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Reconfiguring Ground: Temporalities and Properties of Substance

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This article explores the interplay between the essential and accidental properties of substance as social and environmental interactions within the evolving urban landscape of Amsterdam's Nieuw-West. Tracing these transformations from peat bog to polder, through the 1930s Extension Plan, its mid-20th-century construction, and its present-day form, this article examines how land construction and inhabitation shape environmental and human histories, written through geological, ecological, built, and social taskspaces. Each iteration of the figure-ground reconfigures relationships, influencing the intersecting and symbiotic actions of taskspaces and urban/natural processes.

Drawing on Aristotle's metaphysics, Ingold's deep surface, and the temporality of landscape, this article examines how taskspaces—embodied actions of habitation (urbanization, wear, maintenance, adaptation) and environmental processes (weather, ecology, soil)—function as symbiotic relational forces affecting the climate, situating our planetary condition locally. These interactions reside within the dynamic tension between process and substance, where material formations and social structures emerge over time. It traces Nieuw-West's foundations from reclamation and extraction to its hybrid formation as a garden city and modernist suburban structure, highlighting the ongoing tensions between social and ecological displacement. By grounding the epistemology of substance, this article reveals narratives of fragmentation—both ecological and social—embedded in urban development.

Critiquing the ongoing urban densification that extends Nieuw-West's early commodification and imposed efficiencies, this article instead advocates for a dynamic approach—one that reconnects built and natural environments through collective social practices. By reimagining social contracts as continuums of care and ownership, it highlights the terrestrial, strengthening relationships that reactivate collective environmental imagination, bridging ecological and social disconnections, and enhancing both resilience and agency.

INTRODUCTION

A Klee painting named 'Angelus Novus' shows an angel looking as though he is about to move away from something he is fixedly contemplating. His eyes are staring, his mouth is open, his wings are spread. This is how one pictures the angel of history. His face is turned toward the past. Where we perceive a chain of events, he sees one catastrophe that keeps piling wreckage upon wreckage and hurls it in front of his feet. The angel would like to stay, awaken the dead, and make whole what has been smashed. But a storm is blowing from Paradise; it has got caught in his wings with such violence that the angel can no longer close them. This storm irreversibly propels him into the future to which his back is turned while the pile of debris before him grows skyward. This storm is what we call progress.
- Walter Benjamin, The Angel of History

Walter Benjamin's *The Angel of History*[1] is a cautionary tale that refers not to natural disasters but to the actions of human beings that led to the catastrophic events of World War II. It condemns us to the endless repetition of tragedies—the events accumulating wreckage that propels us—unseeing—into the future. In this article, the storm that Benjamin calls 'progress' is traced through human actions, in the case of Amsterdam's Neiuw West, transforming vast peat bogs and lakes situated west of Amsterdam, where another war was waged against the natural world through processes of domination, control, and exploitation. This process does not end but is iterative and still ongoing today, embedded in taskspaces[2] of labor, mapped out in plans, and constructed in the figure-ground as land reclamation and resource extraction, infrastructural projects, and housing developments.

This watery landscape and its taskspaces accumulate, embedded in the continual movement of soil, ecologies, and water. These events merge human and environmental histories, revealing patterns of conflict where the desire for stability contradicts the landscape's inherent tendency toward flux. These contradictions appear not only in the construction of large-scale infrastructures (reclamation projects, large-scale barriers/gates, highways, trains, and subways) but also in land practices. These conflicts are characteristic of a world thoroughly transformed by human intervention, where each failure and its material trace remain embedded in substance—in the abandoned relics or disconnected processes that continuously push us to attempt solutions to problems of our own making. This tendency creates a continuous process of failure, which is linked to local events pushed by climate, "the very substance of everything that happens on our earth"[3].

SUBSTANCE, ESSENTIAL OR ACCIDENTAL PROPERTIES AND FAILURE

In this article, substance is understood simultaneously as "the weather, which manifests locally the totality of the planet"[3] and as a fundamental component in all things. Substance, defined epistemologically as a noun or subject (being, thing, object, element or part within a system), is, in the work of Aristotle, associated with both essential and accidental properties. Essential properties are determined by the predictability of necessary functioning and underlie a substance's essence. Accidental properties,

1 Benjamin, 1968, Thesis IX, pp. 257–258
2 Ingold, 1993
3 Coccia, 2023

on the other hand, are situational—as relations or events—which are non-essential and do not change a substance's core functioning or essence[4].

Accidental properties of substance are categorized as quantity, quality, relation (family, kin), habitus (builds, bodies, shapes), time (tempo, schedule, phase), location, situation (state, position), action or interaction (movement, force, exchange), and passion (being acted upon), which exist in all substance and define the exchange between substance and its context (situation and relation) or environment, whether internal or external to a being, thing, organism, or system.

Within this epistemological framework, the accidental properties of substance suggest that, while non-essential to function, they are relational—connecting the dynamic spatial and temporal scalesbetween substance, thing, and so on as part of processes. Assuming that all substances move toward failure due to their inherent temporality, the accidental becomes an important link for understanding the scalar dynamics of failure[5].

In the case of Amsterdam's Nieuw-West district, it was conceived through the hybridization of Garden City, Functionalist City, and De Stijl ideas, reflecting both an emphasis on plasticity, light, air, and space, and the separation of spatial functions (nature, living, work, and leisure). As such, both the essential and accidental properties of substance are embedded in the temporality of processes and in attempts to pursue movement between parts, which instead emphasized the separation of essential functionality of substance at all scales that severed connectivity within the figure-ground as constructed and inhabited.

This is particularly evident in the construction of land through the ongoing and iterative processes of reclamation and its by-products, which has many unintended consequences. Here, disconnections and displacements between substances of ground and its substratum reveal an accumulation of wreckage that eventually resurfaces, only to cause disruptions and failures within urban, infrastructural, and natural landscapes across multiple layers and scales. In this context, failures often manifest as disconnections between substance and its essential and accidental properties, which are overlooked or taken for granted, seen simply as part of the journey. These accidental properties of substance, then, are the interconnections, which situate relations and mediate between scales spatially and temporally appearing as agents of change—manifest either in large-scale disasters and in incremental failures caused by disconnections and wear—transforming systems, processes, and substance itself.

In shifting perspectives, epistemological logic can be used to reshape both the understanding of this case study and its historical trajectory toward the present state and possible futures. Therefore, in defining and categorizing substance, the dominance of essential properties over accidental properties reflects a hierarchical attachment to functional aspects over situational and relational ones. These distinctions, although rooted in philosophy, became central to informing categorization and value systems in scientific knowledge, economics, and the constructive and representational arts[6]. In all sectors of society, functional abstraction was foregrounded over the accidental and organizational and spatial systems were tied to social and economic structures, which reinforced this negation.

In economics, the commodity—generic products stripped of their context of origin and labor—became to industry what the parcel became in

4 Aristotle, 1966; Copi, 1954
5 Copi, 1954; Aristotle, 1966; Fine, 2012; Inman, 2018
6 Popper, 1994; van den Berg, 1999; Inman, 2018

urban development, where ownership and real estate formed yet another layer of commodification. With each iteration, from Industrialization to Modernism, the essential properties of functionality and singular efficiency shape the design of space and its relation to territory. This separation of the accidental from the essential resulted in a disconnection from locality and from individual skills and care, rendering them invisible forms of labor embedded in generic products[7]. This separation into singularly efficient variables, of resources and their extraction or labor production, produced industrial processes and corresponding products such as infrastructures, the parcellation of land into real estate, which, along with its architecture, functions cyclically to repay investment on a continuum. This separation and abstraction into singular efficient processes that emphasize the essential properties of substance impacted both the transfer of historical knowledge, practices of tending and the taskspaces of relations that connected the environment and lived experience.

Here, in the delta landscape, the construction of land was first a utopian idea of reclamation, carried out through processes of abstraction, in which displacement, extraction, and disconnection accumulate, eventually resurfacing as unintended consequences that cause disruptions and failures in multiple fractions, which becomes evident when disconnections in landscape, urban planning, and infrastructural construction must be repeatedly adapted and repaired. This suggests that the utopian abstractions underpinning most urban, infrastructural, and architectural processes often ignore the accidental, either taking it for granted or accepting it as an inevitable part of the journey. In shifting perspectives, epistemological logic can be used to reconsider accidental properties, which situate the relational aspects between beings, systems, and substance, and reshape both the understanding of this case study and its historical trajectory, which may begin to change historic disconnections, reframe current perspectives, and open possibilities for alternative future states.

TEMPORALITY, TASKSPACE, AND RHYTHMS

This interplay between the essential and accidental properties of substance reveals how core functionality is influenced by accidental properties such as situation, location, and relations—elements that evolve across temporalities and through action. Accidental properties mediate the characteristics of substance, which is inextricably linked to its context, situating it within a broader framework and connecting it to other substances and its environment. These properties simultaneously shape and endow substance with relevance (applicability, consequence, meaning), thus reflecting the relational dynamics between humans, the urban, and the natural environment. They offer deeper insights into urban landscape transformations.

This expanded framework of substance—as descriptive, relational, and temporal events or processes—illuminates the convergence of environmental histories as evolving landscapes, their rhythms, regulated cycles, and everyday taskspaces[8], which act on and transform substance through both minor shifts and catastrophic events. These concepts of temporality can be understood through the delineation of either linear or cyclical rhythms, which define the connectivity between spatial and temporal dynamics, establishing relationships, and the symbiotic action and reaction that generate histories.

7 van den Berg, 1999
8 Ingold, 1993; Lefebvre, 2004

This provides a lens through which to explore the temporality of the figure-ground, defined as both a temporal process and a spatial relationship that interacts with natural events or cycles and human interventions—encompassing historical and social changes that accumulate, erode, or erase. These cultural and environmental events or processes continuously transform and reshape the terrestrial—not only the surface topography, but also the deep surface[9]. Therefore, figure and ground leave lasting marks on the delta landscape.

The broader dynamics of the delta operate at both micro and macro scales—from the properties of individual substances to the geological and hydrological processes that shape territories (figure 1: left). This section employs a figure-ground framework to trace these dynamics, where "figures" (e.g., buildings, highways) represent planned interventions and "ground" (e.g., reclaimed land, water systems) reflects natural responses. This illustrates how the evolution of Nieuw-West, Amsterdam, has led to unexpected vulnerabilities. In line with the Journal of Delta Urbanism 's focus on accidents as structural outcomes, this approach underscores that failures are not isolated events but are deeply embedded in historical planning decisions.

THE HISTORICAL AND GEOLOGICAL FOUNDATIONS IN NIEUW-WEST

As methods of tracing interactions between humans and landscapes, these interactions unfold over centuries; cultural knowledge and socio-political forces have jointly reconfigured the landscape, creating complex taskscapes[10], where the engagement in working the land actively constructs history. These intersecting taskscapes both embody and embed processes where forces sometimes cooperate and, at other times, conflict in attempts to control movement and flow. This tending is not limited to surface modifications; rather, it embeds change in substance that affects the deep surface[9], acting on both accidental and essential properties, and revealing disruptions or change within overlay/palimpsest maps. These provide a lens to examine time, substance, and urban-natural interactions.

This reveals contradictions in what is valued and preserved versus what is erased within landscapes. Landscape processes are seen as cultural artifacts—not singular, but as combinations of various aspects of landscape form, structure, and process—all subject to natural and anthropogenic forces that influence processes and temporalities[11]. In shifting perspectives, what appears to be a problem from one perspective—that frustrates a desire for control and stability[12]—may, in fact, be necessary from another, highlighting the inherent contradictions in human interventions.

RECLAMATION POLDER AND PEAT

The transformation of the landscape west of central Amsterdam underpins its development, rooted in the larger context of the delta: its peatland bogs, shallow lakes, and sand ridges, functioning both as protective dunes to the North Sea and as the accidental incursion of glacial deposits[13]. Holocene sand was pushed north and inland, creating a deep layer of sand below the surface. These local formations have shaped centuries of extraction, reclamation, and urban development, including Amsterdam's expansions.

This peat landscape, situated outside the city's walled boundary, was long considered uninhabitable, useful only for industry, subsistence

9 Ingold, 2018
10 Ingold, 1993
11 Low, 2000, p. 94; Raj, 2007, pp. 7–8
12 Milligan, 2015, Holmes, 2025
13 Schokker et al., 2015

farming dependent on fluctuating water levels, and the extraction of peat for heating, which supported a flourishing trade with the North Sea countries and Europe. The extraction of compacted peat left deep scars in the landscape, depleting its ability to absorb water and causing increased flooding. The reclamation of land from water into pastures emerged as a means of controlling these floods through a method called poldering—combining modern and military tactics of organization, techniques of topographical and foundational construction, and knowledge of the subground gained through core sampling.

Amsterdam emerged during the 16th century as a center for scientific scholarship, particularly in sub-ground knowledge, stratigraphic analysis[14], and insights into peat formation and soil composition, (Figure 1). This expertise has spurred the practical application of science in large-scale hydraulic engineering projects. Water infrastructure practices that predated the 12th century (see figure 1: right polderkaart reveals both containment and drainage), harnessing water's essence against itself, evolved through the separation of soil from water, displacing water via infrastructures (canals/ditches, dikes/levees, sluices, gates) designed to drain and control its movement, keeping it in motion by means of pumps.

figure 01 — page 22

A similar displacement linked the sociopolitical structure to this transformation, through the symbolism of land and nation, where the landscape and labor of its construction, as well as its tending and pumping, were embedded in water boards and social contracts. This process collectively organized labor and constructed infrastructural systems, which were overseen, maintained, and monitored by localized water boards. These large-scale reclamation projects embedded history as taskspaces, where bodily action, social contracts, and knowledge of substance—water and subsoil—intersected with landscape processes. The ordinance boundaries of city-state water boards connected political will to localized labor that maintained the physical infrastructure and possessed an understanding of the delta landscape's hydrology, geology, and ecology. Through this, "land" was established not only as a commodity for investment but as a symbol of national identity—captured in art and military precision and defined strategically through cartographic boundaries and surface topographies that simultaneously transformed subsurface geological layers[15], embedding cultural history.

The history of the Netherlands as a nation stems from the manipulation and control of its landscape. Coupled with an idea of ownership as a God-given right, this displacement of substance's essence transformed 'nature' into land and property—as both product and resource—an investment by the owner, whether city-state or individual. The construction of generic parcels (measured dimensions) stripped the accidental, relational, and situational components of substance, reducing it to a commodity of real estate and a future resource for production.

This process of human intervention disrupted natural flows and reshaped the landscape through the delineation of topography (soil, sand, etc.) and the management of water through physical infrastructures (sluices, gates, dams), as well as regulatory boards that harnessed its power. In this

14 Abrahamse 2019/21
15 Abrahamse, 2019; de Gans, 2001; Schokker et al., 2015

way, the natural bog and lake were reconfigured as generic parcels of land. The polder became the systematic organizer of substances and labor, corralling the interaction between taskspaces and substance as elements of production. This system of abstraction created an illusion of stability—defining ground through technological means and controlled movement. This laid the groundwork for Nieuw-West, organized as an industrialized system both environmentally (as infrastructure) and socially (as labor).

However, in this process, the accidental properties of the landscape—its inherent dynamism, ecological rhythms, and material contingencies—were deliberately erased through the privileging of essential functional properties. Yet, paradoxically, this very erasure only accumulated unresolved conditions—accidents—unintended failures and disruptions that resurface over time as environmental vulnerabilities, social fragmentations, and infrastructural weaknesses. The organization of environmental and social infrastructures also exposes the contradictions of control: the more efforts made to eliminate contingencies, the more unstable and fragmented the landscape became.

AMSTERDAM NIEUW-WEST — PREPARING GROUND

In iterating historical definitions of separation and control within the polder landscape, would lay the groundwork for the development of Nieuw-West under the 1934 Amsterdam Expansion Plan (AUP). This phase would only further deepen the initial separation between the functional and accidental properties of substance and taskspaces, initiating yet another set of interactions between the natural (ecological, hydrological, geological), the social and labor dynamics (tending and care) that situate habitation within the environment.

Cornelis van Eesteren, who headed the newly established planning department in the city of Amsterdam[16], sought to extend the city through housing developments to the south and west of central Amsterdam. This plan was originally grounded in the Garden City model, which prioritized collective open spaces (green spaces, playgrounds, etc.) and, when paired with principles from De Stijl, emphasizing the integration of light, air, and space with housing, was intended to alleviate overcrowding and pollution in the city center.

Its implementation, however, was delayed until the 1950s due to war and environmental disruptions (including the 1953 flood). By that time, it had become further hybridized to include contemporary ideas from the Congrès Internationaux d'Architecture Moderne (CIAM4), specifically the Functional City model, of high-rise housing blocks, expansive green spaces, and rigid zoning that separated the functions of life, work, and leisure—creating a hybridized figure-ground—with its multiple scales and types of mixed social housing blocks and green spaces. It also reflected the social ideals of family and labor (e.g., proximity to the new port), which integrated a vast network of transportation infrastructures (highways, trains), wide streets, and bike lanes (see fig.4). Nieuw-West, in its conception and construction structured, both socially and physically, these utopian ideals within its figure-ground composition.

Nieuw-West was not random, but a top-down, large-scale planning development, conceptualized by the dominance of the horizontal or plan view and bird's-eye perspectives. It was also phased as layers of topographical, infrastructural, and neighborhood compositions. Each layer and phase was designed separately and determined largely through

16 Wagenaar, 2015; Steenhuis, 2017

engineered certainties, efficiencies, and statistical measures rooted in social science data—all predicated on functional, technological, and economic priorities. This produced a lived reality in which the situated, relational, and temporal dynamics of social and environmental needs were physically imposed upon. The tension between the static, formal logic of control and the fragmented separation of parts resulted in both alienation and long-term vulnerabilities—social and environmental alike.

The Garden City model (Ebenezer Howard), part of the original Nieuw-West Expansion Plan (AUP), championed a collective and integrated approach to urban planning and fostered middle-class growth through home ownership. However, disruptions—ranging from war, floods, and famine to mass migrations—delayed its implementation until the 1950s. These larger disruptive events intensified the struggle against the natural environment and imposed both an attitude of control, as well as economic and temporal constraints.

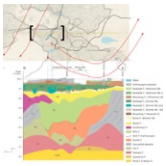
In response, large-scale engineered projects were introduced to control hydrological flows and protect urban growth within the polder landscape, which lies below sea level. These massive earthworks and feats of engineering—including the first large infrastructure project, the Afsluitdijk—severed Amsterdam's historic connection to the North Sea and led to the construction of a new port, reorienting Amsterdam westward. This reorientation and the implementation of large-scale infrastructural projects disrupted both local social and environmental connections that had historically been maintained through shared taskspaces and social contracts rooted in the tending and care of the environment.

These interventions reflect the postwar era's drive for progress under the banner of prosperity, harnessing crises and solidarity alongside ideals of technological and industrial advancement. Standardization (mass production), functionality, and economies of scale played a significant role in the design and planning of this area. Although the technologies, processes, and scales were new, they continued to reinforce social hierarchies, inequalities, and a dominant approach to nature—unintentionally producing new instabilities and furthering insecurities.

THE LAKE AND INFRASTRUCTURES

These geological insights (see figure 2), help contextualize the layered interventions that shaped Nieuw-West. At the city scale, Nieuw-West's expansion coincided with the development of large-scale earthworks and critical infrastructures designed to raise the surrounding areas by two meters above the polder level over eight years, (see photo's figure 3) while also providing the sand needed for multiple social housing neighborhoods in the area. Knowledge of the sub-ground around Sloterpolder came from core samples taken in the area and in 1948, the labor-intensive extraction of Holocene sand—a former natural accident—beneath the existing polder was brought to the surface.

figure 02 — page 22



This same area underwent repeated transformations. Earlier peat extraction caused a small lake to form, which was later drained to create a peat polder—five meters below sea level—before it was ultimately returned to water as an artificial lake, (see figure 3), the Slotermeer. Alongside this, the construction of major infrastructures—such as train lines, the A10 highway, the port to the north, and later the metro—further segmented the urban landscape. These projects created substantial separations between the new suburbs and central Amsterdam in the southeast, as well as the Port and Shell Oil facilities in the north.

17 Cammen, 2012; Steenhuis, 2017; Wagenaar, 2015

figure 03 — page 23

By reconfiguring the landscape through both earthworks and infrastructural projects, Nieuw-West's development reflects the broader challenges of attempting to control nature. The transformation of land and water into manageable, commodified units has severed historical and contextual bonds, producing ongoing environmental and social insecurities that continue to challenge the foundational figure-ground dynamic.

The accompanying street fabric (see figure 4) functioned largely as conduits for utilities and transportation, dividing neighborhoods into discrete zones. These spatial disconnections, evident in planning metrics focused on vehicular efficiency and pedestrian distances, have undermined both community cohesion and environmental resilience[17].

figure 04 — page 24

The history of the Netherlands as a nation stems from its ability to control its landscape, with ownership framed not just as a right but as a fundamental transformation of nature into resource. Land, whether drained through poldering or reclaimed through infrastructural management, has been embedded within systems of valuation that position it as a commodity rather than a dynamic environment. This logic, where landscapes are designed for efficiency rather than resilience, has shaped Nieuw-West's urban fabric, reinforcing separations between land and water, social groups, and ecological processes.

However, what is often labeled as "accidental" failures in urban development—manifested in issues such as flooding, subsidence, poverty, social fragmentation, and environmental vulnerability—can be better understood as the cumulative effects of historical planning decisions and systemic neglect. These failures are not simply unexpected anomalies, but structural consequences of a long history of interventions that have sought to impose control over the landscape while disregarding its inherent complexities and contingencies.

Rather than isolated incidents, these failures reveal how past interventions continue to shape present vulnerabilities, reinforcing patterns of exclusion and disconnection, environmental degradation, and infrastructural decay. The fragmentation of landscapes, the separation of ecological and social systems, and the prioritization of efficiency over connectivity and resilience have all contributed to an urban fabric that is increasingly fragmented, inflexible, static, and impervious or isolating, and therefore also unsustainable.

Drawing on both fieldwork and mapping that correlates the temporalities of social and ecological habitation of ground and subsurface conditions, as well as historical urban planning records and land-use data, this article examines the case of Nieuw-West to illustrate how seemingly unrelated decisions, such as the extraction of sand, the segmentation of land use, and the prioritization of transport corridors, have collectively contributed to spatial, social, and ecological fragmentation and instability. These processes, originally designed to create order, have instead produced unintended disruptions, amplifying social inequalities and environmental risks over time.

By reconsidering these so-called accidents not as random failures but as symptoms of deeply embedded structural logics, this analysis reveals the urgent need to rethink urban planning paradigms—shifting from a fixation on control and predictability toward an approach that acknowledges uncertainty, embraces adaptability, and fosters more integrated socio-environmental relationships.

The historic desire for control over the Netherlands' low-lying landscape, coupled with the conceptualization of land as both product and property, resulted in landscape transformations where land was treated as a space of production, a resource, and a social contract—an investment by the owner, whether city-state, private company, or individual. Each parcel, of equal dimensions, became a generic commodity of real estate and assigned value based on its future potential as a productive resource or property.

This process of human intervention assumed the reduction or negation of accidental qualities and their complex relations, disrupting ecology, hydrology, and subsoil flows through the reshaping and delineation of topography and water systems. Each element and its taskspaces, both as structures of tending and through regulatory boards, set a framework where one abstraction multiplied into a cascade of economic functionality: generic, productive, and transformative.

However, in seeking absolute control, planners ignored the accidental properties of the landscape—its ecological variability, hydrological rhythms, and spatial contingencies—effectively erasing accidents in favor of predetermined efficiencies. Ironically, this very erasure of accidental properties led to unintended consequences, as new accidents emerged—manifesting as environmental vulnerabilities, infrastructural failures, and social disconnections.

This paradox—the attempt to eliminate accidents only to create new ones—lays the groundwork for Nieuw-West, both organizationally (in terms of the environment and infrastructure) and socially (in terms of labor). Together, the invention of property—the construction of land, through ownership and investment in its future production, whether real estate, rent or product—reveals, economic pairings designed by corporations, of labor, and nature, which lead to the massive transformations and identity of the nation. Land, then as both product and resource, invested in by the owner, whether city-state or individual, constructed as generic parcels of equal dimensions, a micro-economic unit in futures, which rebuilt the nation and its prosperity in new dimensions.

This process of human intervention reduced the complex, accidental qualities of the landscape, disrupting natural flows and reshaping the delta through the delineation of topography, water systems, and regulatory frameworks into generic, commodified elements. It reflects the illusion

of stability—but in fact, the ground is defined through technological movement, which laid the groundwork for Nieuw-West, in terms of the physical: through separation and the organization of both the environment and society as infrastructural, temporal, and labor systems.

Within this framework, the figure refers to constructed elements, such as buildings, infrastructures, and transport systems, while the ground encompasses the natural and constructed landscape. This distinction helps highlight how deliberate urban planning interacts with, and at times disrupts, the natural dynamics of the delta. Through this lens, the case study examines how historical urban interventions in Nieuw-West have produced unintended vulnerabilities, a finding that reinforces the need for adaptive, context-sensitive planning in delta regions.

This separation from context, at its base, cast nature as a right to be transformed into resource, a product to be extracted and devalued as a generic commodity. In doing so, it serves the essential function of substance—as a body (organism/thing), element (part/object), building, or system—from its relations, displacing it in time, space, and action. This disregard for and disconnection from the accidental properties, which are vital for social and environmental relationships, are critiqued here alongside a rethinking of failure and what it reveals.

The persistent separation and abstraction of substance, and the disregard for the temporal and spatial relations of action, may be at the heart of many societal and environmental failures. Here, the interplay between substance and its context situates the accidental and functional properties together within complex scalar, temporal, and spatial dynamics. This reframing invites us to seek failure not merely as a matter of economic valuation, but as an opportunity to instill relationships, foster interaction, and generate potential synergies between the social and the environmental.

In this way, connection is nurtured and embedded at the interface between natural systems and collective social practices, activating the deep surface to build capacity for the causal effects of events, whether they stem from increased climate volatility, geopolitical unrest, sea-level rise, or the intensifying demand placed on “land” as capital investment. This is in contrast with the predominance of technically driven solutions over natural adaptation processes. In this context, the desire to “solve” landscape problems[18] can be redefined through the lens of the accidental recognizing its situated, temporal, and relational aspects, rather than rigidly sorting conditions into essential/functional categories that are continually and strategically reshaped.

RECONFIGURING FIGURE-GROUND: TEMPORAL PATTERNS & SUBSTANTIAL INTERACTIONS

In uncovering the dynamics within the figure-ground, a strategic reengagement with the accidental can be used to reconfigure ground as situational—linking actions of care that reconnect aspects of substance and temporality (patterns/flows) to the embedded historical layers of the deep surface—the palimpsest. In this way, the taskspaces of tending reconnect and restore relationships between inhabitants and the very substance of the deep surface and its geological foundations.

This approach moves beyond the abstractions of planimetries and modernist functionalism, which separate and delineate efficiencies within

systems and substances, often at the expense of relational processes and emergent spatial practices. Rather than treating efficiency and separation as neutral urban tools, which have historically disconnected social and ecological systems this article draws on the concept of a bio-cultural nexus[19], which positions water and soil as both cultural and ecological substances.

Klaver argues that this potential for transformation engages us with our surroundings and fosters environmental connection and public knowledge, turning infrastructure into a porous and experiential zone where ecological and deep geological processes intersect[20]. This hybrid space, where the public, ecology, and research interact, enables stewardship and fosters an environmental imagination[20]. Interactions in this context produce experiential learning, dissolving disciplinary boundaries, merging humanities and sciences, and bridging public and academic discourse. It fosters a synesthetic understanding of how we conceive of our world[21].

Rather than merely looking at the world, this form of engagement urges us to inhabit and co-create it. By interacting, we confront our situational being, recognizing our dependence on the contingencies of our surroundings and fostering a broader awareness of planetary interconnections. This article appeals to both individual and collective agency, particularly in moments of social and cultural uncertainty, as well as in the face of the fluvial indeterminacy of climate change. In this context, the need to reconnect and actively engage with both social and ecological dynamics becomes increasingly pressing.

"Society and academia both benefit from a further integrated way of working and understanding: community engagement (in various directions) influences the type of questions asked, the narratives written, the topics (and experiences) researched or taken into consideration."

—Klaver, 2013, p. 88

Community engagement blurs the boundary between serious academic discourse and the curiosity-driven public, influencing both the questions asked and the research produced[22]. Advocating for curiosity and openness in fieldwork, designers gather embodied feedback that materializes in documents, records, and artifacts, reframing how we perceive landscape problems and spatial conditions. By shifting the focus from problem-solving to coexistence, this research challenges conventional approaches to flood mitigation, instead asking how residents might live differently with water and the dynamics of flux. This reoriented perspective suggests that, rather than designing to control water, we might design in collaboration with it.

19 Klaver, 2013; Holmes, 2025
20 Klaver, 2013, p. 85
21 Klaver, 2013, p. 89
22 Klaver, 2013, p. 88

STRUCTURE OF NEIGHBORHOODS AND THE FIGURE-GROUND DYNAMIC

23 Vos, 1995

Nieuw-West's design reveals an ongoing redefinition of urban form—its figures (built structures and infrastructures) and ground (open spaces) evolve through processes of planning, construction, and inhabitation (figure 5). These transformations are shaped by both environmental conditions and human actions, in which the past continues to influence present-day perceptions and uses.

figure 05 — page 25

In the 1950s, low-value agricultural land was transformed into high-value residential areas, producing a patterned layout reminiscent of a "Scottish Tartan" (see figure 6(i)[23]). Each neighborhood was distinctly defined and designed by a different group of architects. These neighborhoods were developed within a shared framework of housing typologies and material palettes, that configured the structure of the landscape and delineated programs, from commercial and community areas (retail shops, schools, etc..) to residential blocks, playgrounds, and green spaces. This functional design was driven by data metrics that coded spacing and the rhythms of daily life. The overriding emphasis on efficiency and standardized metrics often prioritized economic goals over social and ecological networks, ultimately contributing to fragmented experience of the urban forms.

BUILT FORM, SOCIAL INTERFACES, AND URBAN DISCONNECTIONS

Due to the postponement of the implementation of the Amsterdam Expansion Plan (AUP)—first due to World War II (1939–1945), and later the flood of 1953—the resulting development took shape as a hybrid suburban form, drawing from both the Garden City and Functional City models. The final design captured the principles that presented a rhythmic interplay of space, air, and light, emerging as a modern suburb that prioritized high-rise apartment blocks, expansive green spaces, and rigid zoning that separated the functions of life, work, and leisure.

The planned organization of green spaces, tree-lined streets, and housing blocks was intended to create self-contained community neighborhoods deploying ideals of plasticity—not just as spatial movement in plan, but also as continuity and interaction between scales (see figure 5iii & 6 ii)—were, unfortunately, inconsistently applied, due to the larger spatial order that prioritized efficiencies of infrastructural lines for commuters and laborers headed to the port, factories, or offices via trains, vehicles, or bicycles. The large vehicular traffic grid structure remained open to the broader network of block formations and courtyard or access spaces, creating ambiguity in the delineation between the public and private realms. This middle ground and the thresholds that mediated between scales, enabled the formation of smaller neighborhood-level connections.

This diversity of typologies and formal rhythms—driven by data-informed metrics for the placement and proximity of residential units to shops, schools, churches, and transportation infrastructures (including on/off ramps and turning radius)—contributed to the infrastructural and

functional scaling of urban space (see fig.4). However, this emphasis on functionality, isolated functions that were singularly efficient and stripped of relational context as for instance school, shopping and home. This often, depended on both a unified collective of daily rhythms and social values, that linked intermediate scales to everyday experience and exchange. These separations, often tacking precedence over facilitating social and ecological interaction and often revealed themselves in a sense of increasing isolation, especially for those who remained at home, disconnected from their community and surroundings, leaving them feeling effectively "imprisoned."

CONFIGURATIONS OF HOME AND THE COLLECTIVE

Configurations of home and the collective in Nieuw-West are embedded within the broader figure-ground dynamic, connecting subsurface processes with surface experiences and linking historical practices of draining, extracting, and constructing. Each element of the figure-ground relationship is layered with both essential functions and unintended, accidental properties that mediate social and ecological interactions. The urban plan, characterized by defined blocks, green spaces, and infrastructural routes, reveals disconnections across multiple scales. These displacements, whether of sand, soil, or water, disrupt not only the physical landscape but also the subsurface and social processes that shape daily life.

figure 06 — page 26

Nieuw-West's tartan grid (see Fig.6ii) of streets, landscape configurations, and repeated housing typologies contributed to a disjointed spatial rhythm—an aspiration for dynamic movement between parts that initially aimed to foster social and ecological interaction. However, the rigid planning process, combined with the construction and differentiation of lot formations (in terms of densities, orientation/access, and distinctions between public and semi-public spaces), led to disjointedness between neighborhoods, producing separation rather than cohesion.

At the neighborhood scale, variations in housing typology patterns and unclear boundaries between public, semi-public, and private spaces, expressed in a rhythmic openness created by low garages, hedges, and trees, failed to reinforce social cohesion or a sense of ownership. The lack of connectivity and limited engagement with large exterior spaces resulted in a failure to unify spatial definitions, leading instead to internal disconnections.

The units were small in comparison to the exterior spaces, placing an emphasis on the interiors, often small and disconnected (balconies) from exterior spaces, with ambiguous transitions between private and public realms. These conditions limited opportunities for community interaction. In each case, the essential or necessary functions of unit include, considering the family as a group, the living room, dining room and, positioning of appliances with minimal furnishings, and the number of beds, not thinking about being there or whose freedom was envisioned.

In actuality, the separations of the functions of home life and urban life had little or no overlap, which divided the individuals of the family and communities. This lack of a "middle ground"— a meanness of the private areas and the vastness of the green—led to experiences of

social isolation. The design's focus on efficiency resulted in separated domestic functions from broader urban life, creating a gap that has reinforced social alienation—particularly for women—and contributed to the commodification of domestic life.

Initially, the plan enjoyed social success due to a relatively homogeneous population with similar lifestyles. However, as family structures evolved and cultural diversity increased, the original design left little room for adaptation. Property ownership remained limited due to municipal control and dependence on public or private housing corporations, which increasingly separated private and collective spheres.

As many of the initial residents moved out and public funding for building and landscape maintenance was cut or minimized, a new population arrived—primarily immigrant laborers from Morocco, Turkey, and Suriname in the 1960s and 1970s. The spatial organization and housing design left little room for cultural diversity or expression. Many residents, lacking ownership of the land or home, and coming from cultural traditions in which privacy and boundaries (curtains, fences) are important, felt alienated by the vast and undefined green spaces and wide streets surrounding them. These were strategies of protection, a way to create intimacy on an otherwise overwhelming spatial scale.

Uprooted from their homes and identities by crisis—war, economic hardship—these residents found themselves caught in a state of liminality: no longer fully defined by their old identities, yet not fully encompassed by their new one either. They remained isolated, with little incentive to care for or engage with collectively held spaces, themselves displaced. This state of in-betweenness continues even as they become "Dutch"—a metaphorical ungroundedness, perhaps akin to the sand on which Nieuw-West is built displaced and, in the eyes of dominant systems, at times seen as dispensable—especially now, as new calls to densify once again emerge.

PRESENT: CASCO LAND AND RAINPROOF INITIATIVES

Nieuw-West has evolved into one of Amsterdam's most multicultural districts, with over 70% of its population now having a non-Western migration background[24]. This demographic shift has exposed significant shortcomings in the original design of Nieuw-West, which has not adequately addressed the diverse needs and cultural identities of its residents. In particular, critical spatial inequities have emerged, as immigrant communities face limited access to culturally specific facilities such as mosques, community centers, and schools that reflect their traditions and values[25].

In response, several social and community organizations have emerged—such as De Appel, Cascoland, De Vlugt, MAQAM, and Rainproofing Amsterdam Nieuw-West—all of which provide adaptive, culturally and ecologically responsive approaches to align urban space with the social, educational, and environmental aspirations of Nieuw-West's diverse communities in addressing various social and ecological failures. These groups engage with the community socially, culturally, and ecologically, creating exchanges of time and knowledge: sharing skills and space through neighborhood shops (Lodewijk van Deysselstraat), community kitchens (Cascoland), shared meals and recipes, gardening and orchard initiatives (Cascoland), and participatory climate adaptation projects such aspavement removal (Rainproofing).

24 Gemeente Amsterdam, 2023

25 At Home in Europe Project, 2010

Rather than privatizing land and homes by erecting fences, these initiatives resist the shift toward what van den Heuvel[26] describes as "the continuous landscape of open and collective spaces mak[ing] way for densification, the city of enclaves, closed perimeter blocks, and private enterprise. Complete neighborhoods… were to be dismantled by a private conglomerate of housing corporations without any democratic process or seeming objection."

26 van den Heuvel, 2018, p. 28

In contrast, these collective efforts, voiced by both immigrant and local residents, provide not only value to the community but also an alternative strategy for land management, such as the community land trust model. This form of stewardship can challenge or even transcend market-based and private equity-driven redevelopment. Rather than contributing to further segregation through privatization, these initiatives maintain open spaces that support the rhythms of community life and social connection.

By learning from history and these collective initiatives, we can redirect and resituate past failures, developing a connected openness that enables exchange in new ways. This relinks taskspaces—between people and the earth, water and soil—through acts of tending and care. The result is a re-grounded, vibrant urban ecology: garden flora at the heart of post-war reconstruction. This illustrates an alternative mode of transformation, where the interplay between the essential (or functional) and the accidental (or situated) can enhance the intended functionality of urban design while also embracing the unintended outcomes of historical planning. This dynamic interaction helps shape both the physical environment and the collective identity of the community.

As Nieuw-West's residents have adapted their surroundings in response to environmental challenges and shifting social dynamics, these adaptations have underscored that urban space is not merely a commodity but a complex tapestry of the ecological and social processes of place-making. However, the history of separation, extraction, and displacement in the reconfiguration of land has, in many ways, disconnected communities from the knowledge necessary to mitigate flooding, protect their homes, and apply their agricultural expertise to create cohesive, context-sensitive community development.

Modern planning ideologies, with their emphasis on control and uniformity, have often failed to account for the fluid and evolving nature of both natural systems and social life in the urban realm. Rather than producing a stable, universal development model based on singular-functioning infrastructures, the realities in Nieuw-West demonstrate that both human and non-human forces continuously reshape the landscape. In this context, the adaptive responses spearheaded by local organizations signal a shift toward more resilient systems—those that embrace uncertainty and foster the dynamic interplay between societal needs and environmental conditions, rather than attempting to impose rigid control.

The article highlights two initiatives—Cascoland and Rainproofing Amsterdam—that exemplify social and cultural engagement with the landscape (see figure 7 ii-v). Both seek to develop ecological and socially sustainable communities by fostering education, participation, and shared practices through collective activities such as orchards, community kitchens, gardens, and water-permeable interventions that help reconnect residents with the environment. Both Cascoland and Rainproofing Amsterdam work to restore forgotten ecological connections, remove

pavement (releasing water back to sand and soil), plant gardens, and implement bioswales in areas prone to flooding or high groundwater. These initiatives, in different ways, reintroduce connectivity where disconnection and separation have been severed by decades of abstraction and over-engineering. In reengaging the terrestrial—deep surface—activating relationships the historical hydrological flows are reconnected.

This is precisely the kind of reconnection that these projects aim to achieve. Both initiatives seek to bridge historical disconnections between water, ecology, and urban form—elements fragmented by large-scale, top-down planning. Cascoland's temporary urban interventions invite people to engage directly with their surroundings, transforming neglected or ambiguous spaces into community assets. Rainproofing Amsterdam, meanwhile, operates at the intersection of ecological and infrastructural adaptation, making visible the underlying hydrological rhythms that were long suppressed or ignored by urban design.

By overlaying historical maps (see figure 7 and figure 1-iv map details) with contemporary urban data, a clear pattern emerges: areas experiencing frequent flooding today often correspond to historical lake edges, water-ways, or wetlands, and relationships between polders edges, erased canals, water systems or unresolved drainage. The persistence of water in these places is not incidental—it is a signal of the landscape's memory. The terrain itself speaks, revealing where past interventions have failed and where natural systems are now reasserting themselves.

figure 07 — page 27

Reconnection, then, is not just about adapting to climate risks—it is about acknowledging that accidents, failures, and disruptions are part of an ongoing negotiation between built form and natural processes. The task is not simply to mitigate these failures, but to engage with them—to listen, observe, and work with these re-emerging landscapes rather than against them. Initiatives such as Cascoland and Rainproofing Amsterdam (see figure 7) embody this shift, demonstrating that adaptation is not about imposing control but about recognizing the rhythms of place—and designing with, rather than against, its flows.

CONCLUSION

This article has explored the interaction between essential and accidental properties within Amsterdam's Nieuw-West and their relationship with the historical taskspaces that have shaped its urban landscape—both socially and environmentally. The separation between the essential function of substance and its accidental properties situates and reveals how historical trajectories inform contemporary vulnerabilities. It critiques how rigid planning models—reinforcing the separations inherent in Garden City ideals and modernist functionalism—have further fragmented spatial and social structures by privileging essential properties, such as singular efficiencies and predictable functionality, while systematically overlooking the accidental properties of substance.

By situating social and ecological relations that engage ecological rhythms, temporalities, and the uncertainties inherent to delta landscapes, the article reveals how so-called "accidents"—floods, infrastructural

failures, ecological degradation, and social disintegration—traditionally categorized by urban planning as unforeseen anomalies, are in fact structural and systematic outcomes of historical erasures, separations, and persistent neglect. These are not isolated events but inevitable consequences of abstraction and rigid control.

In addressing the geological, ecological, and social challenges within delta urbanism, the article highlights the importance of acknowledging historical and relational dynamics between essential and accidental properties that intrinsically shape landscape processes. Using Nieuw-West as a case study, it illustrates how the emphasis of urban design on efficiency, economics, and functional abstraction has neglected experiential differences and reciprocal relationships between social and ecological systems. This demonstrates how past planning decisions, such as land reclamation and large-scale infrastructures driven by visions of progress, have shaped current vulnerabilities, resulting in disconnections across land use, housing, transportation infrastructures, and collective taskspaces. These paradigms have deepened socio-environmental divides, disproportionately impacting marginalized communities, particularly immigrant populations.

Urban resilience in Nieuw-West—and in delta landscapes more broadly—requires recognizing accidents not merely as problems to be solved, but as conditions to live and design with. Embracing uncertainty and integrating accidental properties within the interconnected geological and hydrological rhythms of the landscape demands a paradigm shift: one that fosters socio-ecological integration and symbiotic relationships between ground, climate, and human activity. This strengthens the collective social and ecological imagination, reconnecting fractured relationships and cultivating landscapes that thrive by anticipating and accommodating accidents, rather than suppressing them.

Moving beyond economic models of densification that disrupt ecological rhythms and weaken community bonds, this article advocates for a dynamic urban planning approach. It calls for the reactivation of relationships between the built and natural environments through collective social practices. Reimagining social contracts as continuums of care—integrating the rhythms of natural and social systems, celebrating temporality, and emphasizing adaptability—builds capacity and community as inherent qualities of urban space. Initiatives like Cascoland and Rainproofing Amsterdam exemplify this approach by actively engaging collective social actions to strategically reconnect ecological layers and forgotten hydrological and geological relations. These efforts reinforce collective environmental imagination and embody reciprocities of care and stewardship.

Connecting the essential and accidental properties of any substance—whether land, infrastructure, climate, or human conditions—reveals an ongoing tension between the stasis of control and the flux of adaptation. Acknowledging this complexity and engaging with the accidental aspects, with the understanding that our actions are symbiotically interconnected, represents a first step toward fostering meaningful urban resilience. Working with, rather than against, the inherent instability of delta landscapes—and of the planet—requires collective actions that embrace the relational dynamics of substance and context.

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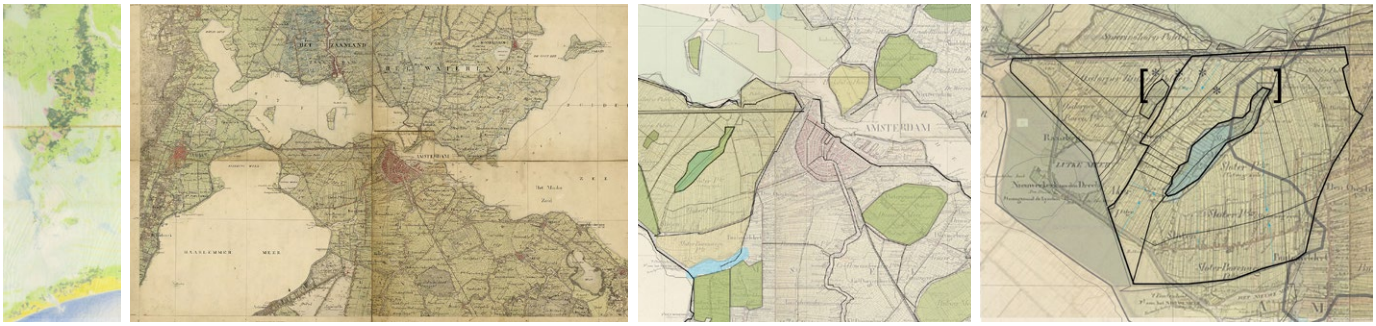

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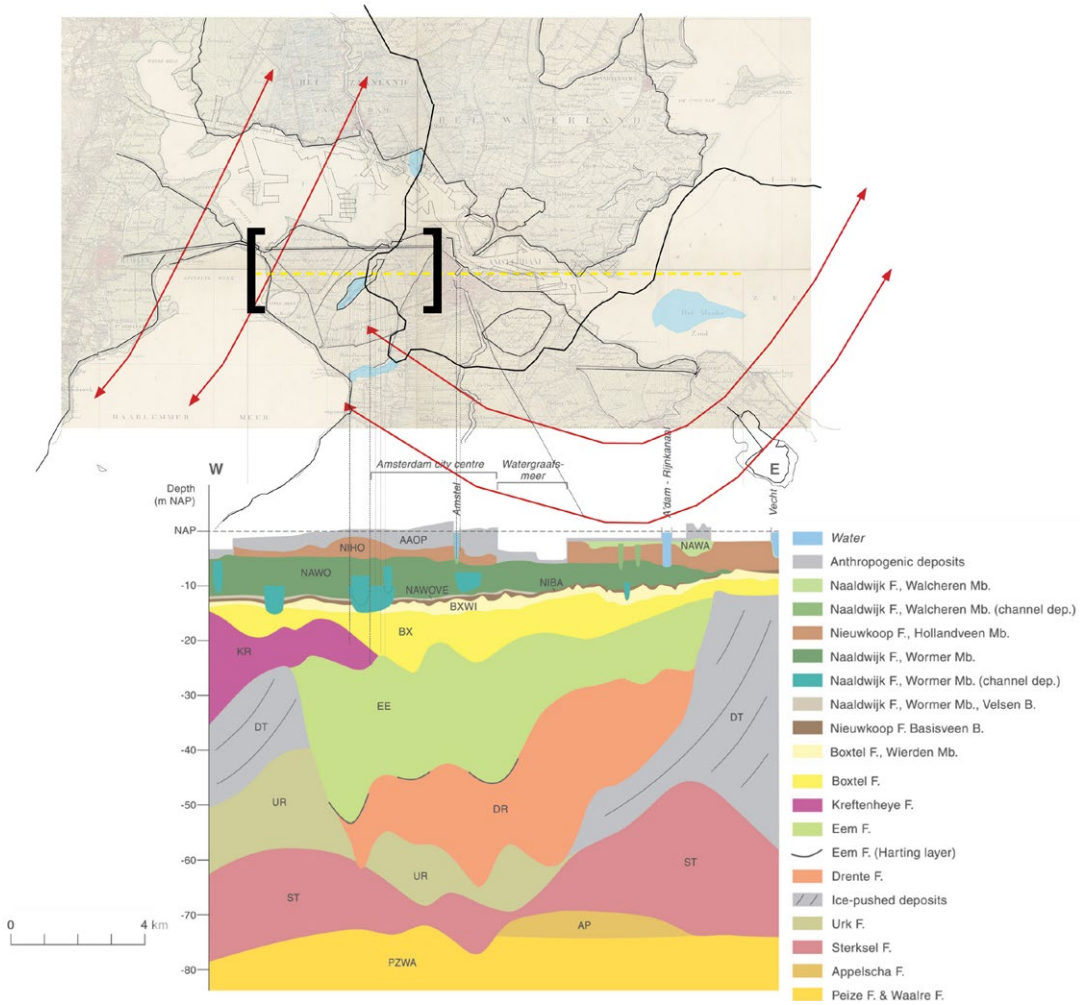
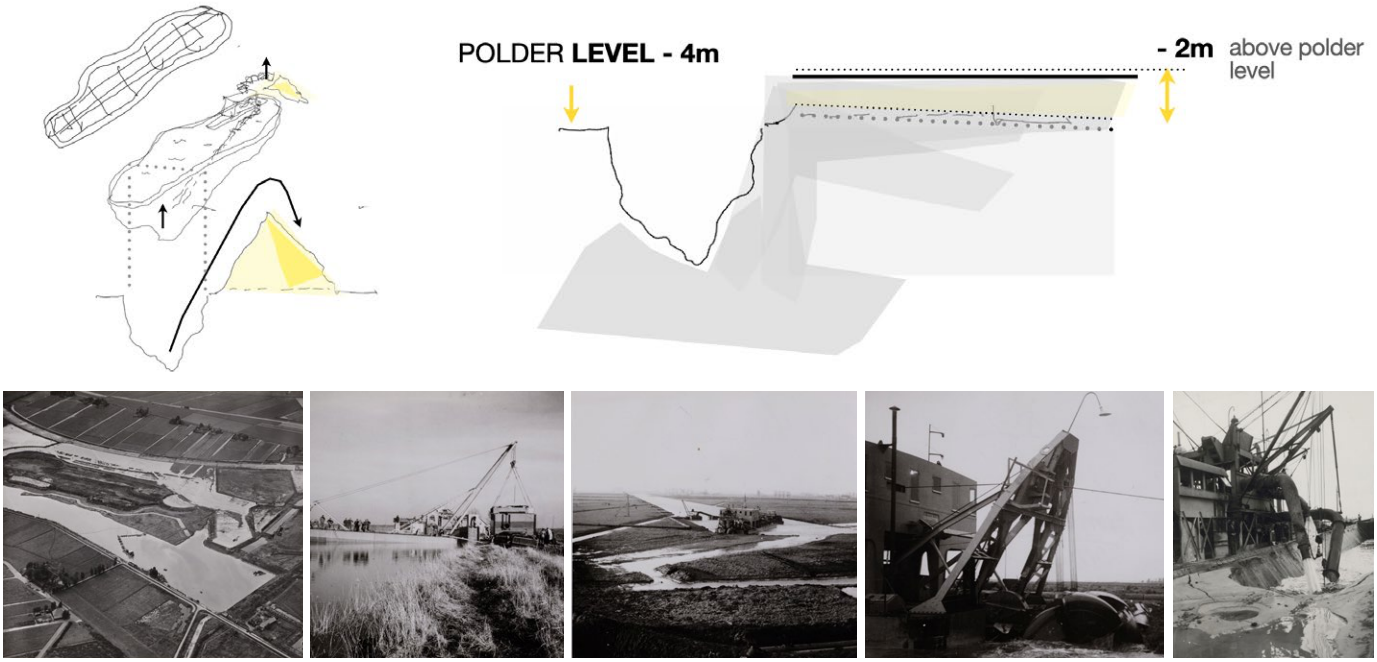


02

01 (i) Detail from Pjotr Gonggrijp. Morphological studies of the Dutch delta landscape, 1969. Collection Het Nieuwe Instituut, GONG 3;
(ii) Topografische kaarten van Amsterdam en omgeving, unknown author, 1850
(iii) Overlay Map, by author cvenart, highlighting polder edges and flows which combined a portion of figure ii.
iv) detail of Nieuw-West Overlay Map.

02 Top: Composite Map Diagram (C. Venart), compiled from i) Topographic Map (1850), Topografische kaarten van Amsterdam en omgeving [Fig.1(ii)] and ii) geomorphology of the southern Amsterdam glacial basin showing ice-pushed ridges of pre-late Saalian deposits (red lines, strike direction) from a regional analysis of glaciotectonic landforms. Bottom left: West–East cross-section from 3D subsurface modeling (Schokker et al., 2015) cutting through the basin and ridges, revealing Amsterdam's shallow geology. Bottom right: Borehole data (GDN, DINOloket, https://www.dinoloket.nl/en/subsurface-data) from Nieuw West Neighborhood (B25B0841, B25B0838) indicate relationships between past surface and subsurface formations.

Note: 3D visualizations such as DGM and GeoTOP (Schokker et al., 2015; Stafleu et al., 2021a) improve understanding of geological unit distribution, thickness, interrelations, and temporal-spatial dynamics between urbanization and subsurface processes in an estuarine landscape.



03

03 i) Aerial photo of Sloterplas under construction, looking west toward Sloterdijkermeerweg and Uitweg. Fototechnisch- en Cartografisch Bedrijf KLM, 8 Sept 1949. City Archives Amsterdam, A04139000709, 10003/43377 (copyright free).
ii) Slotermeer Expansion Plan – assembly of the cutter suction dredger after arrival in the Sloterdijkermeerpolder, near Ringspoordijk. Public Works Dept., Jan 1948. City Archives Amsterdam, 10009, image 010009010521 (copyright free).
iii) Slotermeer Expansion Plan – cunet for Bos en Lommerweg (later Burgemeester de Vlugtlaan). Public Works Dept., 11 Dec 1948. City Archives Amsterdam, 10009 , image 010009010532 (copyright free).
iv) Slotermeer Expansion Plan – excavation of the Uitweg at plot 85. Public Works Dept., 20 Oct 1948. City Archives Amsterdam, 10009, image 010009010530 (copyright free).
v) Sand dredger working for the Slotermeer Plan. Het Vrije Volk newspaper, 30 Sept 1950. City Archives Amsterdam, 10030/256`, image HVVA00256000011 (copyright free).

04

04 (i) Map of Amsterdam (1970), showinginfrastructural linkages between the historical center and Nieuw-West, and structural–scalar changes in networks (Oostoever, Ringweg-West, Amstelveensweg–Nieuwe Haagseweg, Ringweg Zuid). Produced by the Public Works Department, Surveying and Cartography Division. Crop and overlay by C. Venart and H. Weirsma. Amsterdam City Archives, Maps of the whole of Amsterdam, image D10100000005, 10035/1780
(ii) Robert Fruinlaan 15 (approx.) toward Sloterplas, Feb 1970. Amsterdam City Archives, Department of Spatial Planning, image 10009A000870, 10009.A
(iii) Cycling routes around August Allebéplein, Jan 7 1974. Amsterdam City Archives, Department of Spatial Planning, image B00000012372, 10009.B
(iv) Intersection of Robert Fruinlaan and Johan Huizingalaan, July 6 1977. Photographer J.M. Arsath Ro'is. Amsterdam City Archives, image 010122039097, 10122

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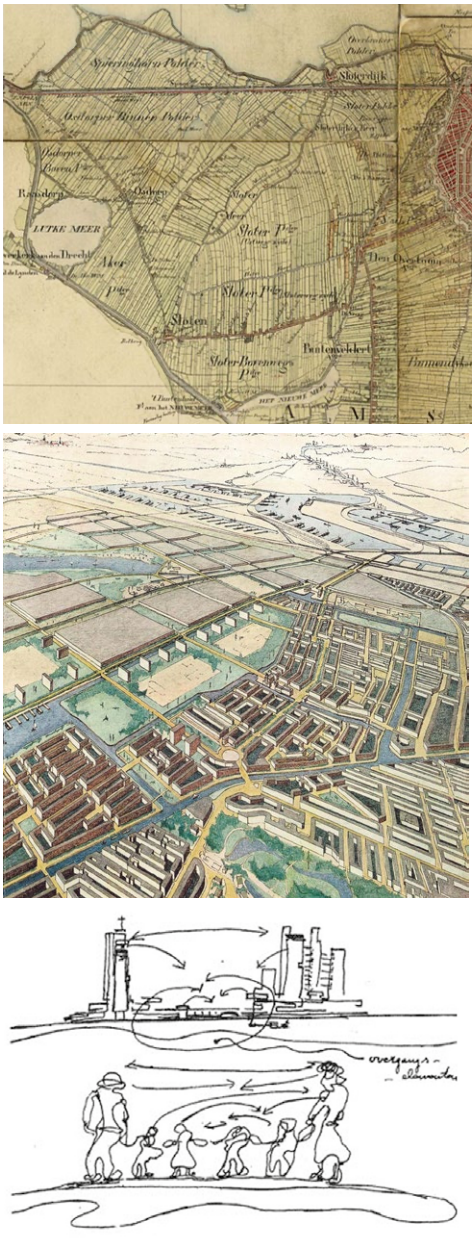

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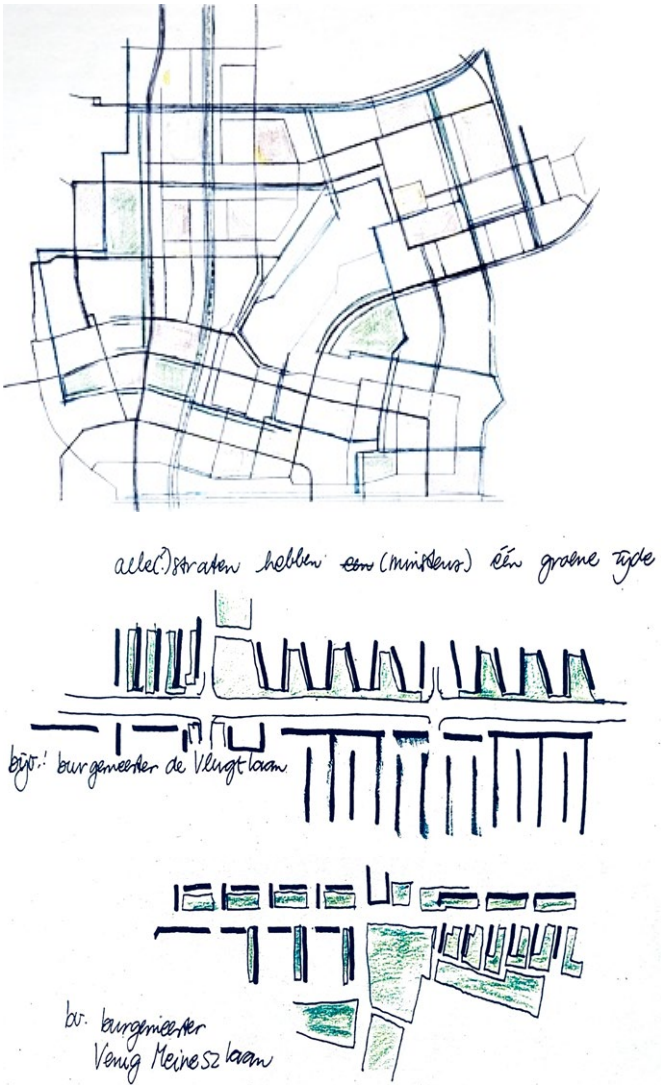

06

05 (i) Detail of area of focus from the 1850 Topographic Map of Amsterdam and surroundings [see Fig. 1(ii)].
(ii) Bird's-eye view of the Western Garden Cities, part of the 1934 General Expansion Plan of Amsterdam by Cornelis van Eesteren, seen from the southeast. In the foreground: Vondelpark, Surinameplein, Plan West, and Rembrandtpark. Bureau Monumenten & Archeologie (bMA) / Department for the Preservation and Restoration of Historic Buildings and Sites, Amsterdam. Public domain
(iii) J.B. Bakema, The Family Sketch (also known as Friendship Diagram). Het Nieuwe Instituut, Rotterdam, Archive of J.B. Bakema, BAKE_t42-1, link

06 (Left) A. Vos, (i) Tartan Pattern of Streets (p. 106) and (ii) Block Patterns / Types, Parkland (p. 60), 1995. Source: Anna Vos.

07

07 (i) Composite Overlay Map showing temporal layers and disconnections between ground configurations, indicating surface flooding and high groundwater (blue), and local interventions (Cascoland, Rainproofing). The overlay combines: Topografische kaarten van Amsterdam en omgeving (1850, public domain) [see Fig. 1(ii)]; Polderkaart van de landen tusschen Maas en IJ (W.H. Hoekwater, 1901, public domain); and the General Expansion Plan of Amsterdam (C. van Eesteren, 1935, Atlas Kok, 10095/497), with recent map data from Gemeente Amsterdam, 2023 (maps.amsterdam.nl). (ii) Still from H. Honigmann's documentary West Side Stories, depicting neighbour collaboration. (iii) C. Venart and A. Elgendi, neighbourhood garden initiative with Rainproofing Amsterdam and Cascoland—community-led greening of facades, balconies, and pavements.

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