Supplement

Reclaiming Opacity: Towards Errant, Exaptive and Monstrous Architectural Ecologies

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In his *Poetics of Relation*, Édouard Glissant laments the enforced transparency of a French language "given in advance"[1] and assumed to be fixed and absolute, and argues instead for dynamic and situated reconfigurations and diversions that, in francophone regions like the Antilles or Réunion, might "destabiliz[e] 'standard' French" and "provide the means for [a] place and its people to relate to the world as one among equivalent entities."[2] Hence, what is at stake is both the "renunciation of an arrogant, monolingual separateness"[3] (the ethnocentric privileging of an original language and set of uses) and the willingness "to enter into the penetrable opacity of a world in which one exists, or agrees to exist, with and among others."[4] As Glissant writes elsewhere, one should "speak with the knowledge that there are

[1] Édouard Glissant, *Poetics of Relation* (Ann Arbor: The University of Michigan Press, 2009), 119.
[2] Betsy Wing, "Translator's Introduction," in Glissant, *Poetics of Relation*, xii.
[3] Glissant, *Poetics of Relation*, 118.
[4] Ibid., 114.

other languages in the world."[5] Likewise, Timothy Morton describes opacity "not a[s] total nothing, but [...] as a *meaningfulness not for him*."[6]

Glissant's call for opacity imagines the transition from a totalitarian and appropriative form of understanding (the French *comprendre*, in the Latin sense of *com-prehendĕre*, to take with, to seize) to one that is relational, relative, and characterized by entanglements and interdependence (*donner-avec*, "giving-on-and-with").[7] Here, a Western model of humanity founded on ideals of rationality and universality (the projection and imposition of a single world-system used to measure and evaluate all others) is replaced by a relational web ("the weave"),[8] and the many worlds and humanities coexisting in what decolonial scholars call the "pluriverse."[9] Decrying the imperative to understand and *see through* (and the racist rejection of that which remains opaque),[10] Glissant thus identifies the acceptance and recognition of a reciprocal degree of impenetrability and unknowability as a necessary condition for co-existence. The present essay explores how this insight—the relevance of

[5] Édouard Glissant and Hans Ulrich Obrist, *The Archipelago Conversations*, trans. Emma Ramadan (New York: Common Era Inc., 2021), 37.
[6] Timothy Morton, "Frankenstein and Ecocriticism," in *The Cambridge Companion to Frankenstein*, ed. Andrew Smith (Cambridge: Cambridge University Press, 2016), 152.
[7] Wing, "Translator's Introduction," xiv.
[8] Glissant, *Poetics of Relation*, 190.
[9] See, for example, Samir Amin, *Delinking: Towards a Polycentric World* (London: Zed Books, 1985); Walter D. Mignolo, "DELINKING: The Rhetoric of Modernity, the Logic of Coloniality and the Grammar of de-Coloniality," *Cultural Studies* 21, no. 2–3 (March 2007), *449-514;* John Law, "What's Wrong with a One-World World?", *Distinktion: Journal of Social Theory* 16, no. 1 (2 January 2015): 126–39; Arturo Escobar, *Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds* (Durham: Duke University Press, 2018).
[10] *Edouard Glissant: One World in Relation*. Directed by Manthia Diawara. Third World Newsreel, 2010.

which cannot be overstated—might be put into practice in the context of architectural design.

Before delving into this question, however, it is perhaps useful to relate it to Aldo Leopold's *Sand County Almanac*, which inspired the GAMeC's "Thinking like a Mountain" project. Leopold's posthumously-published book develops a "land ethic" according to which something is right "when it tends to preserve the integrity, stability, and beauty of the biotic community."[11] By foregrounding the ethical dimensions in the interaction between humans and land—an "extension of ethics"—Leopold rejects a "strictly economic" basis for land relations that entails "privileges but not obligations,"[12] and calls for changing "the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it."[13] Like in Glissant's work, this transition—likely inspired by the traditional practices and philosophies of Indigenous Peoples in the American southwest—depends on the relinquishing of epistemic claims or, in other words, on the recognition of a measure of opacity.

Leopold explains that what characterizes the figure of the conqueror is precisely that he "knows, *ex cathedra*, just what makes the community clock tick, and just what and

[11] Aldo Leopold, *Sand County Almanac: With Essays on Conservation* (Oxford: Oxford University Press, 2010), 189. This passage is reminiscent of Bernice Fisher and Joanne Tronto's celebrated articulation of *care* as an "activity that includes everything we do to maintain, continue, and repair our 'world' so that we can live in it as well as possible. That world," they continue, "includes our bodies, ourselves, and our environment, all of which we seek to interweave in a complex, life-sustaining web." Bernice Fisher and Joan Tronto, "Towards a Feminist Theory of Care," in Emily K. Abel and Margaret K. Nelson, eds., *Circles of Care* (Albany: State University of New York Press, 1990), 40.
[12] Leopold, *Sand County Almanac*, 168.
[13] Ibid., 171.

who is valuable, and what and who is worthless."[14] The conqueror, that is, exercises knowledge by imposing violent forms of reduction, appropriation, and exclusion. Namely, he builds walls and fences that reduce reality to the difference between two sides (e.g. inside and outside, culture and nature, friend and foe, the enclosed and the common), imagining that the truthfulness of these dichotomies precedes his actions (it does not). Yet, the belief in a transparent world—in one coextensive with one's values, understandings, and desires; in one where actions simply and solely cause the intended effects—by definition precludes an awareness of the world's actual complexity and interdependence. As the conqueror thrusts his narrow interpretation of reality upon beings and land, he fails to recognize himself as a mere "link in many chains,"[15] or to appreciate that agentic capacity is, in Jane Bennett's words, "distributed across an ontologically heterogeneous field."[16] As Glissant and Patrick Chamoiseau write in *Manifestos*, "all conquerors are secretly conquered. All those who dominate are ruined by nothing other than the alchemy of their domination. [...] Those who exercise brutal and blind power are burdened by inescapable weakness."[17]

The conqueror and his avatars (e.g. industry, agriculture, transportation) don't see land in Leopold's terms—as a situated "fountain of energy flowing through a circuit of soils, plants, and animals"[18]—but as a mere collection of

[14] Ibid.
[15] Ibid., 181.
[16] Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham: Duke University Press, 2010), 23.
[17] Édouard Glissant and Patrick Chamoiseau, *Manifestos*, Planetarities (London: Goldsmiths Press, 2022), 27.
[18] Leopold, *Sand County Almanac*, 181.

resources to be claimed, extracted, processed, and exchanged. The ensuing "worldwide pooling of faunas and floras"[19] concentrates power around a few countries and corporations, and disrupts the ecological networks upon which many humans and nonhumans depend, producing damaging and unequal effects (e.g. marginalization, impoverishment, pollution, erosion, the extinction of species, and the depletion of soils) that are often not intended or foreseen, and that elude accountability. Similarly, the productive flows and destructive ebbs of the construction industry contribute directly to ecocidal and discriminatory patterns of land use, exploitation, and environmental harm—ones that architects and designers can no longer ignore. Can the lesson learnt from Glissant and Leopold—that co-existence and care demand the deliberate preservation of opacities—promote different design sensibilities and forms of architectural literacy and practice?

Designing is (1): Transparentizing

Whether we call something transparent or opaque may depend on whether we believe ourselves capable of grasping it or of predicting its future. In this sense, a window is transparent not because its pane is made of glass and I can see through it, but because by seeing through it I confirm its window-ness, its essence as an opening capable of "admitting light or air and allowing people to see out."[20] To be transparent, then, is to fulfil a design prophecy; not to be *seen*

[19] Ibid., 182.
[20] *Oxford English Dictionary,* s.v. "window (n.)," March 2024, https://doi.org/10.1093/OED/9365984529.

through (the window affording views and the transmission of light) but to be reduced to what is visible (a window-object I can name and define, as well as open to let fresh air into the room).

My proposed use of the term "transparency" does therefore not describe a physical quality or condition (the state of actually being clear or limpid), but an object's compliance with the privileged roles, meanings, and communication channels assigned to it by a design project (the window-ness of the window, as opposed to its existence as extracted landscapes; melted rocks and sand; loose constellations of glazing panels, aluminum extrusions, and rubber gaskets; or glass shards and demolition rubble). That is to say: transparency consigns objects to specific visualizing practices, temporalities, and functional regimes, bridging the gap between being and being visible or useable—between what something is (or how it came to pass) and what it is for.

A design project brings some aspects of reality to the surface, sinking others. Following in the conqueror's footsteps, it constructs physical and extra-physical boundaries that, across scales and operations, make it possible to separate what and who has value from what and who does not. "To be declared redundant," explains Zygmunt Bauman, "means to have been disposed of *because of being disposable*."[21]

Mining is one case in point: it reduces mountains and their layered ecologies to concentrations of ore—to rock and sediments that can be removed in order to reach metals like aluminum or gold. While these violent processes of

[21] Zygmunt Bauman, *Wasted Lives: Modernity and Its Outcasts* (Cambridge: Polity, 2011), 12.

accumulation are obviously political—they depend on systems of power capable of assigning disposability to mountains, rivers, humans, and nonhumans—the design project paints them in an objective and neutral light, foregrounding functional inevitabilities (the light weight and malleability of aluminum in response to specific fabrication or programmatic concerns); aesthetic desirability (the slick appearance of polished or brushed aluminum); or even sustainability (the metal's presumed circularity).[22] Here, once again, transparency does not describe clarity, but the partial ways in which design projects articulate their outputs.

At the same time, the techno-social operations associated with the primary production of materials and building components, and with their increasing purity, activate discursive re-appropriations that, after each step, rename and renew the ensuing outputs (e.g., from bauxite ore to sodium aluminate; from alumina powder to aluminum ingots; from extruded aluminum to window mullions), also shedding their locality and specificity (from *this* riverbed or mine to a generic concrete or aluminum material) and occluding the circumstances and effects of their production (e.g. environmental and social damage; labor conditions; the expenditure of energy, water, and carbon).[23]

Yet importantly, while unmooring products from specific contexts and increasing their equivalence and exchangeability on the global marketplace, these operations also mobilize materials and components towards targeted

[22] For a sophisticated account of the shortcomings of the secondary production of aluminum, see Carl A. Zimring, *Aluminum Upcycled: Sustainable Design in Historical Perspective* (Baltimore: Johns Hopkins University Press, 2017).
[23] I have developed an analysis of these processes, and of the associated "technical tabula rasa," in Simone Ferracina, *Ecologies of Inception: Design Potentials on a Warming Planet* (Abingdon & New York: Routledge, 2022), 11–29.

construction systems and horizons of use, both increasing their ability to interact within set ecologies (e.g., the effective assembly of frames, gaskets, and insulated glazing panels giving rise to a high-performing window), and establishing strict parameters for their compatibility, compliance, and inclusion (once a component fails to perform, it is scrapped and replaced). The "transparentizing" model of design thus described presumes a relatively linear and faithful translation from design intents to designed outputs—the former being sequentially wrought from and embodied in the latter. This naïve understanding of causality and ontology, according to which a thing's being fully coincides with what it was designed to be—with its function—entrusts the value of designed objects to their continued ability to perform their given scripts and identities. If something *is* a bicycle, or a window, or a postbox, it can only maintain its value by remaining useable or exchangeable as one; by holding on to the essential properties and capacities associated with that role.

Objects are discarded when they can no longer perform, either because they deteriorate and break, or because they become outmoded and undesirable in comparison with newer and better-functioning (or more commercially viable) ones.[24] Whatever the reason for their demise, the horizon of their worth or obsolescence is not neutral, natural, or intrinsic, but is defined in the shadow of—and constructed by—the various functions assigned to them through design projects. There, the violence of disposal (e.g., the ability to demolish

[24] See Vance Packard, *The Waste Makers* (New York: Pocket Books, 1969), 46–47. For an historical account of the gap between the physical decay and economic depreciation of buildings, see Daniel M. Abramson, *Obsolescence: An Architectural History* (Chicago and London: The University of Chicago Press, 2016), 12–37.

a poorly insulated post-war building, to throw away an unfashionable sweater, or to landfill the blade of a wind turbine) is guaranteed and protected by identities understood to be univocal and definitive, and so are the associated assimilations and dissipations.

Yet other design paradigms are possible, ones that give in to opacity, and that view identities as porous, mutable, and dynamic. "[W]here identity-as-wall closes down," write Glissant and Chamoiseau, "identity-as-relation opens up."[25]

Taking Objects for Walks (1): Errant Design

Evidence of the irreducibility of objects to their functional roles and definitions is everywhere for one to see (e.g., landfills, oceanic garbage patches, asbestosis). In a domestic setting, the fact that a seat is not just a "place or thing to sit upon,"[26] despite having been designed and fabricated as one, is demonstrated by the regular misusing of chairs (as door stops, shelves, foot rests, step ladders, props, and coffee tables).[27] The illusion that the chair-object has a fixed and transparent identity—that it is *solely* a chair—vanishes as soon as we recognize that its functional orientation is continually subject to local attunements and readjustments; in other words, depending on who uses it and when, the chair may in fact turn into various objects (e.g. a stage for a singing child, a bed for a lazy cat, a stand for a stack of books, a

[25] Glissant and Chamoiseau, *Manifestos*, 25.
[26] *Oxford English Dictionary*, s.v. "seat (n.)," June 2024, https://doi.org/10.1093/OED/8248712283.
[27] Reyner Banham, "Chairs as Art," *New Society,* April 20, 1967. Quoted in Nigel Whiteley, *Reyner Banham: Historian of the Immediate Future* (Cambridge: MIT Press, 2002), 354.

hanger for a dress).

To be clear, I am not suggesting that every object, room, or building can fluctuate between primary and secondary uses and users with the same ease as a chair—not even every chair can. I am however claiming that objects, rooms, and buildings are not what we design them to be—that while a primary function anchors them, for some time or at certain intervals, to a common name (chair, window, wind turbine, shopping center) and to a horizon of use (their being "in-order-to" do something or "in-terms-of" other items),[28] there is always something more: a surplus or excess, an undisclosed potential, an unpredicted affordance or disposition, an unexpected remainder or effect.[29] "The opaque," explains Glissant, "[...] is that which cannot be reduced."[30] Erin Manning goes further: "opacity claims the uncertainty of the as-yet-unknowable," she writes, "as its strongest ally."[31]

Acknowledging this opacity—these opacities—means expanding the purview of architectural design, its responsibilities, and its methods. It means recognizing that every object, room, and building is not an object, room, or building as much as a bundle of potentials—only some of which are

[28] I am referring here to Heidegger's notion of equipment. See Martin Heidegger, *Being and Time*, trans. John Macquarrie and Edward Robinson (Oxford: Basil Blackwell, 1962), 105.

[29] Some readers will notice here some similarities with the notion of withdrawal in Graham Harman's object-oriented philosophy. However, I am interested in unknowability and non-relationality as political and anti-essentialist moves, whereas for Harman they are gateways to essences and autonomy. For my full critique of object-oriented ontology in architecture, see Ferracina, *Ecologies of Inception, 192–234.*

[30] Glissant, *Poetics of Relation*, 191.

[31] Erin Manning, *For a Pragmatics of the Useless* (Durham & London: Duke University Press, 2020), 47.

actualized at any given moment. Importantly, this identifies actualization not only as a function of production/individuation (the organization and forming of matter towards chairs and shopping centers) but as a function of encounters (the relational activation and mutual unlocking of potentials). This mutual unlocking, unlike the extrusion of aluminum window frames or the firing of terracotta roof tiles, does not occur once and for all, resulting in what Steven J. Jackson calls "congealed forms of human labor, power and interests," but must be continuously preserved, maintained, and extended through "the ongoing forms of labor, power, and interest—neither dead nor congealed—that underpin the ongoing survival of things as objects in the world."[32] "Things," add Jérôme Denis and David Pontille, "are incomplete. They are permanently in the process of being made."[33] And while maintenance (caring for things) reveals a "density" or "thickness" that "defies the transparency and apparent platitude of objects,"[34] all manners of use, misuse, and reuse persistently construct, deconstruct, and reconstruct their identity, negotiating and supplementing their incompleteness. A bicycle that falls into the sea becomes an artificial reef; a wind turbine used for hide and seek becomes a playground;[35] a cockpit installed over a roof becomes a window;[36] a postbox

[32] Steven J. Jackson, "Rethinking Repair," in *Media Technologies: Essays on Communication, Materiality, and Society,* Tarleton Gillespie, Pablo J. Boczkowski, and Kirsten A. Foot (eds.) (Cambridge: The MIT Press, 2014), 230.
[33] Jérôme Denis and David Pontille, *Le soin des choses: politiques de la maintenance* (Paris: la Découverte, 2022), 23. My translation.
[34] Denis and Pontille, *Le soin des choses,* 23. My translation.
[35] See, for example, the *Wikado Playground* by Superuse Studios.
[36] I am referring to *House Kelchtermans* by Marcel Raymaekers. See Arne Vande Capelle, Stijn Colon, Lionel Devlieger, and James Westcott, *Ad Hoc Baroque: Marcel Raymaekers' Salvage Architecture in Postwar Belgium*, eds. James Westcott and Arne Vande Capelle (Brussels: Rotor vzw/asbl, 2023).

inhabited by birds turns into a nest.[37]

The encounters between diverse actors and actants (birds, envelopes, postboxes, children, bicycles, aquatic microorganisms, postmen, wind turbines, pavements, etc.) do not abide by predetermined recipes or instructions, growing out of a singular root. Rather, they describe an errant movement (a "dialectics of rerouting")[38] that takes objects for walks, privileging the many languages of contingent relations over "the totalitarianism of any monolingual intent."[39] The errant, explains Glissant, "challenges and discards the universal—this generalizing edict that summarized the world as something obvious and transparent, claiming for it one presupposed sense and one destiny. He plunges into the opacities of that part of the world to which he has access."[40] Errantry neutralizes the equivalence between potentiality and a predetermined *telos* or aim—the oak tree in the acorn—allowing potentials to emerge in response to specific situations and contexts—the acorn as pig-fattening mast, as habitat for developing larvae, as food source for squirrels, and as ingredient in soups.

An errant design practice therefore muddles any neat separation between design, construction, use, maintenance, and repair, calling into question both the authority of primary designs—their official projects, actors, scripts, and values—and their spatiotemporal completeness or autonomy. Indeed, instances of how "the seemingly closed systems in which [...] objects function" may "be rendered sites

[37] The latter example is borrowed from Sara Ahmed. See Sara Ahmed, *What's the Use? On the Uses of Use* (Durham: Duke University Press, 2019), 35.
[38] Glissant, *Poetics of Relation*, 16.
[39] Ibid., 19.
[40] Ibid., 20.

of potential and unexpected plasticity,"[41] or of how their valuing and devaluing boundaries might be erased and redrawn, abound. One might think of the Russian folk artefacts documented by Vladimir Arkhipov;[42] of the Neapolitan "veto against the closed and hostile automatism of machines" described by Alfred Sohn-Rethel;[43] of the Cuban "technological disobedience" articulated by Ernesto Oroza, which develops by separating "the object from the Western intent and lifecycle it was destined for;"[44] or of what Sara Ahmed calls "queer use," which diverts objects towards different uses *and users* (those excluded, implicitly or explicitly, by their primary designs).[45]

By radically expanding the notion of "functional plasticity," a minimum degree of which André Leroi-Gourhan associates with the fact that, for example, chairs can be used by different bodies sitting in different positions,[46] errant design turns every object into a medium for functional and political recalibrations and reclamations. At a minimum, such a practice places design efforts within wider spatiotemporal continua, foregrounding the partiality of any given project, and challenging the very possibility of new beginnings (a *tabula rasa*) or definitive ends.

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[41] Gean Moreno and Ernesto Oroza, "Generic Objects," *E-Flux Journal*, no. 18 (September 2010).
[42] Vladimir Arkhipov, *Home-Made: Contemporary Russian Folk Artifacts*, (London: Fuel, 2006).
[43] Alfred Sohn-Rethel, "The Ideal of the Broken Down: On the Neapolitan Approach to Things Technical," *Hard Crackers: Chronicles of Everyday Life* (blog), February 15, 2018.
[44] Ernesto Oroza, "Technological Disobedience," *MKSHFT.ORG* (blog), July 7, 2020.
[45] Ahmed, *What's the Use?,* 199.
[46] André Leroi-Gourhan, *Gesture and Speech* (Cambridge: MIT Press, 1993), 301.

Designing is (2): Potentializing

A bicycle is not always a form of transport. Or, borrowing from Latour, it is not one "by itself, but always by others."[47] In other words, the ability to act as a form of transport does not belong to the bicycle as an object in isolation, but to its encounter with other objects: suitable road surfaces and signage; air pumps and bike mechanics; human limbs and their muscular strength, and so on. Indeed, the bicycle will have been designed to facilitate these interactions: the wheels optimized for certain terrains, the frame sized for comfortable sitting and riding, and the crank lever and drive arm engineered to transfer to the wheels the force exerted onto the pedals.

In the book *Ecologies of Inception: Design Potentials on a Warming Planet*, I developed a philosophy of design that prioritizes potentials (the ability to do or to change) over objects.[48] Rather than focusing on outputs in relative isolation (e.g., the bicycle), or on their individual properties and identities, the book turned to the relational ecologies across which their potentials are unlocked (e.g. the body-bike-road assemblage), adopting them as fundamental units of design. Here, design—broadly understood—needs not be a productive or poietic endeavor (or, in Vilem Flusser's words, "one of the methods of giving form to matter and making it appear as it does and not like something else").[49] Instead, I claim that its main function is the potentializing of objects in

[47] Bruno Latour, *The Pasteurization of France*, trans. Alan Sheridan and John Law (Cambridge & London: Harvard University Press, 1988), 161.
[48] Simone Ferracina, *Ecologies of Inception: Design Potentials on a Warming Planet* (Abingdon & New York: Routledge, 2022).
[49] Vilém Flusser, *The Shape of Things: A Philosophy of Design* (London: Reaktion, 1999), 26.

relation to one another, rendering them capable of mutual communication and interaction. This definition releases architectural design from its extractive course, inviting other forms of care, use, and praxis into its creative purview.

The shift proposed (from production to relation; from objects to ecologies) begins to move in the directions suggested by Glissant and Leopold—towards opacity and humility as constitutive aspects of any ethical design practice. While transparency can be easily mapped onto objects, and can borrow the universalizing strength of ontology and the commonsensical truth of language (this *is* a chair; this *is* a shopping mall), the wider ecologies from which potentials emerge resist absolute and fixed denotations, remaining subject to contextual and situational adaptations and revisions (from chair to stepladder to hanger; from shopping mall to vacant building to community center).[50] One might say that to foreground potentials is to prioritize the "ongoing survival of things as objects in the world" over their presumed identity or the associated projects or, rather, to admit that things "get their identity not from their genealogy but their constant exchange with others."[51] The openness and humility required to protect opacity thus imbue objects with a tremulous and oscillatory quality—an irreducible sensitivity and plasticity. Glissant writes that a "poetics of trembling [...] allows us to be in real contact with the world and

[50] I am referring to the repurposing of a vacant department store in Edinburgh, which I have written about here: Simone Ferracina, "The Ethics of Use: Repurposing Debenhams," *E-Flux Architecture*, "After Comfort: A User's Guide," Daniel A. Barber, Jeannette Kuo, Ola Uduku, Thomas Auer, and Nick Axel (eds.). https://www.e-flux.com/architecture/after-comfort/563085/the-ethics-of-use-repurposing-debenhams/

[51] Glissant and Obrist, *The Archipelago Conversations*, 34.

with the peoples of the world."[52] "The thinking of *tremblement*," he explains, "is this: even when I am fighting for my identity, I consider my identity not as the only possible" one.[53]

Taking Objects for Walks (2): Exaptive Design

The previous section proposed to relinquish the centrality of objects (e.g., the bicycle; the chair; the building), and to turn the reader's attention towards their declared and undeclared potentials (e.g., cycling/...; sitting/sleeping/changing a bulb/...; cooking/reading/eating/...), adopting the constellations that collectively unlock them—I call them "ecologies of inception" (or EoI)[54]—as fundamental units of design. EoIs can be either active in synchronous arrangements, describing the potential sparked in ongoing exchanges and situations (e.g., the body-bike-road assemblage), or in diachronic ones, identifying the transformations and translations that, over longer time spans and distances, predispose objects towards certain capacities.

Ecologies of the latter kind identify—and follow across phases and geographies—the operations and conditions

[52] Ibid., 140–41.
[53] Ibid., 148.
[54] "Inception," from the Latin *incipere* (to begin) and *capere* (to be receptive, to grasp), refers to the relational unlocking of potentials. In addition, the alternate root *in-capere* (to enclose, to incorporate) addresses the violence that often accompanies potentializing projects (the fact that potentials don't magically appear, but are usually taken or transferred from someone/somewhere else). My proposed Italian translation, "ecologia dell'utilizzo," accounts instead for the semantic difference between use and utilization. Because of the Greek suffix *-izein*, the latter doesn't simply mean "using", but rather "rendering useful." See also Simone Ferracina, "Yet," *Vesper. Journal of Architecture, Arts & Theory* 8 (May 31, 2023): 208–9.

associated with the production and supply of commodities, binding them to their environmental and social effects. As a result, the consequences of an object's production ("externalities" such as the soil degradation caused by the extraction and refining of bauxite ore) would be, so to speak, re-internalized, and the affordances or value of objects (e.g. aluminum bike frames, window mullions, inner liners and lids) could no longer be understood in abstract functional or economic terms, but as superficial ripples indexing deeper ecological upheavals.[55] Different value systems and forms of visual and spatial literacy would then be required, ones capable of detecting and rejecting the violence unleashed by future buildings, while recognizing and honoring that embodied in existing ones.[56]

Aldo Leopold's celebration of cranes in the "Marshland Elegy" chapter of *Sand County Almanac* poetically situates the bird's existence in the context of its evolutionary history. "When we hear his call," he writes, "we hear no mere bird. We hear the trumpet in the orchestra of evolution."[57] He continues: "a crane marsh holds a paleontological patent of nobility, won in the march of aeons, and revocable only by shotgun."[58] With the necessary adjustments, I think of

[55] For work in this vein, see for example: Andrés Jaque (Office for Political Innovation), "Architecture as Ultra-clear Rendered Society," in Vanessa Grossman and Ciro Miguel (eds.), *Everyday Matters: Contemporary Approaches to Architecture* (Berlin: Ruby Press, 2022); Kiel Moe, *Unless: The Seagram Building Construction Ecology* (New York: Actar Publishers, 2020); Jane Hutton, *Reciprocal Landscapes: Stories of Material Movements* (Abingdon and New York: Routledge, 2020).
[56] I am thinking here of Charlotte Malterre-Barthes and Zosia Dzierżawska's brilliant recasting of architecture as a form of resource stewardship and care. Charlotte Malterre-Barthes and Zosia Dzierżawska, "New Rules," *Cartha* No. 6, June 2022. See also Charlotte Malterre-Barthes and Zosia Dzierżawska, "Architecture without Extraction," in *The Architectural Review*, November 18, 2021.
[57] Leopold, *Sand County Almanac*, 160.
[58] Ibid.

ecologies of inception in a similar fashion: notwithstanding an object's current status, they position it within ontogenetic trajectories that endow it with meaning and value—a "patent of nobility" of sorts, even when "nobility" is shorthand for upholding, or not forgetting, the cost of injustice and uneven exchange.

One might turn Donna Haraway's exhortation to "stay with the trouble" into a battle cry: a call to celebrate the labor, carbon and energy within extant things; to care for that which has been designed by others, for others, and in other times; to make "odd kin" with the unwieldy remainders of previous constructions, uses, and deconstructions;[59] to embrace the opacity and recalcitrance of that which already exists and cannot be remade from scratch, or modelled after the mind's eye. Since 2013, I have called such an approach "exaptive design," with reference to the term exaptation, coined in 1982 by paleontologists Stephen Jay Gould and Elisabeth S. Vrba.[60] In evolutionary morphology, the term refers to features that, rather than being built by natural selection towards a specific goal or set of functions (*ad* + *aptus*, towards a fit), were originally built for one role, or for no reason whatsoever, and later co-opted to perform another (*ex* + *aptus*).[61] Examples include the development of bird

[59] Donna Haraway, *Staying with the Trouble: Making Kin in the Chthulucene*, (Durham & London: Duke University Press, 2016), 4.
[60] Simone Ferracina, "Exaptive Architectures," in *Unconventional Computing: Design Methods for Adaptive Architecture*, eds. Rachel Armstrong and Simone Ferracina (Toronto: Riverside Architectural Press, 2013), 62–65. See also Simone Ferracina, "Exaptive Design: Radical Co-Authorship as Method," in *Experimental Architecture: Designing the Unknown*, ed. Rachel Armstrong (London & New York: Routledge, 2019), 121–43; and a revised version of that chapter in Ferracina, *Ecologies of Inception*, 165–191.
[61] Stephen Jay Gould and Elisabeth S. Vrba, "Exaptation: A Missing Term in the Science of Form," *Paleobiology* 8, no. 1 (1982), 6.

feathers (originally intended for thermoregulation, and then co-opted towards their ability to fly) and of bones (originally intended as stores of calcium phosphate, and then co-opted towards the construction of supporting skeletons).[62] Critically, like Ahmed's queer use, these co-options release "a potentiality that already resides in things *given* how they have taken shape."[63]

Evolutionary chains of adaptation and exaptation confirm that the acquisition of fitness (what Gould and Vrba call "aptation") does not depend on current functionality and productivity—on whether something works or works well (complying with predetermined *teloi*, standards, norms, and intentions). On the contrary: they link the emergence of new functions and uses—the very possibility of novel evolutionary steps and forms of life—to the preservation and availability of "genetic redundancy."[64] "The monstrosity of variation, speciation, and so on" explains Timothy Morton in reference to the construction of human lungs, which exapted the swim bladders of fish, "is the reason why evolution works at all. Monstrosity is *functional*."[65]

Could such monstrosities and our ability to stay with and cherish them hold the key to a more sustainable and just future? If, in redundancy, a transparent world could only see disposability, could exaptive design turn it into a "reserve of inventions and possible reversals"[66]? Could the active preservation of opacity—of the continued separability of forms from functions—turn out to be a superpower?

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[62] Gould and Vrba, "Exaptation," 7–8.
[63] Ahmed, *What's the Use?,* 200.
[64] Gould and Vrba, "Exaptation," 14.
[65] Morton, "Frankenstein and Ecocriticism," 153.
[66] Gilles Clément et al., *The Planetary Garden and Other Writings* (Philadelphia: University of Pennsylvania Press, 2015), 36.

Thinking Like a Mountain

Biographical Notes

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His research and teaching investigate the technical infrastructures, theories, and methodological approaches required to move architectural discourse and practice beyond extraction, ecocide, and environmental injustice; and to challenge narrow disciplinary and economic understandings of authorship, habitation, use, and value. He is interested in the conceptualisation, production, and circulation of building materials, with a particular focus on reuse and repurposing.
His monograph Ecologies of Inception: Design Potentials on a Warming Planet (Routledge 2022) begins from the *tabula rasa* as a figure of potentiality to develop a philosophy of design grounded on acts of reclamation and care.