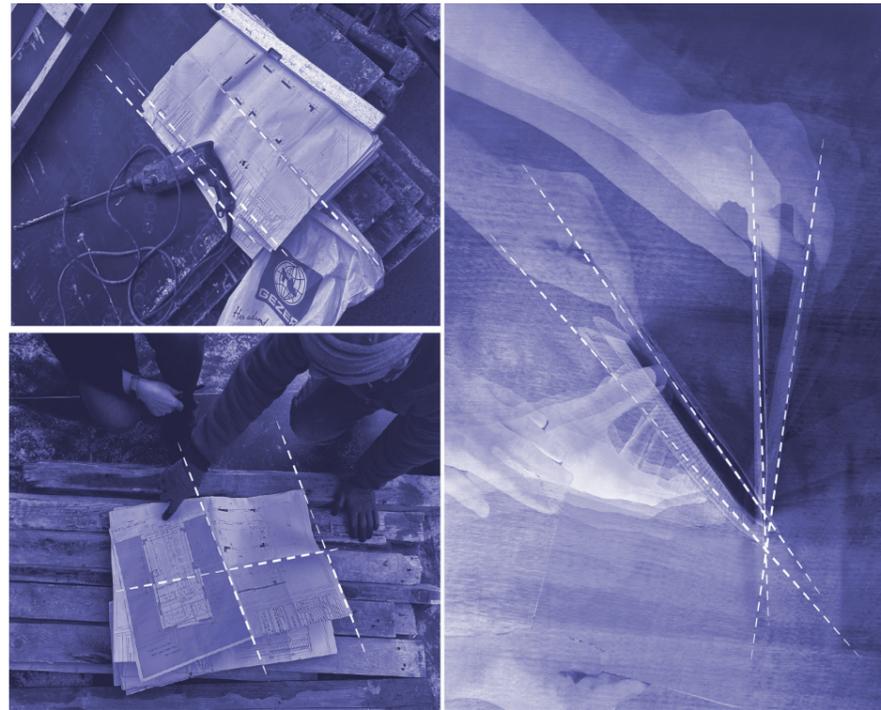


Fig.5 – Technical detail drawings on site, handled and discussed by different actors. The drawing functions as an apparatus that mediates between human and nonhuman agencies, workers' gestures, tools, groundwater, and material flows, revealing its role as an active participant in the production of architectural knowledge. (Author, 2025)

folding and unfolding drawings align with Haraway's (1988) idea of '*partial perspective*': they disclose situated, fragmentary views rather than claims to totality. Layering and over-tracing strategies disrupt the clarity of technical lines by incorporating stains, leaks, and blurred flows (Fig.5).

This extension resonates with the drawing strategies of folding and unfolding, just as folds reveal new layers and scales. The layering of workers' bodily gestures with technical marks allows the foundation detail to unfold into wider hydrological, ecological, and political networks. A partial view on paper thus becomes, in practice, a situated perspective that stitches together the micro-scale of material traces with the macro-scale of environmental cycles, narrating their interdependence across scales. This speculative re-drawing of Section AA (Fig.6) visualizes three situated encounters: (1) groundwater emergence during excavation and the workers' pouring of retaining concrete; (2) the infiltration of water into the neighboring building, echoing the

principle of communicating vessels and (3) the seepage of cement injections beyond the site, extending into Karaköy and the Marmara Sea. Together, these layered views illustrate how architectural detail drawings unfold across scales, linking local material acts to wider urban and ecological networks. Water channels and cement injections are registered, not as invisible background conditions but as marks within the drawing. What appears minor, seepage, dampness, or rust, emerges as evidence of architectural entanglement.

Just as in Frichot's reflections on dirt (2019), performative matters such as groundwater and cement slurry likewise refuse categorical distinctions, undoing the separations between inside and outside, clean and dirty, building and environment that architectural detailing seeks to enforce. Following Neimanis (2017), groundwater cannot be isolated as a local technical problem but must be understood within the broader hydrological cycle - the hydrocommons that connects soils, cements, pipes, bodies, and seas.

Once injected, cement enters this continuum, its particles migrating through pores and microcracks, carrying chemical residues that may infiltrate marine ecosystems and transform microbial life. In this sense, a building's foundations do not end at the perimeter of its walls; they merge, materially and ethically, with surrounding waters.

The speculative drawing that accompanies this inquiry thus does not map a closed system but imagines these unseen threads - where a line traced on paper might just as well continue through groundwater into the Marmara Sea. Thus, the architectural foundation is implicated in watery embodiments that extend beyond the building and its Karaköy site. Here, speculation on drawing is a methodological apparatus that reveals excluded agents and hidden narratives on technical drawing. The ethical dimension of this inquiry emerges precisely at the moment when the technical drawing begins to break down. As such, drawing as a speculative surface, a site where the ecological, chemical, and social effects are imagined and made thinkable. The act of re-drawing the cement injection as a speculative way does not simply visualize an unseen process; it interrupts the epistemic authority of the technical line.

By allowing indeterminacy, leakage, and speculation to enter the drawing, the work resists architecture's habitual impulse to conceal instability beneath the surface. This gesture, modest yet critical, reframes architectural detailing as an 'ethico-onto-epistemological' (Barad 2007) practice of exposure - a willingness to confront the material consequences of design decisions and to stay with the uncertainties they produce. In this sense, to draw speculatively is not to abandon precision but to assume responsibility for what the drawing excludes, acknowledging that every line traced on paper extends into material, ecological, and political realities that architecture can no longer afford to bury.

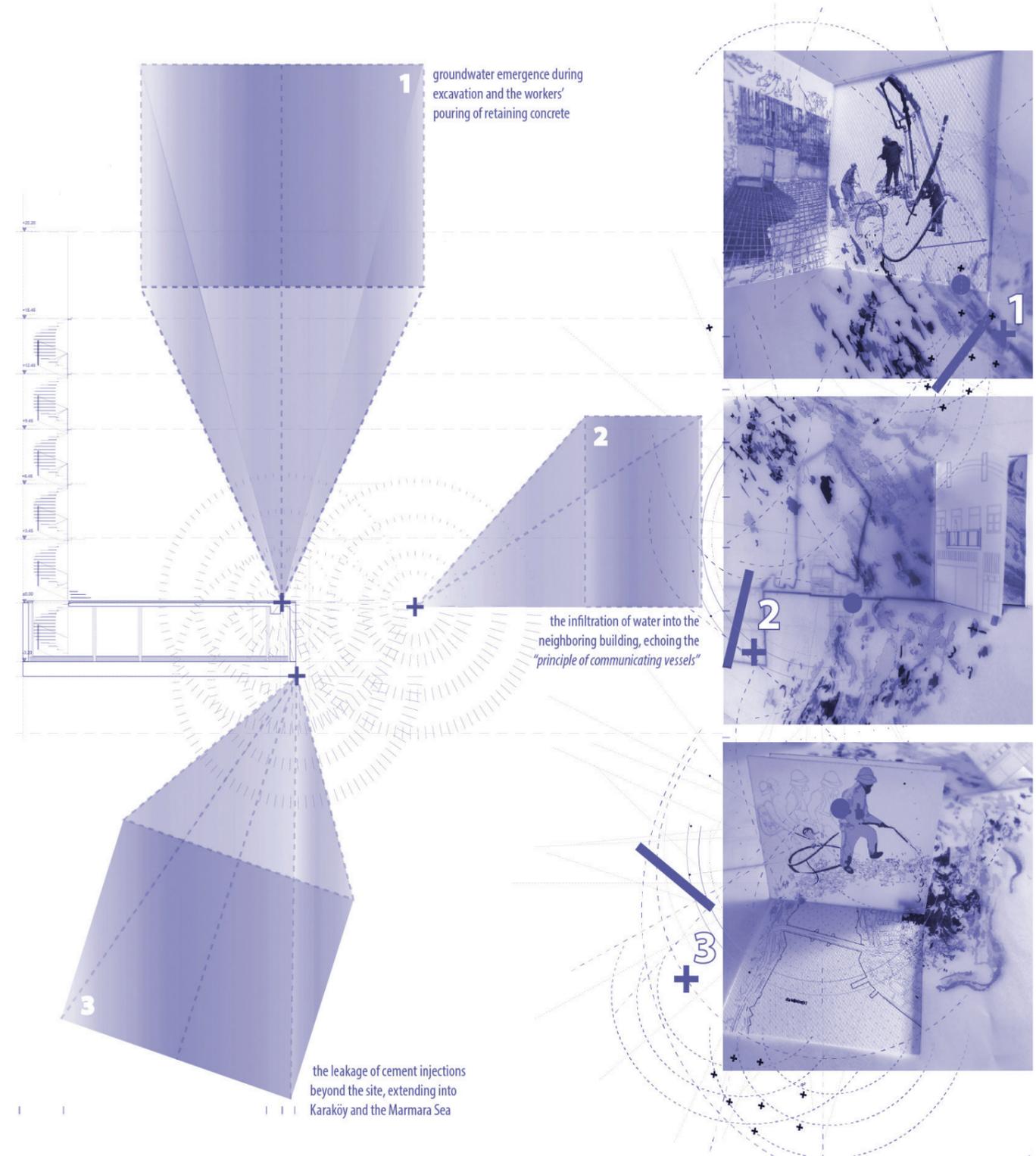


Fig.6 – Re-drawing Section AA to visualize three situated encounters at multiple scales. (Author, 2025)

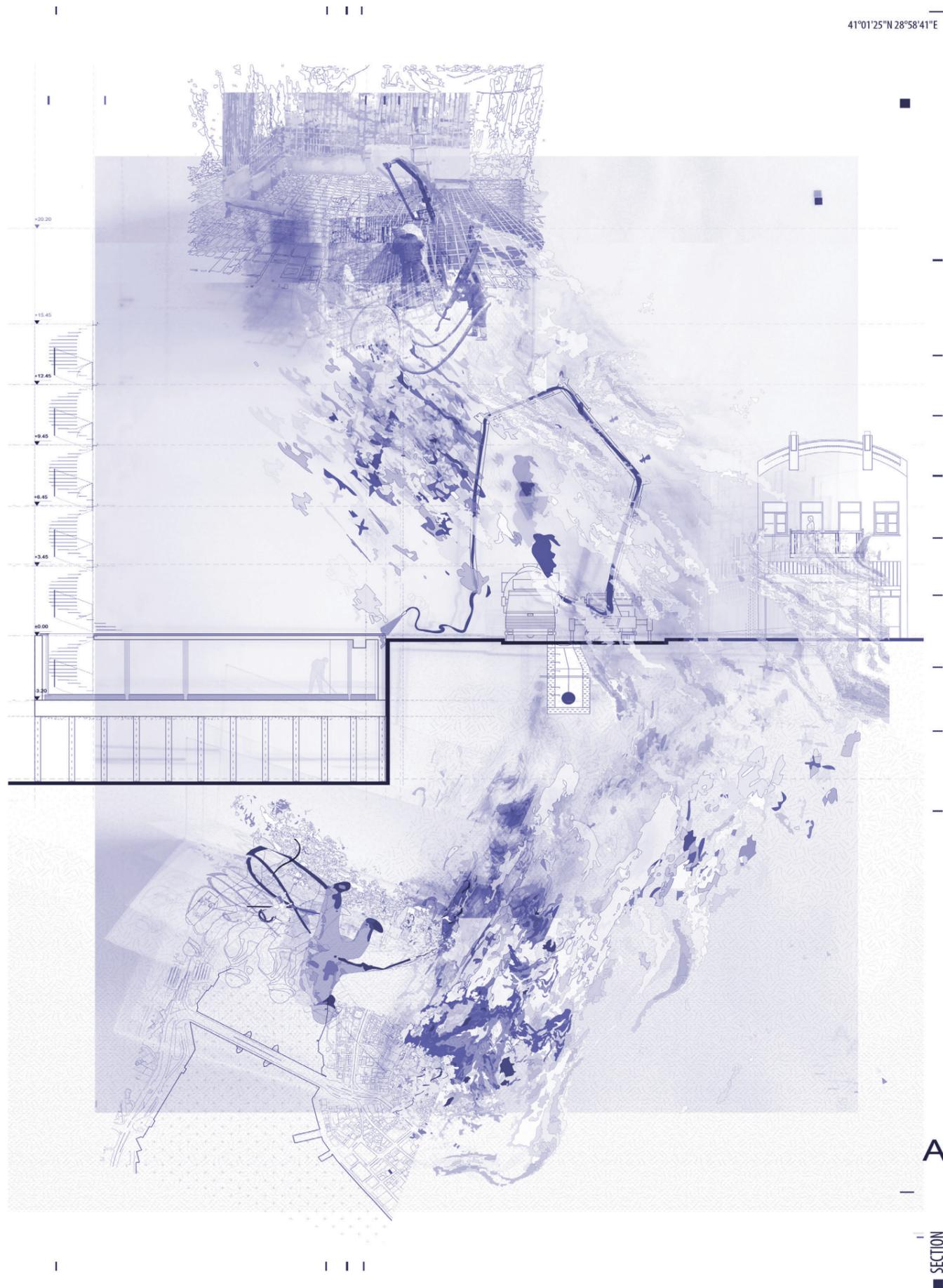


Fig.7 – Final Collage, Section A Re-configured: Entanglements of Water, Concrete, and Site. Hybrid collage combining hand drawing, digital drawing, and photo layering. (Author, 2025)

CONCLUSION

This article argues that architectural details cannot be understood merely as technical fragments or fetishized measures of mastery. Instead, it emerges as a relational structure that is simultaneously narrative, material, and ethical. Attending to details opens a lens onto architecture's intersections with active material forces. Reframing drawings as apparatuses reveals that they are active practices that shape the materialization of buildings and environments.

Although a conventional foundation drawing meticulously depicts concrete, reinforcement, and insulation, it rarely registers groundwater seepage or the micro-ecologies of soil. Through Barad's (2007) notion of apparatus, drawing can be expanded to include these invisible conditions, resulting in representations that are technical, speculative, and critical. This speculative approach aligns with the ethical and political commitments of feminist new materialism. Drawing leaks, flows, and uncertainties acknowledges overlooked material agency and cultivates what Puig de la Bellacasa (2017) calls relations of care. Thus, a key contribution of this study is highlighting the layered entanglements of drawing, thinking, and building in architectural practice. Re-drawing details becomes a responsible practice: it unsettles assumptions, visualizes excluded scenarios, and generates new forms of knowledge that are attentive to material and ecological consequences. Technical details are not flawless expressions of a designer's intent, but rather, they are the intersection of material worlds, geographies, economies, and labor. Architecture is not built from isolated details but from networks of relations extending from drawings to contractors, materials to environments, and regulations to inhabitations.

In conclusion, this study redefines architectural detailing as a speculative, situational and critical practice, rather than as a technical demonstration of the architect's

mastery. As Barad (2007, p.206) argues, "Reality is therefore not a fixed essence. Reality is an ongoing dynamic of intra-activity." Re-drawing a detail exposes networks, troubles them, and cares for them. The strength of drawing lies in its permeability between line and stain, data and speculation, and observation and imagination. In doing so, architectural practice can evolve from an illusion of fixed objectivity to a more responsive, situated, and ecologically attuned approach to construction.

Architecture's real resilience lies not in the aesthetic or technical perfection of a single detail, but in the relations it sustains and makes visible. This approach aims to reveal not only the physical body of the architecture but also its ecological, ethical, and political aspects.

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