



AR

Architecture Research
/ Arhitektura, raziskave

Form of Resistance
/ Oblika upora

2022

Architecture Research
/ Arhitektura, raziskave

Form of Resistance
/ Oblika upora



9

21

33

53

73

95

121

To Resist: Between Hubris and Compassion

Editor's Foreword

Agostino De Rosa

Upornost, med napuhom in sočutjem

Uvodnik

Agostino De Rosa

Porch Notes

Charlie Hailey

Stretched Out

Spatializing the Pregnant Body

Elizabeth Cronin

Space, Body, Architecture

Towards a Difficult Balance

Renato Bocchi

Aesthetics of Resistance

Fabio Quici

Arcangelo Sassolino and the Italian School of Engineering

Tullia Iori

141

165

179

211

231

249

253

Warped Versus Regular Surfaces

A Form of Resistance to Canonical Shapes, from
Reims Cathedral to Le Corbusier

José Calvo-López, Enrique Rabasa-Díaz

The Resilience of Small Numbers

From Self-Construction to Symbol

Aldo Aymonino

Forests of Resistance

Memorial Strategies in Forested Landscapes of
Socialist Yugoslavia

Vida Rucli

House in Tateshina

Kazuo Shinohara's Transformational Space

Giorgia Cesaro

The Resistant Capacity of Architecture

Petra Čeferin

Against All Homologation

Prefatory Artworks by Claudio Patanè

Claudio Patanè

Biographies

To Resist: Between Hubris and Compassion

Editor's Foreword

Agostino De Rosa

- 1 Cfr. François Ozon, *Sous le sable* (Paris: L'Arche, 2011). More generally, on Ozon's cinematographic work see: Loïc Bourdeau, ed., *The Films of François Ozon* (Edinburgh: Edinburgh University Press, 2021).

Maybe some of you will remember *Sous le sable*¹ (France 2000), a beautiful and poignant film by director François Ozon (1967) from several years ago. For those who haven't seen it, the film tells the story of Marie (played by Charlotte Rampling, 1946) and Jean Drillon (Bruno Cremer, 1929–2010), a middle-aged couple who have been married for many years. He is French and she is English; they live in Paris and have no children. One day, during a summer vacation, Marie falls asleep on the beach while Jean goes swimming. The man, however, disappears into thin air, perhaps drowned. Having completed the formalities with the local authorities, Marie, returned to Paris, tries to start living again, while the police continue the investigation into the disappearance of her husband. However, her life develops daily as if Jean had never disappeared: in fact, she talks to him, makes love with him and astonishingly refers to him, with her friends, if he were present, there with her. And in the film he really 'is' with her: we see him undressing Marie, eating with her ... But the truth, evident to all, is opaque only in her eyes, even when the police of seaside village recover her husband's body drowned. In the movie's final scene, Marie returns to the beach that has seen them happy together, for the last time, and suddenly she sees, in the distance, the silhouette of Jean on the shore, walking away. Marie starts running to reach him: the scene, on which the credits fade with the beautiful score of Philippe Rombi (1968), is destined to never end. In fact, Marie's race towards Jean's ghost is not concluded, nor could it ever be. It seems that she approaches him, but in reality he remains unreachable: the image thus continues *ad infinitum* in a moving loop.

I believe that this scene explains perfectly, better than a thousand arid projective and mathematical demonstrations, in a poetic way, what a 'vanishing point' is: a fake image of something so far away (infinitely distant) that is never reached. The same phantasmic essence of Jean in the background, never reached by Marie, seals the failure of the human vision in trapping (and reaching) what is no longer among us and which, perhaps, never was. After all, the perspective, and the representation in general, is in some ways precisely this: the death of the object, its hypostatization. Yet this deadly scene from Ozon's movie also visually explains to us what the term 'resistance' means: opposing the inevitability of nature, destiny, the known and unknown forces that surround and condition us, of our ego and oppose our desire to it, our will and also our unreasonableness. The scene therefore seems to allude to a form of resistance to the impossibility of representing the infinite, in this specific case, from a merely human position and therefore eternally condemned to failure. The etymology in this case comes to our aid: the term derives from the late Latin

resistentia, derivative of *resistere*, "resisting", to indicate the action and the fact of opposing something or someone, but also the way and the means themselves with which such actions take place. It has various semantic nuances, for example in the military field (defense action against the enemy or the adversary), but also legal (the right to oppose, even by force, any attack or threat affecting the fundamental and inviolable rights of man by the established power). But I would like to dwell on its mechanical meaning where the verb 'resist' alludes to any force that opposes the motion of the body to which it is applied: this definition therefore seems to fit perfectly, in its double articulation, to the conventional domains of the architect, that of the representation and of building. The first involves a process of objectification of the real, through the aid of a mechanism external to the observer, which in the specific case consists of a projection. Projection, in the cultural status of an architect, is a transformative action that allows objects belonging to domains characterized by three dimensions to be brought back to their flat representation with the inevitable loss of one of them: a process therefore of *reductio* and *translatio* that makes clear a strong mechanical action de-anthropomorphizing resistance.

Any architectural projection constitutes a form of profound abstraction with respect to reality and therefore implies a form of logical-rhetorical construction that eliminates the object and which, through the projective vehicle, transforms it into an archetype, or a model. *Descriptive Geometry*—like all other forms of representation, even ethnographically distant from that which dwell in Western culture—therefore arises from constructions of thought and from an observer-independent projective process, even in its most optical application, that of the monocular perspective. However, today the context in which the architect works has violently changed. With the advent of the digital, representation seems to have lost memory of its projective origin: entire universes that, in the past, have been narrated to us as born from the projective act of biblical *fiat lux* or of primeval *Om* whose acoustic echo reached everywhere to organize matter and spirit, today in the horizon of the eidomatics seem to lose more and more sense. On the other hand, the architect's resistance is expressed in his or her desire to contrast the laws of gravity that dominate the phenomenal world; resistances that seem to me to be historically well-summarized in the *stereotomic* configuration procedures that today have a natural *analogue* in the tools of some digital modeling software, to the point of appearing to be created specifically for this purpose—impression corroborated by the close ties that can be established, at that placement, with rapid prototyping, imaginable as a sort of a digital *Maitre Maçon*.

2 Cfr. Charles Howard Hinton, *Racconti scientifici* (Parma: Franco Maria Ricci Editore, 1978).

3 Cfr. Jean-Victor Poncelet, *Traité des propriétés projectives des figures* (Paris: Gautier-Villars, 1822).

The geometric construction thus manages to translate into the construction of physical elements through a process of phylogenesis totally controlled by the architect. Stereotomy testifies how the knowledge of geometry, even before Gaspard Monge (1746–1818), could develop all its imaginative power by introjecting in its practices of projections and determinations of the true forms (or sizes), tectonic criteria handed down in the secret of the stonemasons' guilds, at least up to the act of rupture with the silence made in the treatises, by Philibert de L'Orme (c. 1514–1570).

From a historical point of view, stereotomy constitutes a charade that has been baffling scholars for decades: in fact, when only the practices of manual roughing of the stone prevailed, the stonecutter already exercised in his mind the control of the form through the wise identification of the plans of cutting and contact between the blocks, modeling surfaces with double curvature with a naturalness disguised by years of practice, but never explicitly resorting to auxiliary graphics. Again, one might say, a form of internal resistance. The space of representation was therefore entirely entoptic, 'internal', carried out in the mind of the operator, which, as Charles Howard Hinton noted in his studies on the fourth dimension², became a place of virtual prefiguration where the modeling action was carried out through completely abstract sculptural procedures, yet with concrete effects in the act of making the work. The sixteenth-century graphics elaborated by de L'Orme, in the illustrative apparatus of his treatise *Le premier tome de l'Architecture* (1567), didactically show these passages, previously confined to the opaque space of the mind, but still did not linguistically solve the gap that separated them from the understanding shared by the community of operators: cryptic in form, exact in methodological approach, they needed, for their unanimous understanding, a 'Rosetta stone' which, in the 18th century will prove to be classical *Descriptive Geometry*. Thanks to it, the methods of sizing, measurement and the equivalence of the projection-section operations assumed a displayed dignity and a common Esperanto that would eliminate the distance between scholar and construction work site practice. Above all, the equivalence—postulated by Jean Victor Poncelet³—between the operation of *projection* and that of *section*, here also assumed in a physical sense, appeared to be the keystone in the understanding of the common procedures for configuring the form between mental imagination and the space of the phenomenological experience: the idea that the hyperuraneous and ethereal lines, which pile up the tables of the treatises on descriptive and projective geometry, can become the *analogon* of physical instruments that operate *in corpore vivi* on the stone, unravels a series of infinite possibilities and equivalences between the world of theory and the world of

practice that perhaps Girard Desargues (1591–1661) had already guessed when he used botanical terms or nautical jargon to define the elements of his geometry. These observations appear even more meaningful when referring to contemporary architectural production, oscillating between two behavioral extremes: on the one hand, the increasingly accelerated push towards the use of complex forms which, in an attempt to accommodate the designer's ideas, require the development of theoretical and operational approaches for its engineering, often unrelated to the architect and delegated to other technical-scientific skills; on the other hand, the corrective trivialization of the profession that adopts pre-packaged solutions from industry in an uncritical manner, helping to debase the horizon of the contemporary urban landscape. Today the new forms of artistic expression can give new life to the configurative imagination of the architect, showing how even the most complex constructions can be translated into forms that can be experienced in the phenomenal space of an installation, making the space of geometry no longer an elsewhere, but a 'here and now.'

Bibliography

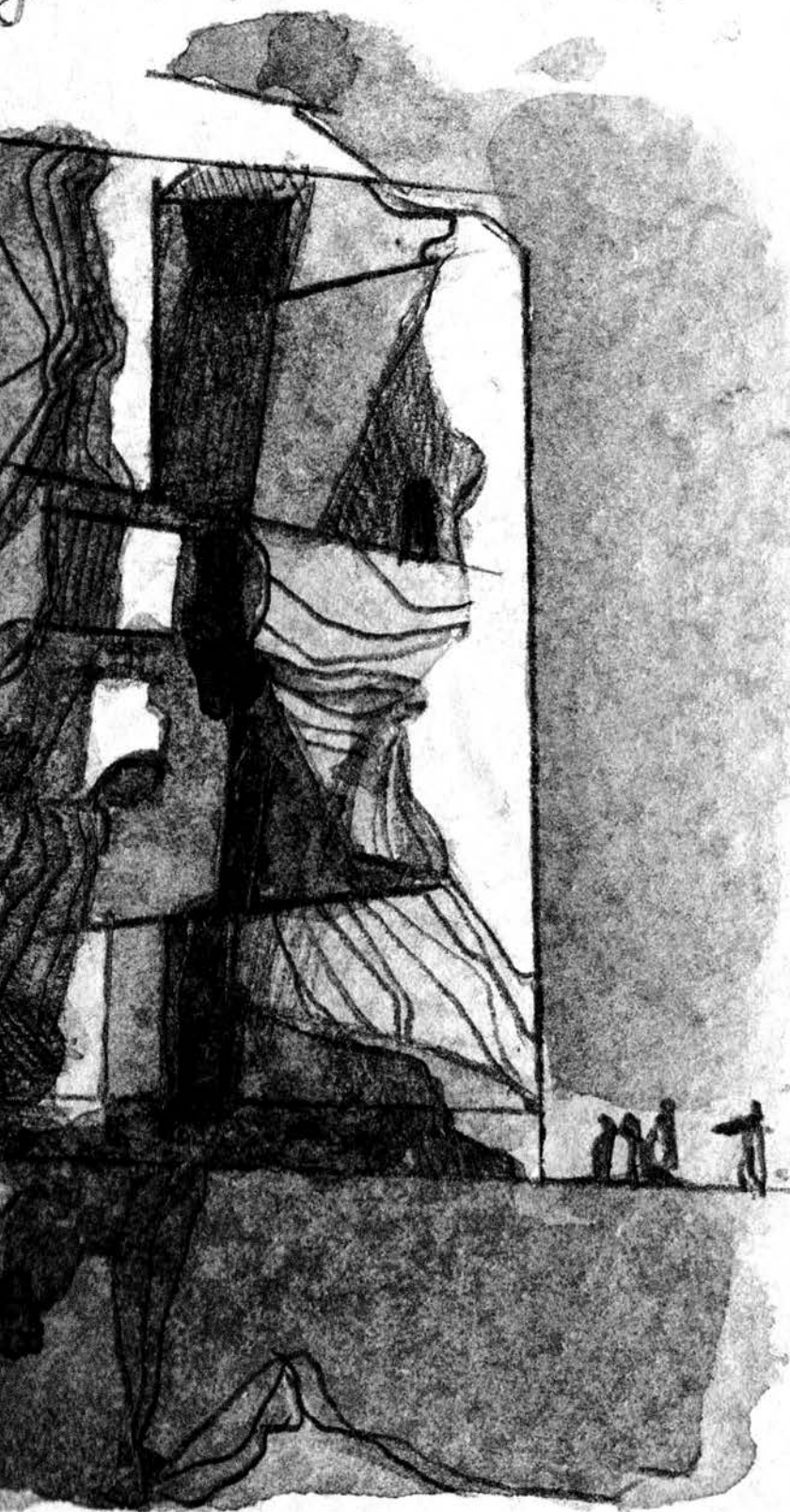
Bourdeau, Loic (ed.). *The Films of François Ozon* edited. Edinburgh: Edinburgh University Press, 2021.

Hinton, Charles Howard. *Racconti scientifici*. Parma: Franco Maria Ricci Editore, 1978.

Ozon, François, *Sous le sable*. Paris: L'Arche, 2011.

Poncelet, Jean-Victor, *Traité des propriétés projectives des figures*. Paris: Gautier-Villars, 1822.

fandi tua dell vento



la
tutto
sul
me

Io so
l'onno
fietra

ad il l'ouca
d'ouca

la
cola

Upornost, med napuhom in sočutjem

Uvodnik

Agostino De Rosa

- 1 Prim. François Ozon, *Sous le sable* (Pariz: L'Arche, 2011). Za Ozonova filmska dela na splošno glej Loïc Bourdeau, ur., *The Films of François Ozon* (Edinburg: Edinburgh University Press, 2021).

Morda se nekateri spominjate filma *Sous le sable*¹ (Francija, 2000), čudovitega, ganljivega dela režiserja Françoisa Ozona (1967) izpred nekaj let. Za tiste, ki ga niste videli: film pripoveduje o Marie (igra jo Charlotte Rampling, 1946) in Jeanu Drillonu (Bruno Cremer, 1929–2010), že dolgo poročenem paru srednjih let. On je Francoz, ona Angležinja, živita v Parizu in nimata otrok. Nekega dne, ko počitnikujeta na morju, se Jean odloči za plavanje, Marie pa zaspi na plaži. Moški izgine, morda utone. Potem ko opravi formalnosti z lokalnimi oblastmi, se Marie vrne v mesto in poskuša ponovno zaživeti, policija pa medtem nadaljuje s preiskavo izginotja. Vendar pa Mariejin vsakdan poteka tako, kot da Jean sploh ne bi izginil: z njim se pogovarja, se z njim ljubi, osuplim prijateljem govori o njem, kot bi bil še vedno ob njej. V filmu tudi *je* ob njej: vidimo, kako ji slači oblačila, kako z njo obeduje ... Resnica, ki je vsem očitna, je skrita le Mariejinim očem; ne prepozna je niti takrat, ko policija v letoviškem kraju najde truplo utopljenega Jeana. V sklepnem prizoru filma se Marie še zadnjič vrne na plažo, kjer sta z možem preživljala srečne trenutke, in nenadoma se ji v daljavi prikaže njegov obris, ki se oddaljuje vzdolž obale. Steče za njim in prizor, čez katerega se ob čudoviti glasbi Philippa Rombija (1968) odvrti odjavna špica, se ne bo mogel nikoli zaključiti. Marie ne more dohiteti prikazni. Zdi se, da se Jeanu približuje, a v resnici ostaja ta nedosegljiv; podobe na filmskem platnu so ujete v presunljivo neskončno ponavljanje.

Mislím, da ta prizor odlično pojasni – bolje kot tisoči suhoparnih projekcijskih in matematičnih prikazov, poleg tega pa še na poetičen način – kaj je »točka izginotja«: lažna podoba nečesa, kar je tako zelo oddaljeno (neskončno daleč), da je nedosegljivo. Jeanova fantazmična esenca v ozadju, ki je Marie nikoli ne doseže, zapečati poraz človeškega vida, ki ni sposoben zgrabiti (in doseči) tega, česar ni več med nami in česar morda nikoli ni bilo. Perspektiva in reprezentacija nasploh sta navsezadnje na neki način prav to: smrt objekta, njegova hipostatizacija. Ta pogubni prizor iz Ozonovega filma pa nam pojasni in prikaže tudi, kaj pomeni beseda »upor«: kljubovati neizbežnosti narave, usode, znanim in neznanim silam, ki nas obdajajo in pogojujejo, lastnemu jazu ter se temu zoperstaviti s svojim hrepenenjem, voljo in tudi s svojo nerazumnostjo. Upreti se nemožnosti reprezentacije neskončnosti – v tem primeru zgolj iz človeške pozicije, ki je za vedno obsojena na neuspeh.

Poznolatinska beseda *resistentia*, ki izhaja iz glagola *resistere*, pomeni 'upor' ali 'odpor' proti nečemu ali nekemu, pa tudi način upora in sredstva, s katerimi se to dejanje vrši. Beseda ima več pomenskih odtenkov: kot vojaški izraz pomeni obrambo pred sovražnikom ali nasprotnikom, v pravu pa pravico upiranja – tudi s silo – vsakršnemu kršenju ali ogrožanju osnovnih in neodtujljivih človekovih pravic s strani oblasti. Rad pa bi se

ustavil pri mehanskem pomenu besede: glagol *resistere* se tu nanaša na vsako silo, ki se upira gibanju telesa, na katerega deluje. Ta definicija se torej v svoji dvojni artikulaciji odlično vklaplja v obe konvencionalni domeni arhitekta, namreč reprezentacijo in gradnjo. Prva vključuje proces objektivizacije realnega s pomočjo mehanizma, ki je zunaj opazovalca; v konkretnem primeru je to projekcija. V arhitektovem kulturnem kodeksu je projekcija dejanje preoblikovanja, s katerim lahko predmete, ki pripadajo polju tridimenzionalnosti, zvedemo na sploščeno reprezentacijo, pri čemer se ne moremo izogniti izgubi ene od dimenzij. Bistvo procesa sta torej *reductio* in *translatio*, njegova manifestacija pa jasno prikaže, kako samodejni posegi uporju odvezamejo antropomorfne lastnosti.

Vsaka arhitekturna projekcija predstavlja obliko radikalne abstrakcije resničnega in je tako oblika logično-retorične konstrukcije, ki predmet izniči in ga preko projekcijskega sredstva spremeni v arhetip ali model. *Opisna geometrija* torej – tako kot vse druge oblike reprezentacije, tudi tiste, ki so etnografsko oddaljene od zahodne kulture – izhaja iz miselnih konstrukcij in iz procesa projiciranja, ki je neodvisen od opazovalca; to velja tudi za njeno najbolj optično izvedbo, monokularno perspektivo. Vendar pa je kontekst, v katerem arhitekt deluje, s prihodom digitalnih tehnologij doživel nasilno spremembo in zdi se, da se v reprezentaciji ne ohranja več spomin na njen izvor v projekciji: celi univerzumi, ki so nekoč veljali za porojene iz nekega proto-projekcijskega dejanja – biblijskega *fiat lux* ali prvobitnega *oma*, katerega odmev je segel vsepovsod in uredil materijo in duha –, sedaj v prostoru, ki ga je zasedla računalniška grafika, vedno bolj izgubljajo pomen. Po drugi strani se arhitektov upor kaže v želji, da bi kljuboval zakonom težnosti, ki vladajo pojavnemu svetu. Zdi se mi, da se je ta upor skozi zgodovino izrazil v postopkih stereotomske konfiguracije, ki so tako njegov povzetek in katerih naravni sodobni *analogon* so orodja nekaterih programov za digitalno modeliranje. Ta se zdijo izdelana prav v ta namen, ta vtis pa potrjujejo tudi tesne povezave, ki lahko nastanejo s hitrim prototipiranjem; slednje si lahko predstavljamo kot nekakšnega digitalnega *Maitre Maçon*a. Geometrična konstrukcija se tako skozi proces *filogeneze*, ki ga povsem nadzira arhitekt, lahko prevede v konstrukcijo fizičnih elementov. Stereotomija dokazuje, kako je lahko poznavanje geometrije, tudi v času pred Gaspardom Mongeom (1746–1818), razvilo vso svojo moč zamišljanja, in sicer tako, da je v svoje prakse projiciranja, preobračanja in opisovanja resničnih oblik (ali velikosti) introjiciralo tektonske kriterije, ki so se znotraj kamnoseških cehov v tajnosti prenašali iz generacije v generacijo, vsaj dokler zaobljube molčečnosti v svojih spisih ni prelomil Philibert de L'Orme (cca 1514–1570).

2 Prim. Charles Howard Hinton, *Racconti scientifici* (Parma: Franco Maria Ricci Editore, 1978).

3 Prim. Jean Victor Poncelet, *Traité des propriétés projectives des figures* (Paris, 1822).

V zgodovinskem pogledu je *stereotomija* šarada, ki jo učenjaki poskušajo razrešiti že desetletja: ko je groba obdelava kamnitega bloka še potekala predvsem ročno, je obdelovalec v svojem umu namreč že nadzoroval obliko, tako da je modro razbiral načrte rezov in stikov med bloki ter z naravno lahkotnostjo, skrito za leti izkušenj, oblikoval dvojno ukrivljene površine, ne da bi si pri tem pomagal s pomožnimi izrisi. Lahko bi rekli, da je šlo tudi tu za obliko notranjega upora. Reprezentacija je bila povsem entoptična, ›notranja‹, dogajala se je v umu izvajalca, ki je – kot je v svojih raziskavah četrte dimenzije ugotavljal Charles Howard Hinton² – postal mesto virtualne prefiguracije, kjer se je oblikovanje vršilo preko popolnoma abstraktnih postopkov obdelave, a je imelo konkretne učinke na realizacijo dela. Ilustracije, ki spremljajo de L'Ormovo razpravo *Le premier tome de l'Architecture* (1567), didaskalično prikazujejo te geometrijske prehode, ki so bili poprej zaprti v očem nedostopne prostore uma. Kljub temu avtor še vedno ni odpravil vrzeli na ravni jezika, ki je delo ločevala od razumevanja v posesti skupnosti praktikov: za poenoteno razumevanje teh geometrijskih konstrukcij, ki so izdelane po natančni metodologiji in za katere so značilne enigmatične oblike, je bil potreben ključ, za kar se je v osemnajstem stoletju izkazala klasična *opisna geometrija*. Z njo so načini dimenzioniranja in merjenja ter enakovrednost projekcije in prereza pridobili dostojanstvo in skupni esperanto, ki je izničil razdaljo med znanstvenim udejstvovanjem in praktičnim delom na gradbišču. Predvsem ekvivalentnost operacij *projekcije* in *prereza*, ki jo je postuliral Jean Victor Poncelet³ in je tu mišljena tudi v fizičnem pomenu, je bila ključna pri razumevanju običajnih postopkov konfiguracije oblike med miselnimi predstavami in prostorom pojavnega izkustva: ideja, da lahko nadnebeške in eterične črte, nakopičene v ilustracijah k razpravam o opisni in projektivni geometriji, postanejo *analogon* fizičnih orodij, ki delujejo na kamen *in corpore vivi*, je sprostila neskončne možnosti in ekvivalence med svetom teorije in svetom prakse; te je morda že slutil Girard Desargues (1591–1661), ko je elemente svoje geometrije opisoval z izrazi iz botanike in pomorskega žargona. Ta opažanja se zdijo še bolj pomenljiva, ko govorimo o sodobni arhitekturni produkciji, ki niha med dvema vedenjskima skrajnostma: na eni strani je vedno močnejša težnja po uporabi kompleksnih oblik, katerih realizacija zahteva razvoj teoretskih in operativnih pristopov, ki so arhitektu pogosto tuji in se tako prepustijo strokovnjakom z drugačnimi tehnično-znanstvenimi kompetencami; po drugi strani smo priča lahkotni banalizaciji discipline, ki od industrije nekritično sprejema instantne rešitve ter tako prispeva k razvrednotenju obzorja sodobne urbane krajine. Danes lahko nove oblike umetniškega izražanja poživijo konfigurativno domišljijo arhitekta in tudi najbolj

kompleksne konstrukcije postanejo prevedljive v oblike, ki jih je mogoče doživeti v pojavnem prostoru instalacije. Prostor geometrije tako ni več nekje drugje, ampak je ›tukaj in zdaj‹.

Bibliography

Bourdeau, Loic (ed.). *The Films of François Ozon* edited. Edinburgh: Edinburgh University Press, 2021.

Hinton, Charles Howard. *Racconti scientifici*. Parma: Franco Maria Ricci Editore, 1978.

Ozon, François, *Sous le sable*. Paris: L'Arche, 2011.

Poncelet, Jean-Victor, *Traité des propriétés projectives des figures*. Paris: Gautier-Villars, 1822.

ffabala



ch

le sa

Porch Notes

Charlie Hailey

1 The Smithsons wrote: "*The porch can be read as an exemplar of a method by which a small physical change - a layering-over of air adhered to an existing fabric - can bring about a delicate tuning of persons with place.*" *The Charged Void: Architecture* (New York: Monacelli Press, 2001), 552.

2 See Jay Fellows, "Janusian Thresholds," *Perspecta* 19 (1982): 43-57. Through Fellows' work, I am also borrowing from Mikhail Bakhtin's *The Dialogic Imagination*, trans. Caryl Emerson and Michael Holquist (Austin: University of Texas Press, 1981). Fellows writes how Bakhtin "perceives oppositions that might be held simultaneously without the comfort of dialectical mediation" (44).

Fevered respite: I have been thinking a lot about porches lately. Too much perhaps, so that I am immersed in my own inquiry. So that I am less convinced of a necessary distance. I imagine conversations here on the porch where I often work and where I have invited dialogues with strangers, ghosts, colleagues, and friends. Among this crowd of guests, I listen to artists and scientists, writers and photographers, presidents and naturalists. Here on a porch in Florida, their voices mix with the chirp of cicadas, wind in the cedars, and the river's murmur as it runs back and forth with tides and rain. Wrapped in the same anxious calm and fevered respite where Goethe slept fitfully but productively on his Gartenhaus terrace and where Calvin Stowe hallucinated and recounted those heady dreams to Harriet Beecher (both dressed in wool, crinoline, and humidity), this crowded porch respects neither time nor location but does hew toward those who themselves have lingered—whether as porch-sitters or porch-thinkers (or both)—on porches, balconies, terraces, and other plein air architectures: James Agee, Athena, Wendell Berry, John Burroughs, John Cage, Rachel Carson, bell hooks, Paul Cézanne, Zora Neale Hurston, Luce Irigaray, Louis Kahn, Sigurd Lewerentz, Margaret Mead, Gregory Bateson, Claude Monet, John Muir, John Prine, Teddy Roosevelt, John Ruskin, Socrates, Paul Strand.

Working definition: Two others helped me define the porch, early in the research, now more than a decade ago. In their work with Axel Bruchhäuser, architects Alison and Peter Smithson defined porch as method.¹ For them, this procedure was not merely theoretical; it was an active negotiation of site and context, of the “charged void” between Axel's *hexenhaus* and the wooded slopes along the Weser River. In one my favorite photographs of architects at work, here is Alison Smithson on her hands and knees measuring, laying out edges, and talking with Axel. They crouch and bend and stretch on sheets of plywood, no more than fifty square meters, in a small, introspective space with all the reach and public import of urban projects like Golden Lane. They are mocking up, in real time, a private porch space for a man and his cat. A porch is an indeterminate space that elides finite definitions and negotiates fields of resistance as it also tunes person and place.

An invitation: On this teeming porch, two stood out more recently. Jay Fellows taught me that a porch, like the “framed threshold,” moves away from dialectics toward the dialogic. Put another way, porches hold oppositions without dialectical mediation.² Just as porches make room for conversation on the cusp of nature and along the frontiers of built form, the dialogues they house always have two sides. Think of the double-sidedness of a porch screen, where its veiling reflection makes for a play between hiding and revealing based on light. Porches are much more complicated than a simple blend of open and closed or of public and private. And John Dewey

- 3 Dewey had already identified the problems when resistance is misunderstood and misused: "Resistance is treated as an obstruction to be beaten down, not as an invitation to reflection.... That which distinguishes an experience as aesthetic is conversion of resistance and tensions...." Experience, in Dewey's telling, is like breathing and its "rhythm of intakings and outgivings." Dewey writes: "Experience is limited by all the causes which interfere with perception of the relations between undergoing and doing. There may be interference because of excess on the side of doing or of excess on the side of receptivity, of undergoing. Unbalance on either side blurs the perception of relations and leaves the experience partial and distorted, with scant or false meaning." See *Art as Experience* (New York, Capricorn Books, 1939), 35–57.
- 4 None of these pairings are dialectics to be resolved by mediation. Instead, a porch is a Janusian threshold in the spirit of Jay Fellows' posited spaces that hold contradictions and oppositions, rather than resolve them. A porch's double-sidedness—its elements that 'face' both ways, like Janus—help in this matter.
- 5 Giorgio Agamben writes of this dialogue in terms of fashion. See "What Is the Contemporary?" in *What Is an Apparatus? and Other Essays* (Redwood City: Stanford University Press, 2009), 47–49.
- 6 Likewise, this lexicon/diary may be meteorological, and in fact weather diaries were some of the earliest versions of the form. Fellows adds the following, lodged in brackets: "[Further, it would seem only fitting for the key introductory word of a text dealing with insides-outsides, the intensive-extensive, to be *whether*—a diacritical word of options, of the double-faced Janus that will include reversals and inversions which change like a meteorological weather that cannot be predicted.]" (45)

helped me understand how a porch embraces such paradox. An advocate of the stable and the precarious, Dewey couldn't resist talking about resistance and its active role in experience. Resistance binds together attitude and skilled method in his discussion of inquiry, here in this oft-quoted aphorism: "The path of least resistance and least trouble is a mental rut already made. It requires troublesome work to undertake the alternation of old beliefs." Aesthetic experience needs resistance, just like a porch needs sun, rain, wind, strangers, neighbors, and fiberglass mesh. It is a place that hosts what Dewey called "undergoing," with its idea of receiving, and doing, which offers a delicate balance—a delicate tuning, the Smithsons would say.³ In this sense, a porch is an invitation to active, even radical, reflection.

Dialogue of pairings: Another favorite photograph depicts the shirtless philosopher serenely typing at a tiny folding table. His sandaled feet set firmly on the open porch's floorboards, Dewey leans over the Underwood. Sun warms his back, and a small boat glides on Lake Sawler in the distance. The chair's birch logs are thick as arms. A book rests on the table's corner, precariously, as if it might fall onto the dog at his feet. Here is Dewey, vulnerable and intent, comfortable and aged, outside in deepening thought, writing. I have no such image of Fellows but what if the two had met on a porch? Maybe in Miami or Key West, where Dewey wintered? What stories would be told?

Lexicon / diary: I am convinced such dialogues can inhabit a lexicon, which has its roots in public speaking and diction. As a nascent vocabulary of the porch, these pairings hinge on stories that oscillate between the didactic and the diaristic. If the former guides practice within a discipline, then the latter registers private ruminations sometimes made public. Similarly, a porch frames as it also folds space and time, it holds secrets and opens out onto streets, it documents and daydreams. These pairings offer preliminary notes for contemporary practices because porches are meant to be lived, experimented with, repaired and constantly redefined.⁴ So often we hear how wonderful porches are for their combination of inside and outside, which suggests an all too easy resolution of architecture and nature and of the domestic interior with what is "out there," in an activity of building that inherently, and unavoidably, disrupts its context. Amid climate crises, post-pandemic life, and social change, no such resolution exists, and the difficult work of undergoing and doing must continue and persist.

Already / not yet: Porches anticipate the future as they also look back. In cases of the former, a porch foreshadows imminent change because of its unconditioned link to climate.⁵ Which is to say that a porch is barometric.⁶

- 7 Svetlana Boym, *The Future of Nostalgia* (New York: Basic, 2002), xviii. Boym notes that "nostalgic time is that time-out-of-time-of daydreaming and longing that jeopardizes one's timetables and work ethic..." (xxi), and I have also wondered how porches engage *chronos* and *kairos*.
- 8 John Dewey expanded on this latter pairing as the very foundation of philosophy: "it is the intricate mixture of the stable and the precarious, the fixed and the unpredictably novel, the assured and the uncertain, in existence which sets mankind upon that love of wisdom which forms philosophy." *Experience and Nature*, in *The Later Works, 1925-1953*, vol. 1, ed. Jo Ann Boydston (Carbondale: Southern Illinois University Press, 1981), 55.

It is an early indication—an advance warning—of climate’s changes, both short- and long-term.

Conditioned / unconditioned: The unconditioned porch moves, while its house—conditioned by heating and cooling, glazing and walls—stays put.

Here / there: The porch where I have been writing for this past decade rides this change like an open-air vessel. Each year I notice the increased number of mangroves growing up around the lagoon outside the porch. Each king tide rises that much closer to the porch’s tilted floor. Each season, another cedar, another palm, and another live oak dies from saltwater intrusion. Their silver trunks shimmer in the heat. Climatically speaking, in terms of rising temperatures, the porch where I write has moved southward nearly one hundred miles to Tampa, but the snook that seek warmer water already know that. I am still here, but climatically I am there. A witness.

Restorative / reflective: Some look back with nostalgia and the *already* becomes a *no more* to be lamented. Porches cut across the “restorative” and the “reflective” that Svetlana Boym found in nostalgia. The former “stresses *nostos* and attempts a transhistorical reconstruction of the lost home” and the latter “thrives in *algia*, the longing itself” and “explores ways of inhabiting many places at once.”⁷ Porches are anachronistic and exceedingly contemporary.

Absence / presence: Last year, during my residency at a nearby arts center, I set out to build a porch without a house—a porch that would rely on its itself for support but would recall its connections to house and home. Out for a walk in the neighborhood next to the center, I encountered a vacant lot where a house had recently been demolished. Patches of bright green grass remained, amid upturned sand and dirt, around a concrete slab swept clean of walls, plumbing, and tiles. Only the porch remained. Its side walls canted outward, its thin roof sagged, and its catenary form was reminiscent of Paul Rudolph’s Cocoon House, which still stands across the peninsula on the other coast. In the house’s absence, afternoon sun fills the porch. The roof’s shadow drapes down across the screen, evaporates the mesh, and further dematerializes the porch. Its crystalline lens also brings the backyard closer, in sharper focus. Here is a porch to nature in the house’s absence.

Stable / precarious: A porch hovers between comfort and discomfort, security and vulnerability, stability and precariousness.⁸ How a porch resists a storm is that it lets the storm inside. Rain moves in and out, and wind moves through. The slope of a porch’s floor sheds rainfall, whether through scuppers or between floorboards. Porches assume inundation. They also meet air on its own terms; and screens offer a degree of resistance, but most are only designed to withstand one-hundred-mile-per-hour wind speeds. Porches may rely on their houses for structural support, but they also depend

on their own precarity, out there on the house's edge, for survival in hurricanes and other extreme weather events.⁹ In 1992, I moved to south Florida to repair a house damaged by Hurricane Andrew. I marveled at the durability of two porches cantilevered off the second floor of the house. They had lost only their screens and a few inches of their cantilever when the hurricane's center tracked right over the house. No one knows for sure how fast the winds blew because all of the official, publicly-funded wind gauges failed before the storm reached its peak. But one privately-owned device a few miles north of the porch registered what is now accepted as the maximum speed, a 79.4 meters-per-second (177-mile-per-hour) gust that lasted one minute. Before his anemometer blew away and before scientific tests later downgraded the wind speed, the amateur meteorologist claimed a reading of 95 meters per second (212 mph).¹⁰ I imagine him out there on his own porch, squinting through squalls, the roar of wind in his ears.

Unknown / known: A stranger at home, Odysseus sleeps in his own echoing portico. He sleeps where suitors and, later in early Christian churches, the unbaptized await, on a porch along the edges of hospitality, under the roof but outside the interior chambers of house, palace or church. Here, on this palace's porch, Odysseus eavesdrops on the suitors who pursue his wife Penelope inside, and a goatherd teases the disguised hero, where animals destined for the feast are tethered. And later, Odysseus overhears Penelope crying in her bedroom as he lies awake and plots his return.

Compromise: On November 22, 1916, writer Jack London died on the sleeping porch of his Beauty Ranch cottage. Three years earlier, he composed "When the World Was Young," the story of James Ward, a successful but afflicted businessman. Aware of his atavistic tendencies, Ward builds himself a porch for sleeping on the second story of his house. Not one but two layers of screen thwart his nightly escapes to the woods: "Here he at least breathed the blessed night air."¹¹ Each night his cook locks him up in the porch, and lets him out in the morning.

In / out: John Muir famously suggested that to go out is really going in.¹² On a porch, interiority just might be housed out of doors. The naturalist Muir was not one to worry about discrete boundaries. He slept on Yosemite's pine needle as readily as a bed. The shelter he cantilevered off the Yosemite sawmill where he worked was shot through with windows, skylights, and gaps between boards and battens. The hen ladder that sloped up to what he called his "hang-nest" hosted farm animals and humans.

Near / peras: A question that set this porch research in motion was what happens when camping returns home. I think that's why historian Frederick Jackson Turner pitched a tent on the back porch of his Cambridge house.

- 13 Alfred Stieglitz, "Our Illustrations," *Camera Work*, nos. 49/50 (June 1917): 36.
- 14 For an expanded discussion of Lewerentz's projects, see the chapter "Blue" in my book *The Porch* (Chicago: University of Chicago Press, 2021).
- 15 In "Janusian Thresholds," Fellows sandwiches the pairing of immanence and transcendence between 'insides and outsides' and 'beginnings and endings' as he introduces the negotiations of framed thresholds.
- 16 Luce Irigaray, *The Forgetting of Air*, trans. Mary Beth Mader (Austin: University of Texas Press, 1999), 62.

Teaching Harvard students about a nation's receding frontiers, he sought new fringes closer to home.

Immanence / transcendence: Paul Strand steps out onto his porch to make pictures. He watches sunlight carve shadows in the floorboards, and the photographer tips a round table on its side to find light on painted wood. Later in the day, he steps off the porch, lays down in the yard's sun-warmed grass, and watches clouds clip the oblique corner of his porch. Alfred Stieglitz called Strand's porch photographs "direct expression[s] of today" and said that the photographer had "actually done something from within," and some believe that abstraction was born here on this workaday porch in rural Connecticut.¹³ Across the Atlantic, Sigurd Lewerentz was designing the Woodland Cemetery in Stockholm.¹⁴ The architect matched arboreal form with spiritual presence in the Resurrection Chapel's porch, where the slightest skew— inches between chapel and porch— opens a sliver of blue sky, marking transitions between living and dying.¹⁵

Veiling / reflecting: Lit from inside at night, the porch opens as a private stage. During the day, sunlight shrouds a public interior. The screening material itself contributes to this veiling phenomenon. Most screen, whether metal or cheaper fiberglass, has a reflective finish while the porosity of its weave lets light through.

Material / immaterial: On the porch, there are also times of the day when the screens evaporate. They become translucent, and I remember air. They remind me how Luce Irigaray connects breathing and being; she says that Heidegger forgot air and that "what is forgotten is always recalled."¹⁶ It is harder to forget air in a place like Florida, where air feels like water and the slightest breeze cools the skin.

Breeze / breath: Reading Irigaray and living on the porch, I became fascinated with the breathing body, as well as the breathing porch. A few years ago, I decided to paint the porch ceiling robin's egg blue, and I hung visqueen— painter's plastic sheeting— from the inside edge of the porch. Half a millimeter thick, the plastic soon billowed in the air of what I had only perceived as a windless day. The bottom of the sheet lifted slowly as if reaching for the porch's back wall. Its seven feet fell short of the porch's ten-foot depth, but its performance charged the porch's full breadth as it furled and floated on freshets of air. Here were the most subtle movements of air, barely perceptible on my skin and only intermittently visible in leaves and grasses outside. I later hung a heavier scrim from the porch ceiling to study how air molds fabric and how light and shadow play across the screened wall. The scrim's top edge glowed with the ceiling's blue sheen; detail photographs of this joint have the uncanny effect of a Rothko paintings. The openings of the porch screen— a standard sixteen-by-sixteen weave—

17 S. S. Block, "Insect Tests of Wire Screening Effectiveness," *American Journal of Public Health* 36 (November 1946): 1279-86.

18 Rawlings, *Cross Creek* (New York: Simon and Schuster, 1996), 280.

19 Dewey, *Experience and Nature*, 43-44.

provided just enough openness to the air, and the screen's stretch afforded just enough tension at this thinnest of thresholds. A porch's resistance suffices; it is just enough.

Porous / boundary: If light treads carefully on either side of mesh, sound travels easily through a porch screen. And so do some bugs. Despite its "insect screen" moniker, mesh requires specific densities of weave—and close tolerances of production—to resist the intrusion of insects. Based on research into the behavior—and transgressive abilities—of *Aedes* mosquitoes, a grid of sixteen by sixteen wires per inch became the industry standard around the middle of the twentieth century. Postwar production economized the weave to eighteen warp wires and fourteen weft wires; and research here at the University of Florida, in a region saturated by wetlands and mosquitoes, found that twenty-by-twenty screening marks the threshold of balancing openness and closure. Researchers warned that higher wire densities noticeably reduced visibility and air circulation.¹⁷ Meanwhile, the tiny biting gnats—known as no-see'ums—crawled on through the one-millimeter openings.

Invisible / visible: Birds and digital scanners have a harder time fathoming the ambiguities of porch screens. Marjorie Kinnan Rawlings tells this story: "One day I selfishly picked all the hibiscus blossoms and put them in a bowl on the veranda table. A hummingbird tried to dart through the screen to come at them. His needle-bill caught in the wire and I loosened it gently. He flew away and perched on the fence and shook himself and tried to adjust himself to invisible barriers."¹⁸ A while ago, I made a three-dimensional digital scan of Rawlings' porch in Cross Creek. The scanner did not know what to make of the mesh screens, the reflections in the French doors along the porch's back wall, the flicker of morning through the pine trees, the zigzag of chickens in the front yard, and the general indeterminacy of the porch's space. Which is to say that a porch resists documentation because it is made from both the visible and the invisible. For Dewey, this is a question of what is known and unknown and the two sides of existence: "The visible is set in the invisible; and in the end what is unseen decides what happens in the seen; the tangible rests precariously upon the untouched and ungrasped."¹⁹

Air / water: Philip Lovell advocated the healthful benefits of fresh air in his "Care of the Body" columns for the *LA Times*. He sought this same fresh air on the sleeping porches of the beach house Rudolph Schindler designed for him. But less than a year after its completion, Lovell asked the architect to enclose this elevated tray of space that opened out toward the Pacific. Much later, in a 1978 interview, Dione Neutra attributed the change to the porches filling with water. The newly glazed spaces still harbored sunlight,

- 20 Dione Neutra, interviewed by Lawrence Weschler, Los Angeles, California, Oral History Program, University of California, Los Angeles, 1978. <https://static.library.ucla.edu/oralhistory/pdf/masters/21198-zz0008zcnb-5-master.pdf>. Dione Neutra said: "Originally, the bedrooms were conceived as dressing areas, with beds located outside on sleeping porches, but not long after the house was built, despite Lovell's belief in the virtues of sleeping outside, the Lovells requested that the sleeping porches be enclosed due to the evening fog. Schindler moved the windows of the dressing areas out to enclose the sleeping porches." Others have claimed it was fog that vexed the Lovells. See Judith Scheine, "Lovell Beach House," SAH Archipedia, accessed 21 September 2022, <https://sah-archipedia.org/buildings/CA-01-059-0108>.
- 21 Interview with Dione Neutra by Weschler, 1.6. TAPE NUMBER: III, Side One (July 14, 1978); library of UCLA. Dione further described the public and private nature of the sleeping baskets at Kings Road: "The privacy was something which we were not used to, this open living. And later on, when we moved into the larger apartment, our bedroom was an open sleeping porch outside, which you reached by a little stairway..."
- 22 bell hooks, *Belonging: A Culture of Place* (New York: Routledge, 2009), 121.
- 23 See Charlie Hailey, "Porch Practice," forthcoming in *The Pandemic Effect* (New York: Princeton Architectural Press, 2023).
- 24 Theodore Roosevelt, August 31, 1910, speech in Osawatomie, Kansas.

though at the expense of fresh air and fog's delicate moisture.²⁰ Dione also experienced another of the architect's porch projects when she and architect Richard Neutra lived cooperatively with the Schindlers. She recalled how everyone carried umbrellas when they climbed up to the sleeping baskets at the Kings Road House.²¹

Coming / going: When Frank Lloyd Wright stepped inside the Glass House, he asked Philip Johnson whether he should take his hat off or leave it on.

Athena / Poseidon: Johnson based the plan of the Glass House on the North Porch of the Erechtheum, where Zeus's thunderbolt pierced the roof and Poseidon's trident made three deep scratches in the marble floor during the contest for Athens. The temple's western porch housed Athena's olive tree.

Porch / practice: Tuning person and place also means that porches are spaces for radical practice. bell hooks identifies the porch, in contrast to the patriarchal household, as "a democratic meeting place, capable of containing folks from various walks of life, with diverse perspectives." For her, this "free-floating space" is "a small everyday place of antiracist resistance" where she and her sisters and mother could "practice the etiquette of civility."²² Porches anchor practices amid social reckoning, environmental crisis, and the pandemic's many displacements of body and community.²³

Social / distance: Piano teachers gave lessons from their porches during the pandemic, jazz musicians regaled small socially distanced audiences from their Brooklyn porches, home-bound Instagrammers snapped #porch-traits on their front porches, and neighbors talked through screens from sidewalk to porch in scenes that might have seemed antiquated and sentimental if they weren't so brilliantly and immediately resilient. Porches are ready-made spaces for social distancing.

Surveilled / surveilling: Historically, porches have been spaces to watch people and watch out for neighbors. Now, all eyes are on porch pirates, and many porches house surveillance equipment like Ring cameras that watch over packages delivered from Amazon, the video doorbell's parent company. Porch piracy's alliteration sputters with indignation and fear as it alludes to lawlessness born on a porch's indeterminate space floating on seas of anxiety and capitalism.

Monumental / personal: Presidents have long sought escape along the White House's edges. William Taft paced the South Portico's roof, Dwight Eisenhower grilled hot dogs behind the roof's parapet, and Teddy Roosevelt viewed the "hardy life of the open" from a makeshift outpost atop the national symbol.²⁴ On May 22, 1918, Colonel C. S. Ridley drafted plans for a sleeping shelter that would soon be tethered atop the White House. Ridley

- 25 John Dewey, *Essays and How We Think in The Later Works of John Dewey*, vol. 8 (Carbondale: Southern Illinois University Press, 2008), 136.

had included a small stair in the design so that Woodrow Wilson, exhausted by war and illness, could step out the third-floor bedroom window into the screened room tucked behind the South Portico's heavy balustrade. Here was a president laying prone, vulnerable under the stars, atop a domestic monument, his raspy breath drifting out over the Potomac.

Open / closed: On a porch, imagination runs wild. It is a place where open-mindedness is not simply being open, but resisting closure: "The mind that is open merely in the sense that it passively permits things to trickle in and through will not be able to resist the factors that make for mental closure."²⁵ To illustrate the work of actively maintaining openness, Dewey notes that this is a particular kind of hospitality: "an active desire to listen to more sides than one; to give heed to facts from whatever source they come; to give full attention to alternative possibilities; to recognize the possibility of error even in the beliefs that are dearest to us." On a porch, we can think; we can also write, talk, watch, sweat, sketch, read, sleep, and paint.

Perhaps Cézanne joins Dewey and Fellows on the porch, setting down his easel just inside the porch's screen door. I wonder if either ever saw Kerr-Xavier Roussel's photograph of the painter there in Mont Sainte-Victoire's shadow, leaning into his canvas, his brush poised, suspended between vision and the next stroke.

Bibliography

Agamben, Giorgio. *‘What Is an Apparatus?’ and Other Essays*. Redwood City: Stanford University Press, 2009.

Bakhtin, Mikhail. *The Dialogic Imagination*. Trans. Caryl Emerson and Michael Holquist. Austin: University of Texas Press, 1981.

Block, S. S. "Insect Tests of Wire Screening Effectiveness." *American Journal of Public Health* 36 (November 1946): 1279–86.

Boym, Svetlana. *The Future of Nostalgia*. New York: Basic, 2002.

Dewey, John. *Art as Experience*. New York, Capricorn Books, 1939.

Dewey, John. *Experience and Nature, in The Later Works, 1925–1953, vol. 1*. Ed. Jo Ann Boydston. Carbondale: Southern Illinois University Press, 1981.

Dewey, John. *Essays and How We Think in The Later Works of John Dewey, vol. 8*. Carbondale: Southern Illinois University Press, 2008.

Fellows, Jay. "Janusian Thresholds." *Perspecta* 19 (1982): 43-57.

Hailey, Charlie. *The Porch: Meditations on the Edge of Nature*. Chicago: University of Chicago Press, 2021.

hooks, bell. *Belonging: A Culture of Place*. New York: Routledge, 2009.

Irigaray, Luce. *The Forgetting of Air*. Trans. Mary Beth Mader. Austin: University of Texas Press, 1999.

London, Jack. "When the World Was Young." *The Night-Born*. New York: Century, 1913.

Muir, John. *John of the Mountains: The Unpublished Journals of John Muir*. Ed. Linnie Marsh Wolfe. Madison: University of Wisconsin Press, 1938/1979.

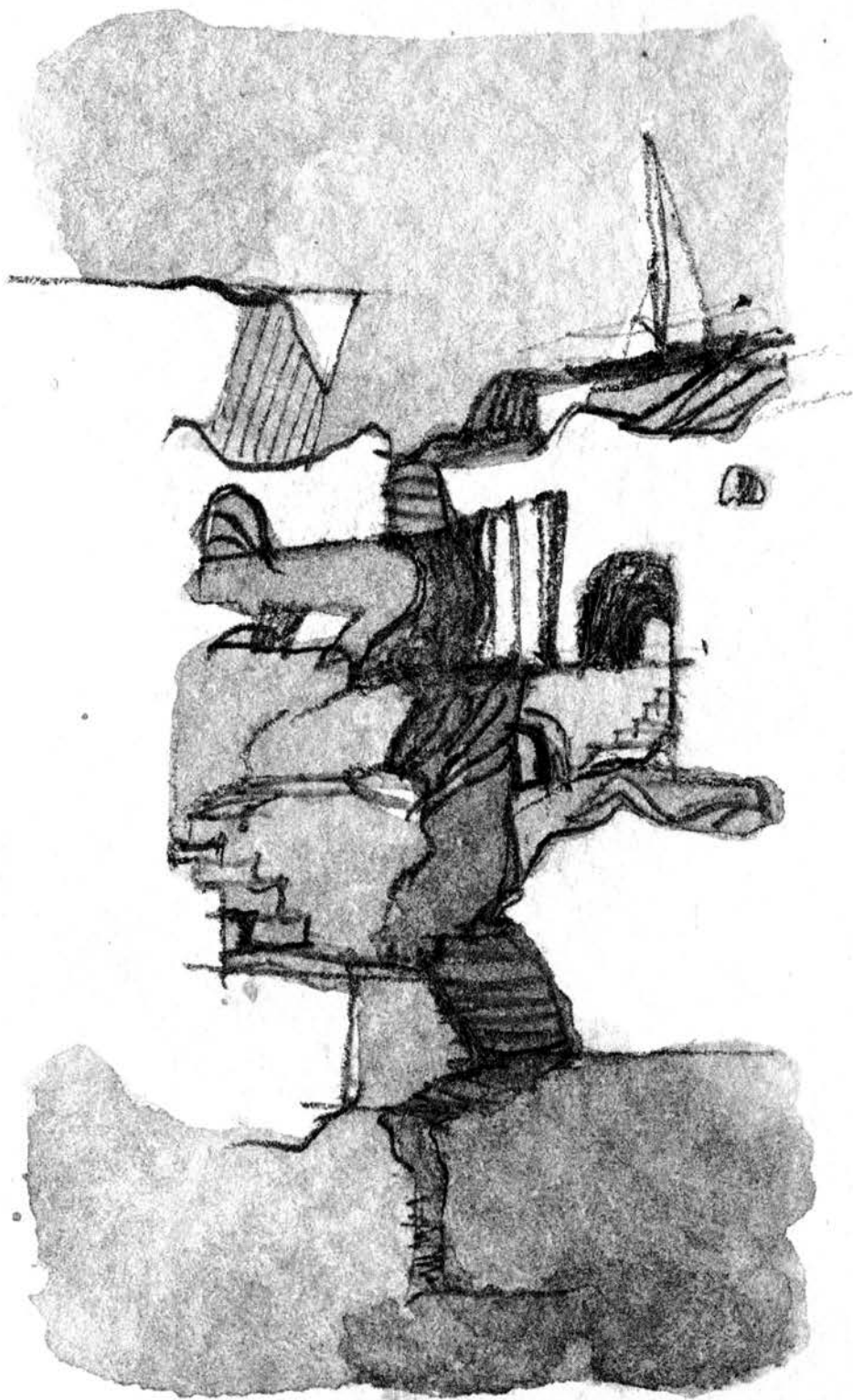
Powell, Mark D., Samuel H. Houston, and Timothy A. Reinhold. "Hurricane Andrew's Landfall in South Florida. Part I: Standardizing Measurements for Documentation of Surface Wind Fields." *Weather and Forecasting* 11, 3 (1996): 304-328.

Rawlings, Marjorie Kinnan. *Cross Creek*. New York: Simon and Schuster, 1996.

Smithson, Alison and Peter. *The Charged Void: Architecture*. New York: Monacelli Press, 2001.

Stieglitz, Alfred. "Our Illustrations." *Camera Work*, nos. 49/50 (June 1917): 36.

man of water



Stretched Out

Spatializing the Pregnant Body

Elizabeth Cronin



1

- 1 "They became totems of the anti-abortion movement; Life had not disclosed that all but one had been taken of aborted fetuses, and that Nilsson had lit and posed their bodies to give the impression that they were alive." Jia Tolentino, "Is Abortion Sacred?" *The New Yorker*, July 16, 2022.

1 Stretch exposes the form it envelopes with no means for resistance.

Introduction

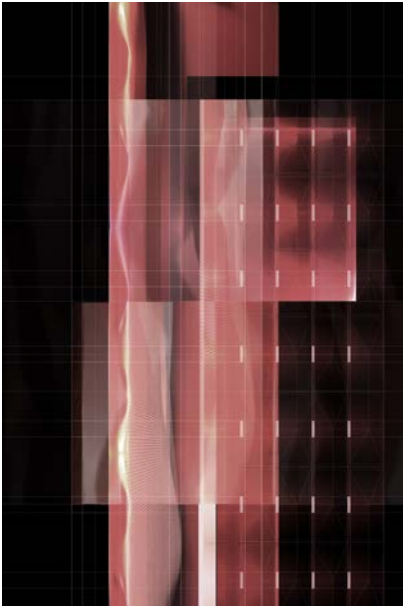
Ultrasound imaging, invented in the nineteen-fifties, completed the transformation of pregnancy into a story that, by default, was narrated to women by other people—doctors, politicians, activists. In 1965, Life magazine published a photo essay by Lennart Nilsson called “Drama of Life Before Birth,” and put the image of a fetus at eighteen weeks on its cover. The photos produced an indelible, deceptive image of the fetus as an isolated being—a “spaceman,” as Nilsson wrote, floating in a void, entirely independent from the person whose body creates it.¹

I have reached the phase where every twinge, sharp movement, run of a little foot puts my body on full alert. Is today the day? They say, “You’ll know,” but until that time comes, mysteries of the internal workings of a pregnant body remain unexplained, territories unexplored.

Conversely, the external pregnant body, the female object, has been ideological fodder for centuries. From mythology to portraits and literature, advertisements to fashion and dress, the pregnant body has been contained and controlled through the media and images we consume, the commodities we buy, the clothes we wear. Nowhere is this clearer than in the maternity jean.

As monstrous as Jekyll and Hyde, maternity jeans serve as a beacon of the pregnant body’s suppression and exposure. They tell a story of the female form. From the hips down, they are ‘normal’ pants, a ‘regular’ pair of jeans—hiding a new deformation of body—but between breast and hip a different territory is formed. In a solid line stitched inches below the belly button, a spandex band wraps around the waist to stretch over a pregnant belly. While the band may cover the bump, it simultaneously replicates its form. Thus, it is no wonder the double-bind has become a keystone of feminist theory: women are always resisting something. She is too exposed, too covered; too skimpy, too modest; too thin, too fat; too young, too old; too loose, too uptight. The female body is always in tension, its form objectified and shaped through physical (and ideological) means, and the pregnant body is no exception.

The following essay and set of drawings explore the tensioned pregnant body as a form of resistance through three methods of loose-fit: to stretch, to swell, to dilate. Rooted in subjectivity, mobility, and open-endedness, loose-fit establishes a frame for anchoring and delaminating an exterior skin from an interior structure. It resists objectifying practices of form and space making, while expanding feminist theories and histories to architecture practice.



2

2 **placenta; to stretch: liberation/containment | loose/tight | matrix/vessel**

From *Mayo Clinic Guide to a Healthy Pregnancy*: "The skin across your abdomen may be dry and itchy from all of the stretching and tightening....You may also notice pink, reddish or purplish indented streaks on the skin covering your breasts, abdomen or perhaps even upper arms, buttocks or thighs. These are stretch marks....They seem to be caused, quite literally, by a stretching of the skin, coupled with a hormone-related decrease in your skin's elasticity....With time, they should fade to light pink or grayish stripes, but it's unlikely that they'll completely disappear."

– Myra J. Wick, *Mayo Clinic Guide to a Healthy Pregnancy* (Rochester, MN: Mayo Foundation for Medical Education and Research, 2018), 169.

2 Catherine McCormack's book *Women in the Picture: What Culture Does With Female Bodies* has been instrumental to this research. From Venus's to mothers to monstrous women, her work has been crucial in defining ways that art and images shape how women see and are seen. She has encouraged me to look. Catherine McCormack, *Women in the Picture: What Culture Does with Female Bodies* (New York, NY: W. W. Norton & Company, 2021).

- 3 Chioma Nnadi, "Oh, Baby! Rihanna's Plus One," *Vogue*, April 12, 2022.
- 4 "When I found out I was pregnant, I thought to myself, There's no way I'm going to go shopping in no maternity Aisle. I'm sorry—it's too much fun to get dressed up. I'm not going to let that part disappear because my body is changing! When I bring up the subject of maternity jeans, she rolls her eyes: If it's not something she would have worn before she was pregnant, then it's not something she's going to wear now," Nnadi, "Oh, Baby! Rihanna's Plus One."
- 5 McCormack, *Women in the Picture*, 85.

6 *Ibid.*, 83.

Caught between Virgin Mary and monstrosity,² each loose-fit method questions juxtapositions of ideologies that bind the pregnant body (liberation/containment, pleasure/shame, beauty/monstrosity); each method moves beyond the external pregnant body as rigid object to explore prenatal organs and internal workings as tensioned architectural spaces (matrix/vessel, layer/mask, threshold/trap). Here, I am particularly interested in how flexible layers of pregnant bodies can stretch to resist hard-shelled depictions of maternity that are neither suppressed in movement nor exposed in form.

to stretch: liberation/containment | loose/tight | matrix/vessel

Stretched over every pregnant curve, Rihanna turned heads in a red lace Alaïa bodysuit and matching long gloves on the cover of April's Vogue magazine. Her pregnant bump shaped the garment, its form an exact replica of the body underneath. She was labeled (by some) as 'indecent'³—an amusing description given she is covered from shoulder to toe—but hailed (by many) for her fearlessness and beauty. As a pregnant woman myself, I was thrilled to see a prenatal body dripping with confidence and sex appeal, liberated from maternity wear (she also hates maternity jeans⁴), countering the narratives and images that continue to confine pregnant women. Why did Rihanna cause such a stir? She (and others who have dared to express their pregnant bodies) stands in stark contrast to arguably "the most definitive and prolific archetype of [pregnant] womanhood to be found in pictures"⁵: the Virgin Mary.

The 'perfect' woman, Mary embodies a double-bind, never touched or 'spoiled' and yet, a mother—pregnant through immaculate conception. As an allegory, she fulfills her duty as a woman without experiencing the pleasure or shame of sex. She is nothing but a contained vessel. As Catherine McCormack writes, "The more we consider this metaphor of the Virgin Mary, the more it starts to feel like sheer horror... Beneath the starched surface of Mary is a body that has been sealed shut, from which only breast milk and tears escape."⁶ While this paints a bleak picture, the ideologies entangled with Mary have a continuous effect on our society and culture. Even Rihanna, a revolutionary beacon of body positivity and pregnant confidence, is shown in her perfect idealized form. She has no stretch marks, appears to gain little weight other than in her baby bump or (possibly) her breasts, her body is pulled tight, starched, gorgeous, and sensual. In an image labeled "GRAND TOUR" she conjures the persona of Mary. Covered from head to

- 7 McCormack, *Women in the Picture*, 84.
- 8 Karen A. Franck, "A Feminist Approach to Architecture," in *Architecture: A Place for Women*, eds. Ellen Berkeley and Matilda McQuaid (Washington, D.C.: Smithsonian Institution Press, 1989), 212.
- 9 McCormack, *Women in the Picture*, 84.
- 10 Myra J. Wick, *Mayo Clinic Guide to a Healthy Pregnancy* (Rochester, MN: Mayo Foundation for Medical Education and Research, 2018), 126.
- 11 *Ibid.*, 102.
- 12 *Ibid.*, 92.

toe in a black veil, she evokes a deity floating across the room, a gorgeous vessel of life.

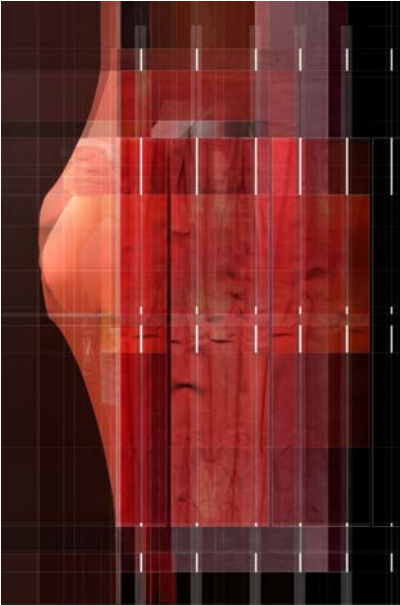
McCormack traces the lineage of Mary to Artemis and Diana of Greek and Roman mythology, goddesses of chastity and fertility (two opposing feminine qualities that have bound women for centuries). Fortunately, she also looks further back in history, to a mother deity from early Mesopotamia—Ninhursag:

Her [Ninhursag's] symbol is the one now known as *omega* in the Greek alphabet—a symbol that now signifies endings but once symbolised the open uterus, the flowing in and out of life and death. She is Tiamat, the ancient primordial goddess of creation, the slippery and germinative salt water from ancient Babylonian religion. She is the abyss at the beginning of time, known as the 'former of all things', or 'Ummu-Hubur'. Before it was a sealed spring and enclosed garden, the maternal body was a boundless and incomprehensible force not made in the service of God—it was God.⁷

The body of Ninhursag presents a swelling, an opening, a surging forth. She expands, not as a starched object but an infinite field, a matrix of life. To create a matrix is to expand through a series of systems and relationships, to construct something from nothing—its "original meaning was uterus or womb, coming from the Latin word 'mater' or mother"⁸—and this presents a very different picture than the sealed vessel of the Virgin Mary that has come to be "embedded in our collective consciousness."⁹ As Madonna and Child have established a set of iconologies and ideologies that shape our societies' perceptions of not only pregnancy and motherhood but tightly bound ideas of womanhood, Ninhursag invites us to explore pregnancy beyond its external shell, to venture into the internal unknown.

To step inside the pregnant body, to examine it as a matrix of infinite space, is to move beyond discussions that revolve around the bulge of child, the object of a woman's body, how she appears to wandering eyes of the world. When viewed from within, the everchanging space of the pregnant body not only stretches to accommodate new life, it pulls tight around organs and muscles that grow, shift, loosen, become crushed. During pregnancy, a woman's rib cage expands 2 to 3 inches in circumference,¹⁰ her womb swells to a volume about 500 times its original size,¹¹ her blood volume increases by 30 to 50 percent,¹² her diaphragm is pushed upwards, her bladder pressured by the fetus. Every day brings new changes as her body is reshaped to grow more than just a child.

Specifically, she also grows the placenta. A baby forms when a sperm successfully fertilizes an egg, when two existing structures join to form something new. Once the egg has been fertilized, the matrix of the pregnant body expands. Within a few days of fertilization, the cells of the developing



3

13 Ibid, 87.

14 Ibid.

15 "Human Placenta Project: How Does the Placenta Form?" *NIH*, December 30, 2017.16 Wick, *Mayo Clinic Guide to a Healthy Pregnancy*, 498.

17 Nnadi, "Oh, Baby! Rihanna's Plus One."

3 **uterus (womb);** to swell: pleasure/shame | expand/contract | layer/mask

From *Mayo Clinic Guide to a Healthy Pregnancy*: "Swelling (edema) is common during pregnancy when your body tissues accumulate more fluid due to dilated blood vessels and increased blood volume...During the last three months of pregnancy, about half of pregnant women notice their eyelids and face becoming puffy, mostly in the morning....In the last few weeks of pregnancy, nearly all women have some swelling in their ankles, legs, fingers or face. By itself, swelling is annoying but not a serious complication."

– Myra J. Wick, *Mayo Clinic Guide to a Healthy Pregnancy* (Rochester, MN: Mayo Foundation for Medical Education and Research, 2018), 421.

18 Naomi Fry, "Is Rihanna's Pregnancy All Bump and No Grind?" *The New Yorker*, April 30, 2022.

baby form into a blastocyst (“a group of cells arranged around a fluid-filled cavity”).¹³ The inner cells of the blastocyst become the fetus, but the outer cells, the trophoblast, serve a different purpose.¹⁴ As the blastocyst becomes embedded in the uterine wall, the uterine blood vessels are “remodeled” to pump maternal blood to the baby¹⁵ and grow a new organ from nothing: the **placenta**[1]. The placenta is a “circular, flat organ that’s responsible for oxygen and nutrient exchange and the elimination of wastes between mother and fetus.”¹⁶ It is the joint between mother and new body, the regulator of life. While the placenta grips the uterus (or womb), the baby is free to move, to float in the amniotic fluid, anchored to the placenta by the umbilical cord. This is a connection forged until after birth, when, for a moment, the placenta tethers a fleeting, loose-fit connection between mother and child, inside and outside, matrix and world.

to swell: pleasure/shame | expand/contract | layer/mask

To be clear, I find images like pregnant Rihanna to be empowering, to have ideological impact on the loosening and liberation of pregnant bodies. In her *Vogue* interview Rihanna says, “ ‘I’m hoping that we were able to redefine what’s considered ‘decent’ for pregnant women...My body is doing incredible things right now, and I’m not going to be ashamed of that. This time should feel celebratory. Because why should you be hiding your pregnancy?’ ”¹⁷ Makeup perfect, clothing immaculate, I find her to be everything I want to be as a pregnant woman—why hide my bump? Mask or feel shame about the miracle my body is working? Therein lies the power of images—Rihanna has made pregnancy look glamorous, has made *my* pregnant body feel glamorous—and such power is not limited to Rihanna. In her *New Yorker* article “Is Rihanna’s Pregnancy All Bump and No Grind?” Naomi Fry writes: “I recalled how, during my own pregnancy, a little more than a decade ago, for the first time since I was a small child, I wasn’t embarrassed to accentuate my own abdomen. I was unlikely to wear a belly chain, but I also wasn’t going to great lengths to cover up the reality of my changing body.”¹⁸

But such is the challenge of the double-bind. While images conjured by Rihanna or Fry speak of the liberated pregnant body, such bodies are also contained. While I revel in my ‘pregnancy glow,’ I can’t help but ask: what happens when the body no longer holds a child, when it ceases to be pulled tight in sensual glory, stretched over a nested body within, when it deflates, sags, softens, and wrinkles? Will it still be deemed beautiful? Empowered?

19 Fry notes, "If someone can show us otherwise, it's Rihanna." Fry, "Is Rihanna's Pregnancy All Bump and No Grind?"

20 Arlene Eisenberg et al., *What to Expect When You're Expecting* (New York: Workman Publishing, 1996), 160.

21 McCormack, *Women in the Picture*, 84.

22 Ibid, 106.

Liberated? Will its loose form be celebrated? If we continue to focus solely on the pregnant vessel, are we all just Mary's? Smooth exteriors—pure and unblemished, stiff and unyielding—fulfilling maternal destinies? Fry concludes her article by saying, “But that mentality didn’t last long, and, once my daughter was born my insecurities returned. In the public imagination, there’s nothing particularly glamorous about the postpartum body—the body that remains after the miracle of creation is done with.”¹⁹

To this point, while we have been reassured that our stretched, pregnant bodies are “the most lovely—and sensuous—of feminine shapes,”²⁰ that our changing bodies are the most natural thing in the world, the exodus of child heralds different expectations. Postpartum bodies are expected to ‘bounce-back.’ After birth, we are assured both uterus and cervix will shrink and become firm, encouraged to begin a regiment of Kegel exercises to strengthen our pelvic floors, sold any number of creams and remedies for diminishing stretch marks and melasmas. Bounce, shrink, firm, strengthen, diminish: each has a tightness, a tension, a return to a normative fit. All imply a contraction to the hard Venus of pre-birth, the starved Virgin Mary, the idealized object of female form. For “[h]er womb having performed its service, becomes obsolete... Mary is beautiful and benevolent, but, like the figure of Venus, she is more a man-made symbol than she is human. She is, as the philosopher Julia Kristeva has suggested, ‘a woman whose entire body is an emptiness through which the patriarchal world is conveyed.’”²¹ And this is no wonder, given the prominence of pleasure and shame that bind motherhood and the pregnant body.

In the United States, political actions have made clear that a woman’s body is not her own. She is a vessel to be contained, her child a method of restraint. Women have inequitable access to healthcare, maternal leave, childcare. Contraceptive pills require a prescription, Plan B pills and vibrators are locked in drugstore boxes amongst hundreds of easily accessed condoms (male contraceptives), and through recent, chilling actions, abortions are highly regulated or banned. The message: women are meant to be mothers, they should not have sex for their own pleasure, and when they do have sex—even in the course of creating a child—that sex is shameful. As McCormack points out, it would seem the only pleasure women are allowed is that of motherhood. For, “when we do see images of mothers experiencing pleasure, it tends to be focused on and fulfilled by the baby and is located anywhere but in the body of the mother.”²² And what if we do look *into* the pregnant body, the swollen uterus, the physical manifestation of sexual exchange? What if we stopped and made the world look? We might find ourselves asking, as Elina Reenkola: “is a woman’s fertility, her ability to give



4

4 cervix; to dilate: beauty/monstrosity | open/close | threshold/trap

From *Mayo Clinic Guide to a Healthy Pregnancy*: "One sign that labor is starting is that your cervix begins to thin (efface) and soften (ripen) in preparation for delivery. As labor progresses, the cervix eventually will go from an inch or more in thickness to paper-thin....Your care provider may also tell you that your cervix is beginning to open (dilate). Dilation is measured in centimeters, with the cervix opening from 0 to 10 centimeters (4 inches) during the course of labor....Thinning, softening and dilation of the cervix often precede other signs of labor."

- Myra J. Wick, *Mayo Clinic Guide to a Healthy Pregnancy* (Rochester, MN: Mayo Foundation for Medical Education and Research, 2018), 202-203.

- 23 Elina M. Reenkola, *The Veiled Female Core* (New York: Other Press, 2002), xi.
- 24 "uterus (womb). The female organ inside of which the unborn baby develops." Wick, *Mayo Clinic Guide to a Healthy Pregnancy*, 499.
- 25 "Uterus," Cleveland Clinic, accessed September 17, 2022.
- 26 Ibid.
- 27 Ibid.
- 28 See McCormack, *Women in the Picture*, 106.
- 29 "cervix. Necklike lower part of the uterus." Wick, *Mayo Clinic Guide to a Healthy Pregnancy*, 495.
- 30 "episiotomy. Surgical incision in the perineum to enlarge the vaginal opening, performing to facilitate delivery as the baby is crowning." Ibid, 496.
- 31 "forceps. Obstetrical instrument that fits around the baby's head to guid the baby through the birth canal in an operative vaginal delivery." Ibid.

birth, so powerful that men—and women—must invalidate and deny it, or women must guard it as their secret in order to prevent its destruction?”²³

And nothing would seem more expansive or powerful than the **uterus, or womb** [2].²⁴ The uterus is central to the female reproductive system and plays a role in both menstrual cycle and pregnancy. It consists of three layers: the perimetrium (a soft outer shell), the myometrium (a muscular center), and the endometrium (an inner lining).²⁵ During pregnancy, all three layers swell to house an expanding fetus and placenta. As the baby develops, so does the uterus—it creates a loose shell around baby, amniotic fluid, and amniotic sac. Through the cervix, it connects to the birth canal and vagina—although the cervix will stay closed, plugged with mucus, until the myometrium layer²⁶ of the uterus begins to contract in preparation for labor. Ultimately, when the time is right, the uterus contracts to push the baby out.²⁷

Most astonishingly, the uterus is a living organ that expands to not only connect a mother with this baby but all future babies. Unlike the placenta, the uterus is a flexible, infinite space that will contract back to its original size once the baby is delivered and prepare itself to swell and grow again. Blood, mucus, amniotic fluid—to stray from the hard-shelled exterior of the pregnant mother to interior realms is to veer into monstrous²⁸ territories.

to dilate: beauty/monstrosity | open/close | threshold/trap

In preparation for birth, the **cervix**²⁹ [3] grows in three-dimensions. In section, it stretches during a process called effacement. It spreads from about 4 centimeters in thickness to paper thin, lengthening as it morphs and changes to wrap the baby’s head. In plan, the cervix dilates, opening from fully closed to 10 centimeters in diameter. A mother’s cervix must be both 100% effaced and 10 centimeters dilated to give birth, and even then, it does not provide a perfect fit. The baby still needs to twist and rotate, loosen and align to make a new space for herself in the birth canal. The cervix either provides a threshold for the baby into the world or traps her inside, calling for alternative measures: episiotomies,³⁰ birth by forceps,³¹ or cesarean sections. Luckily, the pregnant body is flexible. It dilates and contracts, opens and closes to improvise and construct whatever space is necessary. Herein lies its resiliency, beauty, and uncontrollable power.

Before becoming pregnant, I had often heard, “It’s called labor for a reason.” Birth is not easy. It is testament to the strength of women. Whole chapters in pregnancy books are dedicated to pain management, but I cannot

- 32 Ibid.
- 33 Mayo Clinic Press Editors, "Preparing for Delivery: Having a plan, but keeping it flexible," Mayo Clinic, April 5, 2022.
- 34 Ibid.
- 35 McCormack, *Women in the Picture*, 103.
- 36 Ibid.
- 37 *The Holy Bible*, authorized King James Version (Nashville, Tennessee: Holman Bible Publishers, 2010), 4.
- 38 "The idea of female monstrosity is almost always related to women's reproductive bodies; their vaginas and wombs have been mythologised into lethal traps that emasculate and castrate men, the inside of their bodies imagined as a seething mystery that draws on our primal fears of the archaic mother and the unknowable place of our origins." McCormack, *Women in the Picture*, 172.
- 39 Reenkola, *The Veiled Female Core*, xii.
- 40 McCormack, *Women in the Picture*, 103.

tell you how many times (usually by strangers) I have been asked, “Are you planning on having a ‘natural’ birth?”—as if any assistance (medicinal or otherwise) is ‘unnatural,’ renders me less of a woman, exposes some weakness, diminishes the feat of pushing a new life into the world. Interestingly, Doctors Myra Wick and Angela Mattke, discussing empowerment during birth, speak about the use of an epidural (a method of anesthesia used during labor and delivery³²). They say, “It seemed like the delivery was more controlled with an epidural...even though most deliveries are a little bit chaos... there seems to be more a level of calm...especially if there has to be an intervention, like vacuum delivery or forceps.”³³ Posing low risk for mother and baby, interventions like an epidural allow a woman to retain some control over her body during birth. Why then the stigma, the emphasis on a ‘natural’ birth, the encouragement to ‘experience’ the pain often depicted of childbirth instead of embracing the possibility that some moments of labor may be “blissful”³⁴? Perhaps, as McCormack notes, “birth has been made to seem too horrendous, taboo and obscene to contemplate”;³⁵ “the birthing body might call to mind a two-headed monster, something to fear.”³⁶ More likely, it about containment of that birthing body (“Unto the woman [Eve] he said, I will greatly multiply thy sorrow and thy conception; in sorrow thou shalt bring forth children; and thy desire *shall* be to thy husband, and he shall rule over thee.”³⁷). For there is nothing more shocking than a woman who controls her pleasure and reproductive body; nothing more terrifying than a woman who knows her power.³⁸

Conclusions

How then, do we engage this power?

To abandon the female body as a vessel for another and instead explore her pregnant body as a matrix (see [1]), a spatial field, is to consider the complex position she occupies. She is neither a hard object nor static. Like the **placenta** she is a growing space of in-between—betwixt loose and fit, liberation and containment, inside and outside—a constantly changing body that expands and contracts to construct new space and new life.

To make visible that which is often invisible—“the woman’s body and inner life as the source of her pleasure”³⁹—is to stretch open the double-bind and ask: what happens in this space? We occupy the swelling **uterus** (see [2]) and view into the **cervix** (see [3]) to tap into the power of birth, that which “has been made to seem too horrendous, taboo and obscene to contemplate,”⁴⁰ as generative of architectural space. As a form itself, the pregnant body acts in resistance. It is a flexible material pulled in tension, stretching and swelling, enveloping and nesting, dilating and shrinking. The

pregnant body is a tensile structure that constructs its own space (seemingly) from nothing. A layered matrix, it resists the display of most stretch materials, housing a space within that neither objectifies the form of its nested body nor hides its bulge. The pregnant body creates a loose-fit between internal space and external form. Body within body, it is a sea of infinite possibilities.

To write about and draw the interior pregnant body is a method of activism that resists a culture posited between beauty and monstrosity. For, as Catherine McCormack has pointed out again and again, images matter. To resist depictions of the objectified and idealized pregnant body is to unmask its power. To delaminate the layers that construct its swelling material and political forms, to explore its infinite space as stemming from inside-out, to engage its stretching, growing, and loosely-fit structures (vagina, cervix, uterus, amniotic sac, amniotic fluid, placenta): these are forms of resistance.

Bibliography

Eisenberg, Arlene, Murkoff, Heidi Eisenberg, Hathaway, Sandee Eisenberg. *What to Expect When You're Expecting*. New York: Workman Publishing, 1996.

Franck, Karen A. "A Feminist Approach to Architecture." In *Architecture: A Place for Women*, eds. Ellen Berkeley and Matilda McQuaid, 201–218. Washington, D.C.: Smithsonian Institution Press, 1989.

Fry, Naomi. "Is Rihanna's Pregnancy All Bump and No Grind?" *The New Yorker*. April 30, 2022. <https://www.newyorker.com/culture/cultural-comment/is-rihannas-pregnancy-all-bump-and-no-grind>.

"Human Placenta Project: How Does the Placenta Form?" *NIH*. December 30, 2017. https://www.nichd.nih.gov/research/supported/HPP/research_funding/human-placenta#.

Mayo Clinic Press Editors. "Preparing for Delivery: Having a plan, but keeping it flexible." *Mayo Clinic*. April 5, 2022. <https://mcpres.mayoclinic.org/parenting/preparing-for-delivery-having-a-plan-but-keeping-it-flexible/>.

McCormack, Catherine. *Women in the Picture: What Culture Does with Female Bodies*. New York, NY: W. W. Norton & Company, 2021.

Nnadi, Chioma. "Oh, Baby! Rihanna's Plus One." *Vogue*. April 12, 2022. <https://www.vogue.com/article/rihanna-cover-may-2022>.

Reenkola, Elina M. *The Veiled Female Core*. New York: Other Press, 2002.

The Holy Bible, authorized King James Version. Nashville, Tennessee: Holman Bible Publishers, 2010.

Tolentino, Jia. "Always Be Optimizing." In *Trick Mirror: Reflections on Self Delusion*, 63–94. New York: Random House, 2019.

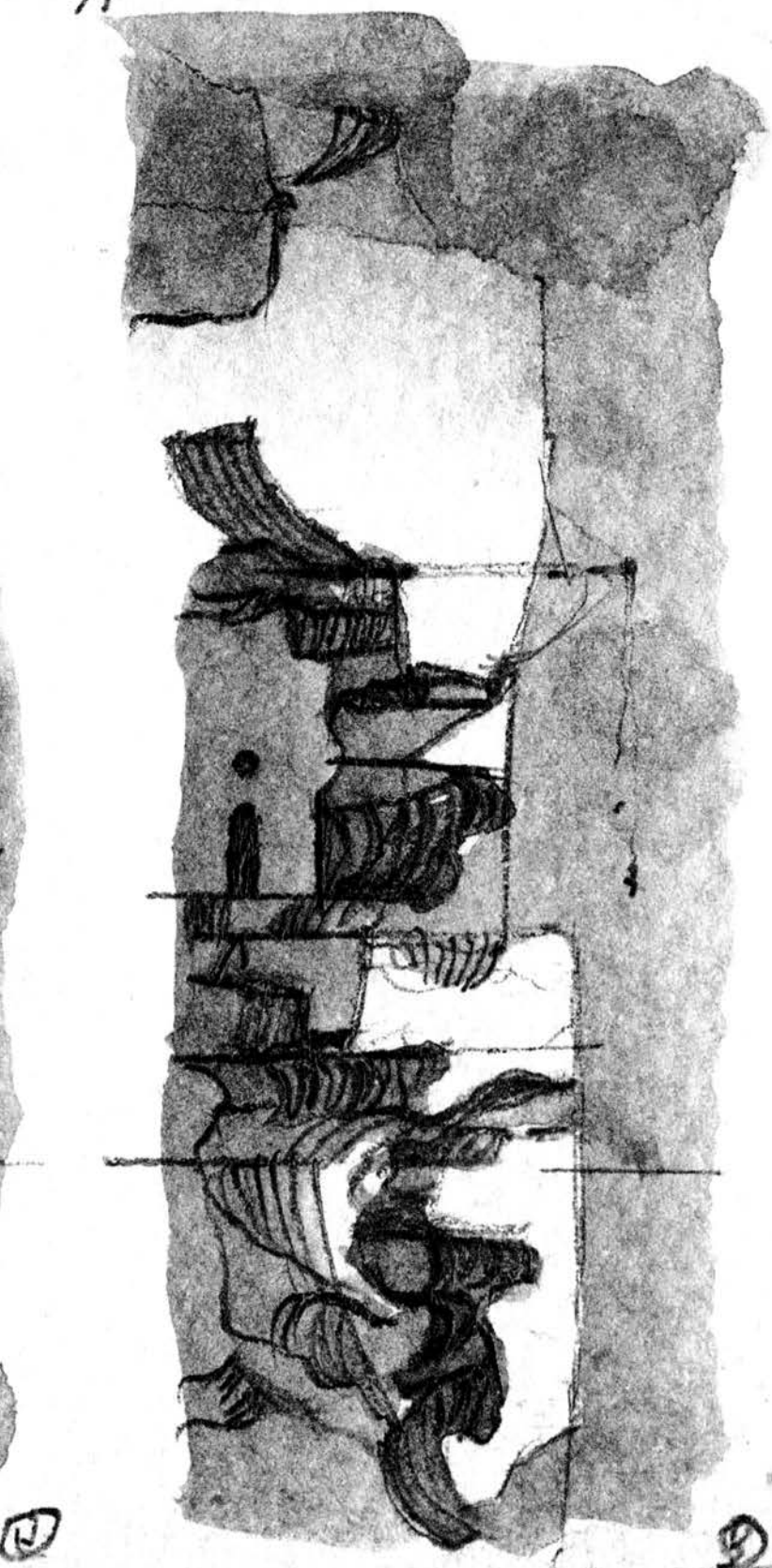
Tolentino, Jia. "Is Abortion Sacred?" *The New Yorker*. July 16, 2022. <https://www.newyorker.com/culture/essay/is-abortion-sacred>.

Wick, Myra J. *Mayo Clinic Guide to a Healthy Pregnancy*. Rochester, MN: Mayo Foundation for Medical Education and Research, 2018.

"Uterus." *Cleveland Clinic*. Accessed September 17, 2022. <https://my.clevelandclinic.org/health/body/2467-uterus>.

appena de vento

2



①

②

Space, Body, Architecture Towards a Difficult Balance

Renato Bocchi

- 1 Erica F. Batlle, "Bruce Nauman: bodies at work," in *Bruce Nauman. Contrapposto Studies*, ed. Carlos Basualdo (Venice: Marsilio, 2021), 135.

- 2 *Ibid.*

1. Contrapposto

It is well known that in classical art, later taken up by Renaissance and neo-classical art—and especially in sculpture, from Polykleitos and Lysippus to Donatello and Michelangelo and later on Rodin—the reflection on the so-called *contrapposto* or *chiasmus* had a large importance in outlining the posture of the human body and the proportional rules of its representation.

That reflection arose from the desire to overcome the static and hieratic vision of the previous Greek sculpture (that of the *koùroi*), decisively introducing the sensation of movement and action in the human body's representation, thus determining an evident empathic flow on the part of the observer in contemplating—or rather experiencing—the work.

In the contemporary world the same reflection is revived in a surprising and innovative way by the research of an artist-performer like Bruce Nauman.

In the catalogue of the recent exhibition *Contrapposto Studies*, organized by the Pinault Foundation at Punta della Dogana in Venice, curated by Carlos Basualdo, Erica Battle explains:

“Contrapposto exemplified a newfound naturalism. Sinuous, sensuous bronze figures of the high classical period stood with one foot planted firmly bearing weight, the other slightly lifted and relaxed. This counterbalancing stance, given its Italian name *contrapposto* (or counterpose) centuries later, was exemplified most famously by the sculptor Polykleitos's bronze Doryphoros (or spear bearer), cast around 450–440 BCE. The sculpture was remarkable not only for its exemplary contrapposto—the figure stands on the right leg with the left leg relaxed, while the left arm is flexed and the right arm at his side—but also for the sophisticated mathematics Polykleitos employed to arrive at an ideal representation of the body”.¹

Polykleitos elaborated his proportional calculations on the measurements of the human body in a text known as *Canon*, in which he documented his "discoveries", according to which the height of the ideal figure should have corresponded to seven times that of the head. These ideas and ideals were then taken up, as is well known, in the humanistic principles explored by artists, scientists and philosophers in the Renaissance.

"Their renditions—emphasizes Battle—mark the historic moment with which Nauman most readily aligns his numerical referents in the *Contrapposto Studies*, which consist of seven projections and, at their most complex, partition Nauman's body into seven parts".²

In the video *Walk with Contrapposto*, dating back to 1968, the artist is seen walking back and forth along a narrow corridor, which he himself built

3 Damon Krukowski, "Following the Sound", in *Bruce Nauman. Contrapposto Studies*, ed. Carlos Basualdo (Venice: Marsilio, 2021), 105.

4 See: *Contrapposto Studies I through VII, 2015–2016*; *Contrapposto Split, 2017*; *Walking a Line, 2019*; *Nature Morte, 2020*.

5 Carlos Basualdo, "Volver sobre sus passos", in *Bruce Nauman. Contrapposto Studies*, ed. Carlos Basualdo (Venice: Marsilio, 2021), 96.

6 *Ibid.*

7 See: Rosalind Krauss, "Sculpture in the Expanded Field", *October* 8 (1979), 30–44.

in his studio, with his hands crossed behind his head and his body swaying as he tries to walk straight in line while maintaining a pose *in contrapposto*.

Damon Krukowski comments: "Nauman's painstaking (and probably painful) walk down a corridor defined by the swing of his hips from contrapposto to contrapposto is highly awkward, to the point of near immobility. [...] That tension is what Nauman is enacting for us, step by excruciating step [...] The one we feel with our ears. The sound of Nauman's deliberate awkward steps in this narrow corridor is preternaturally loud [...]. Once again, Nauman has disoriented us by skewing sound and image".³

This work is revisited years later by Nauman in his most recent *Contrapposto Studies*.⁴

The logic of the new works is based on three steps: *repetition*, *division* and *overturning* of the image. "These operations take place in the context of a general reversal of the relationship between figure and ground, as the adjusted focus of the video camera creates a parallax effect. [...] The overall effect is that of being confronted with the apparent disintegration and coming together of the artist's body".⁵

By inverting the dynamics between the body and the surrounding space in his *Walk with Contrapposto*, 1968, Nauman's walk now seems to make the space around him move.

These new works have an evident monumentality, projected as they are in large dimensions in the vast halls of the Dogana, that further underline the classic references of the aforementioned works.

"Nauman intends to reinstate and to mind the conceptual scaffolding that supports the very definition of sculpture and possibly, by extension, of art itself".⁶

Already in the classical experience, the *contrapposto* introduced the sense of dynamic action in an artistic expression such as that of sculpture — born of necessity as a static, objectual, statuary representation. This fact involved the space around it and aroused an emotional and empathic reaction in the observer.

The perception of the work already tends to immerse the observer in a phenomenological "flow" of interactions among his own body, the body of the work and the surrounding space.

This process is enormously amplified when the "sculpture in the expanded field" of contemporary art—as Rosalind Krauss⁷ defined it—merges with the spatiality of architecture and the performativity of dance or theatre, reciprocal and establishes intense relationship with all those entities, i.e. either the bodies of the work and the viewer or the space that surrounds them, introducing forcefully also the time factor and therefore the process of the artistic action. The work is no longer an object but an event.



1



2



3

- 1 Bruce Nauman, *Walk with Contrapposto*, 1968
- 2 Bruce Nauman, *Contrapposto Studies I through VII*, 2015-2016
- 3 Bruce Nauman, *Diagonal Sound Wall (Acoustic Wall)*, 1970

8 "Reflexive action is very different from reflexive thought [...]. To quote Nauman, "an awareness of yourself comes from a certain amount of activity and you can't get it from just thinking about yourself "[...] Nauman thus experiments with the way in which a purely mental act can affect the corporeal experience. [...] This mobilization of conceptualization in relation to experience reverses the usual hierarchy between thought and experience, which is no longer addressed as a way of understanding, but as a way of feeling, at the service of a personal experience. The hierarchy that traditionally places thought above sensory experience is reversed, and the process is oriented towards the sensory and affective experience of the situation ". See: Noè Soulier, "Action as a work", in *Bruce Nauman. Contrapposto Studies*, ed. Carlos Basualdo (Venice: Marsilio, 2021), 109-114.

9 See *Nature Morte*, 2020.

Nauman's work thus translates the classical *contrapposto* into a complex reflection on knowledge and art, but also necessarily questions the spatial dimension of the scene or architecture in which the event takes place.⁸

The narrow corridor in which Nauman forced himself to walk in 1968 was already part of the work, as well as his swaying body. And the studio where he created and still carries out his performances (and which in the latest experiences literally becomes the theatre of a "3D virtual visit")⁹ is an integral part of the work. Just as important is the aural dimension that accompanies the action and in some way *reads* the space of the work.

Therefore, in his work there is a close involvement of the architectural space in the artistic event: an architectural space, literally measured and shaped by the artist's body movements.

2. Tadao Ando's Museum Spaces

I venture here—beyond the specific intentions of the artist and of the curator—a possible role of affinity and support, within this process, of the museum architecture itself that houses the works' installation, further emphasized through the exhibition design project.

In the case of the Venetian exhibition, it seems interesting to me to investigate the relationship that implicitly is established between Nauman's works and the spaces of the Dogana, restored and revisited some years ago by Tadao Ando.

In fact, Ando's spatial conception of architecture has various points of contact with the reflection on the dialectic between tradition and innovation that we have seen in a certain way as the subject of Nauman's work and with the phenomenological/perceptive outcomes that substantiate his own research.

This seems to be true both in the devices Ando adopted to combine the restoration of the pre-existing building with his own architectural-spatial invention (see in particular the incorporation of the central "cube" in exposed concrete into the brick body of the ancient serial "warehouses") and above all in the conjugation of abstraction and figuration, of Western tradition and oriental sensibility, which is the basis of all his architectural work, reflected in a rarefied spatiality of absolute sobriety and intense emotional empathy.

In many of Ando's works, in fact, the abstract/geometric elements of architecture reinterpret the forms of nature, delimit them, enclose them, contain them, to the point of extracting a rational order, in a tight dialectic between abstraction and corporeality.

- 10 Tadao Ando, "Une superposition de couches abstraites et concrètes", in *Tadao Ando, Pensées sur l'architecture et le paysage*, ed. Yann Nussaume (Paris: Arlea, 1999), 93-95.
- 11 I like to imagine — remarks Tadao Andō, "Lumière, ombre et forme" in *Tadao Ando, Pensées sur l'architecture et le paysage*, ed. Yann Nussaume (Paris: Arlea, 1999), 132 — purified spaces, delimited by attics, walls and ceilings (often of a single material) [...]. When man comes into contact with this type of space, the latter — an imprisoned solid volume — is enhanced under the effect of the rays of light and natural elements such as the wind, transforming into a living, more fluid space which it forms a body with man himself". See: Tadao Andō, "D'une architecture moderne ..", in *Tadao Ando, Pensées sur l'architecture et le paysage*, ed. Yann Nussaume (Paris: Arlea, 1999), 52.
- 12 *Ibid*, 163.

The recovery of forms and procedures typical of abstract art, and of Josef Albers in particular, is strongly present in his design imagery and gives shape to an original way of designing architecture.

Andō writes: "The result is the transition from an abstract architecture, developed according to strict geometric rules, to another concrete one, which covers the appearance of the human body. I think the key to this transformation is the labyrinthine nature of my work. Articulating simple geometric shapes in a labyrinth is equivalent to merging an imaginary Piranesian labyrinth within an Albers-style painting. My main goal is thus to make possible the joint expression of the concrete and the abstract in architecture".¹⁰

Mindful of the art of Japanese gardens, but not far from Mies van der Rohe's modern mastery, the articulation of space by means of walls created by Andō allows to trace guided paths for the visitor's gaze, to design sequences of spaces and intervals (almost sound-silences), thus offering the visitor the possibility of progressively experiencing the landscape.

The avant-garde abstract geometries of art and architecture can thus be combined with an attention, which again we could say is "phenomenological", to the forms of architecture and landscape. The "spatial" tradition of Japanese architecture intervenes to "humanize" the abstract and rational contribution of modern Western architecture.

Furthermore, in all Tadao Andō's works, the *wall*—with an unusual thickness and body—has a fundamental and in some respects autonomous presence: it not only has an enveloping, delimiting function, but it is often a free element with its own autonomy and becomes a screen upon which light and shadows are projected: a vibrant and vital surface.¹¹

Geometry is then re-evaluated, but no longer as an instrument of cold, abstract rationalization of forms, rather as a tool capable of making people to react positively and enhance the expressive potential of natural spaces and shapes, including the human bodies interacting with those spaces.

"Geometry, despite its non-random character, concentrates multiple meanings [...] — explains Andō¹² — isolates landscapes, structures them, highlights them, induces people's movements, makes them walk, stop, go up or down. It also manipulates the intensity of light and, by isolating and collecting the shadows in the background, creates light waves in space. The geometry applied to the architecture highlights the specificity of the site and, by subjecting it to a violent dialogue, sublimates it and gives it a new existence".

If this is the spirit with which Ando designs his spaces, in direct relationship with the perceptions aroused in the people who live there and taking into account the needs of the movement of such people the sounds of their steps, the lights and shadows that are drawn on the surfaces, the temperature



4

- 13 See *Diagonal Sound Wall*, 1970, installed into one of the halls at Punta della Dogana.

- 14 "The concept of *Kiasma* , explains Holl, involves the building's mass intertwining with the geometry of the city and landscape, which are reflected in the shape of the building. An implicit cultural line curves to link the building to Finlandia Hall while it also engages a "natural line" connecting to the back landscape in the background and to Tooolo Bay". See: Steven Holl, *Kiasma*, (Museum of Contemporary Art: Helsinki, 1998), 16.

with which they can touch or lean against the walls ...), we understand how a performative art based on body movements such that of Nauman can find interesting correspondences with the spatiality of Ando's museum. This is true either in situations in which he himself adds spatial and tactile devices to the rooms¹³ or in the situations in which he organizes real physical performances or where he organizes purely sound events, as well as where the walls become monumental projection screens of "virtual" performances.

The emotionally charged "geometries" of Ando's architecture can thus positively host Nauman's provocations; the manipulation of the classical principles of geometry, proportion, *contrapposto*, in a contemporary mode, seems to find a certain correspondence in the work of Ando as in that of Nauman, albeit acting with obviously differing tools and techniques.

3. Kiasma

An interesting relationship with Nauman's reflections on the subject of "*contrapposto*" can also be established incisively with another paradigmatic work of contemporary architecture: Steven Holl's *Kiasma Museum* in Helsinki.

The concept of *contrapposto* in classical and Renaissance art is compared—as previously mentioned—to the analogous concept of "chiasmus", a rhetorical figure which takes its name from the Greek letter "chi" (X) and which arranges the words in a cross according to ABBA scheme.

This concept is explicitly used by Holl to set up the project of the museum; it is even suggested by its eponymous name.¹⁴

This approach of "intertwining different lines of relationship with the context", which decides the overall shape of the building by giving it a torsion that can actually correspond to the counterbalanced pose of the statues *in contrapposto*, is equally and more decisive in shaping the interior spaces of the hall and the exhibition rooms according to a sort of controlled deformation such to give a dynamic sense to museum's experiential itinerary. Thus, visitors are offered a great variety of spatial and perceptive experiences, albeit according to a somewhat controlled posture.

Holl explains that "The general character of the rooms, which are almost rectangular with one wall curved allows for a silent yet dramatic backdrop for the exhibition of contemporary art exhibition. The slight variation in room shape and size is due to the gently curved section of the building which allows the horizontal natural light to enter in several different ways. These rooms are meant to be silent, but not static; they are differentiated through their irregularity. [...] The continuous unfolding of changing perspectives connects the internal experience to the overall concept of intertwining or Kiasma. [...] The geometry has an interior mystery and an



5

15 Holl, *Kiasma*, 16-19.

- 16 The project consisted of five actions — *Origin*, *Ritual*, *Announcement*, *Gravity* and *Nudity* — which, in the intention of Virgilio Sieni, "always generate new resonances between the tables of the Atlas, where the study of the fragment and the details of the body unfolds an archaeological investigation that faces the present. At the heart of *Origin*, there is the gesture that unites a mother to her child in a specific form of intimacy, emotion and beauty. In *Ritual* the bodies created an unfolded choreography according to the passage and transmission of gestures and dynamics in continuous variation. *Announcement* presented a horizontal choreography in which very slow migrations of "angels" combined imperfection and suspension through the gestures of non-professional performers and dancers. At the center of *Gravity* was the body acted upon by other bodies and which in turn infuses movement in the other bodies. Dance embodies the balance between forces, developing a dictionary of exercises on gravity. In *Nudity* common postures and gestures, such as kneeling, sitting or standing up, made up an archive of the simplest movements, of the infinite choreographies inscribed in the shapes and articulations of naked bodies".

5 Steven Holl, Kiasma Museum, Helsinki; photo Jani-Matti Salo

- 17 Enrico Pitozzi "Anatomia del gesto. Conversazione con Virgilio Sieni", in *Materia corpo. Anatomie, sconfinamenti, visioni*, ed. Malvina Borgherini, (Macerata: Quodlibet, 2019), 19.

exterior horizon which, like two hands clasping each other, form the architectural equivalent of a public invitation".¹⁵

Hence, even Holl's Kiasma can be described with some properties as a *contrapposto* architecture, capable of introducing — akin to classical systems — those controlled variations that make it an innovative episode in the field of museum architecture and, above all, predisposed to a free and variable use and perception both in relation to the visitor's sensory experience and to the flexibility in welcoming the very different, and often interactive, forms of art found in contemporary artist production.

4. Atlas of Gesture

Exploring again the relationship between architecture and performing arts in the "tactile" or "corporeal" definition of spaces (in particular those related to the world of choreography), I think it is equally interesting to analyze an experience conducted in 2015 by Virgilio Sieni at the Prada Foundation in Milan in direct connection with the opening exhibition of that cultural center, entitled *Serial Classic*, curated by Salvatore Settis, once again focusing on classical statuary.

In this case, too, I am intrigued by the possibility of investigating how these performative artistic experiences have dialogued, more or less explicitly, with architectural spaces, designed in this case by a guru of contemporary architecture such as Rem Koolhaas.

In the two levels of the so-called *Podium* designed by Koolhaas, where the *Serial Classic* ancient art exhibition had just ended, Virgilio Sieni's project titled *Atlante del gesto* (Atlas of Gesture) explicitly dialogued with the traces of that exhibition and with the installation created by OMA studio. The choreographic project was programmatically planned to "replace the static nature of classical works with the dynamism and vitality of the bodies of the persons involved in the choreographic actions, transforming the exhibition space into a landscape of gestures". Furthermore, the door in the center of one of the glass walls of the Podium and an inclined platform, also designed by OMA, allowed the numerous dancers (professionals and non-professionals) and even the public to move freely between the internal and external spaces.¹⁶

In his research entitled *Atlas of Gesture* Sieni works precisely on bodily expression looking for a fusion of body and space, or — in his own words — establishes a "relationship of anatomy with the surrounding environment". Precisely Sieni declares that "starting from this condition it is possible to define a space".¹⁷



6



7



8

6 *Serial Classic* exhibition, Prada Foundation, Milan, 2015

7 Virgilio Sieni, *Atlante del gesto*, Prada Foundation, Milan, 2015

8 Virgilio Sieni, *Atlante del gesto, Annuncio*, Prada Foundation, Milan, 2015

18 *Ibid.*

19 *Ibid.*, 28. Sieni then adds: "The starting point — he notes, explaining his experimentation — is generally linked to the knowledge of some technical-compositional aspects: it is necessary to bring the body to marginalize thanks to a knowledge linked to the exercise and its quality of execution. All that is sought-after movement, sequence, choreographic phrase, is material that it becomes essential to know for professional and non-professional dancers" (*Ibid.*, 32).

20 *Ibid.*, 34.

21 *Ibid.*, 38–39.

This space “measurement” through posture and body movements seems to me to be a very interesting tool for the analytic perception, and therefore for the design, of an architectural space. And it is interesting to note that even Sieni—as previously noted for Nauman—considers bodily expressions in a way—although based on “slowed” and sometimes “frozen” dynamics—that questions classical statuary’s staticity by pursuing a phenomenological dimension of space which can be assimilated to the themes raised by the problematic of *contrapposto*: it is not a coincidence that Sieni speaks of the concept of “archeology of gesture”.

“Composing is the act of organizing a space by relating a series of elements to be broken up and then modeled, in order to inhabit “difficult” existential regions and thus define an environment of meaning. ... (Looking for) a place that is not symmetrical, where the choreographic design actually enhances the asymmetries, leading the dancers towards the edge of space, [...] the movement of the bodies produces a mass, channels energies, (establishes) volumes that inhabit bodies ”.¹⁸

Sieni explains that “The work of the academy on the art of gesture aims to positively intervene on the livability of places and cities, helping to define a sense of belonging: a field of action on which to graft a renewal of the relationship between the body of individual citizens and the conformation of their territories to which they belong, the cultural practices in which they orient their lives. [...] Through the creation of virtuous circles between practices, visions and the rediscovery of places, the various projects, which have gradually been created, have led to the development of maps and paths capable of expressing a new vision of art and the city”.¹⁹

“I always say: the shape must be the consequence of a whole internal dynamics, the way in which the organ presses on the spine and activates the joint system, thus allowing the production of a visible shape outside. Conversely, the form is also understood in the opposite sense, that is to say something that comes from outside and is oriented with respect to the body ”.²⁰

This research path is often linked to the ability to subtract—to “make emptiness”—rather than to the accumulation of elements. “Each architecture of the body is a redefinition of what is left in space, as a form that manifests itself by degrees, planes and levels. [...] The body thus becomes a diagram, an element that connects all things together, so contemporary that it becomes an intermediary with the past”.²¹

As was said for Nauman, the exercise that repeats and transmits gestures inspired by works of ancient art becomes revealing.



9

- 22 Koolhaas does not seek a unitary image for his project but prefers to think about the idea of a piece of city composed of different units and aggregated precisely by interstitial space. "The new, the old, the horizontal, the vertical, the wide, the narrow, the white, the black, the open, the enclosed — all these contrasts establish the range of opposites that define the project" (Rem Koolhaas, OMA Office Work Search, September 21, 2022).

5. The Podium

It is not easy to establish an immediate relationship of these performances with Koolhaas' spatial work as designer of the Prada Foundation. What is certain is that the specific building involved (the Podium) is a sort of glass case—a fluid space of evident Miesian tradition, projected towards the vision of the outside yet characterized by movements of the deck that enhance its function as a podium and attenuates its possible static nature, instead encouraging fluid dynamics, which are absolutely not symmetrical. It therefore lends itself to being defined as a platform-stage or an open loggia that prepares itself to accommodate the statue-objects as well as the moving bodies and that

induces and favors direct relationships with the external space. Japanese language would define in this regard of a space *ma* or an *engawa*, that is, in fact, an empty space of transition between inside and outside.

In these types of fluid spaces, as well as in urban open spaces, the space-body relationship is necessarily defined by a dimensional flow within which it is the very movement of the bodies. Those movements directly govern spatiality, much more than the enveloping walls, and almost as in a theatre stage, the *parterre*—the decking surface and its modulations—as well as the wings, the free walls that divide the space into different but not completed fields, play a fundamental role. Again, in this sense, the mastery of Mies van der Rohe appears to be the pivotal point of reference.

Moreover, the whole work by Koolhaas at the Prada Foundation largely focuses on the prevalence of urban open space as the main element in the composition of a series of separate and different building fragments, some pre-existing and some new.²²

This willingness to create a collective open space, not strictly formalized, like an ancient *agora*, obviously favors the protagonism of the movement of bodies in space and therefore the appropriation of space by users, in a performative dimension.

For this reason, the compositional philosophy adopted by Koolhaas finds a certain affinity with the ways of measuring and dominating the space typical of choreographic or theatre performances represented, in this case, by the experience of Virgilio Sieni.

6. Forms of Resistance

In conclusion, these two examples of the relationship between artistic performance and the conformation of architectural space convincingly illustrate the contribution that an interaction/ interference between the art of the body

- 23 See the seminar curated by Janko Rozic, *Insight in Site. Globalization, crisis and critical regionalism*, Ljubljana, May 26th 2022, with the participation of Juhani Pallasmaa.

and the art of space can provide to an architectural design approach in the configuration of haptic space. This also provides material for a phenomenologically perceptive and immersive evolution of design processes, capable of establishing an important empathic relationship between the user and the architectural space itself.

However, I find it significant that this type of sensitivity can be traced back to an innovative reflection on artistic principles rooted in the classical artistic tradition such as *chiasmus* or *contrapposto*, in the context of an intense relationship between tradition and innovation.

I wonder, then, how such research can be placed in the context of those "forms of resistance" to what this issue of AR is concerned, also recalling the famous appeal that Kenneth Frampton addressed to architects in 1983 by tracing his *Six Points for an Architecture of Resistance*, recently celebrated and commented on in Ljubljana, forty years later.²³

Bibliography

- Andō, Tadao, "Une superposition de couches abstraites et concrètes." In *Tadao Ando, Pensées sur l'architecture et le paysage*, ed. Yann Nussaume, 93-96. Paris: Arlea, 1999.
- Andō, Tadao, "D'une architecture moderne fermée sur elle-même à l'universalité." In *Tadao Ando, Pensées sur l'architecture et le paysage*, ed. Yann Nussaume, 52-66. Paris: Arlea, 1999.
- Basualdo, Carlos, "Volver sobre sus pasos." In *Bruce Nauman. Contrapposto Studies*, ed. Carlos Basualdo, 95-99. Venice: Marsilio, 2021.
- Battle, Erica F., "Bruce Nauman: bodies at work". In *Bruce Nauman. Contrapposto Studies*, ed. Carlos Basualdo, 132-142. Venice: Marsilio, 2021.
- Holl, Steven, *Kiasma*, Museum of Contemporary Art: Helsinki, 1998.
- Krauss, Rosalind, "Sculpture in the Expanded Field", *October* 8 (1979): 30-44.
- Krukowski, Damon, "Following the Sound". In *Bruce Nauman. Contrapposto Studies*, ed. Carlos Basualdo, 101-106. Venice: Marsilio, 2021.
- OMA Office Work Search, September 21, 2022. <https://www.oma.com/projects/f...>
- Pitozzi, Enrico, "Anatomia del gesto. Conversazione con Virgilio Sieni". In *Materia corpo. Anatomie, sconfinamenti, visioni*, ed. Malvina Borgherini, 19-39. Macerata: Quodlibet, 2019.
- Soulier, Noè, "Action as a work". In *Bruce Nauman. Contrapposto Studies*, ed. Carlos Basualdo, 107-116. Venice: Marsilio, 2021.



Aesthetics of Resistance

Fabio Quici



1



2

1 Trisha Brown. *Man Walking Down the Side of a Building*, SoHo, 1970 (from *Trisha Brown: so that the audience does not know whether I have stopped dancing*, Peter Eleey ed, catalogue of the exhibition at the Walker Art Center, Minneapolis, 2008)

2 Antony Gormley. *Edge II* (2000) at the Astrup Fearnley Museum, Oslo, Norway.
© Fabio Quici

Fatal Attractions

In April of 1970, at 80 Wooster Street in Manhattan, a man began walking on the side of a building, perfectly erect and perfectly perpendicular to its surface [1]. His apparently nonchalant walk rendered nearly natural a movement that in actuality radically altered his body's relationship with gravity. The naturalness of a movement otherwise taken for granted under normal conditions was exalted in the paradoxical situation enacted before the eyes of a group of spectators involved in spite of themselves in a destabilizing performance.

In conceiving the performance of *Man Walking Down the Side of a Building* (1970), Trisha Brown aimed to interpret a natural force like gravity, usually taken for granted in its manifestations, via a mediatic challenge through the human body and its movement. However, it was not a customary challenge like climbing, but a movement that simultaneously indulged and countered the inescapable vertical direction of a body that would normally have been in free fall under those conditions. The dissimulation of the effort of resistance by Brown's dancer became destabilizing from the observers' equally unnatural perspective with respect to the action taking place over their heads. The conventional and functional orientation of their bodies in the world was cast into doubt, opening up unusual forms of experience that required rethinking certain dynamics of movement, like those typical of a gesture as natural as that of walking. The perception of the performer's muscular effort in relation to gravity, fear-induced tension, the potential of physical strength and the force of resistance enacted through that situation amplified the spectators' understanding of the mechanics – and therefore the limitations – of their own bodies.

Thirty years after the Wooster Street performance, British artist Antony Gormley appeared to have wished to pay her homage with the sculpture series *Edge II* (2000), in which his 'Gormlems' — as W.J. T. Mitchell liked to call them — look down upon us from atop the walls of Oslo's Astrup Fearnley Museum [2] and Eton College's Common Lane House. This time deprived of movement, the human figure behaves like an 'architectural body' and, challenging the laws of gravity, appears to invite observers to look at the world from a different perspective.

Resistance to gravity has shaped our bodies just as we, as a function of its action, have given shape to the built environment.

The forms of architecture are by their very nature the result of an act of resistance – a resistance dissimulated at one time and exalted at another.



3



4



5

- 3 **The *Ficus macrophylla*** in Piazza della Marina, Palermo.
© Fabio Quici
- 4 **Adalberto Libera.** Palazzo della Regione, Trento, 1958-1965.
© Fabio Quici
- 5 **Matthew Barney.** *Drawing Restraint 6*, 1989-2004. (from *Matthew Barney: drawing restraint*, catalogue of the traveling exhibition Kanazawa - Seoul - San Francisco, s.l., s.n.).

- 1 John Dewey, *Art as Experience* [1934] (New York: Wideview/Perige Books, G.P. Putman's Sons, 1980), 160.
- 2 Cf Walter Benjamin, *Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit*, from W. Benjamin, *Schriften* (Frankfurt am Main: Suhrkamp Verlag, 1955).
- 3 John Dewey, cit., 41.
- 4 Neville Wakefield, "Matthew Barney. Prayer Sheet with the Wound and the Nail", in *Matthew Barney. Prayer Sheet with the Wound and the Nail*, catalogue of the exhibition at the Schaulager Foundation, Laurenz Foundation ed. (Basel: Schwabe AG Verlag, 2010), 10.

“Resistance, tension and excitement” are at the origin of artistic production, along with the “composure that corresponds to design and composition in the object,” as Dewey pointed out.¹ But art and architecture share these assumptions.

Unlike the forms we find in nature, which are the result of a useful adaptation to their very survival [3], those of architecture have never been limited to the mere survival of their inhabitants. This is why constructions built by people embrace such categories as arbitrariness, decoration, and formal exuberance [4]. Resistance in this case often becomes a performance, a challenge against gravity and more. As takes place in Brown’s performance and in Gormley’s statues, the forms of architects are conceived to elicit just as many actions and reactions from an otherwise “distracted” society at large, as Walter Benjamin was already pointing out at the start of the last century². It is a society that architecture addresses by providing not only shelter — spaces for living— but also a set of stimuli that question the very concept of ‘being in the world’. To these stimuli — visual, tactile, and synaesthetic — society in turn can respond with forms of resistance that are for the most part emotional rather than rational in nature. But when accepted and transformed into experiences, these resistances become opportunities for emancipation, because “struggle and conflict may be themselves enjoyed, although they are painful, when they are experienced as means of developing an experience.”³

The United States artist Matthew Barney, bringing with him from his past as an athlete the idea that the muscle tissue of the human body is strengthened when it encounters resistance, developed the notion of ‘resistance as a catalyst for growth’, seeing in it a necessary prerequisite for creativity. This led to the performance series *Drawing Restraint 1–18* (from 1987), which produced materials in the form of drawings, photographs, videos, and sculptures. Using inclined platforms, wires, and trampolines, Barney jumped towards the walls of a room, then towards the ceiling, and then remained suspended in the void, thus generating designs on the surfaces that bore witness to the effort of each individual gesture. In *Drawing Restraint 6* (1989–2004), Barney, jumping for an entire day on a mini-trampoline set at a 15° angle and leaving a single mark on the ceiling with each leap [5], managed to produce a drawing that alluded to a self-portrait, but also to something more. As Neville Wakefield pointed out: “Reaching against the resistance of gravity and restraint, each mark represented the physical effort of its making along with the circles of exertion, exhaustion, and recovery that characterize our very existence as sensate beings.”⁴

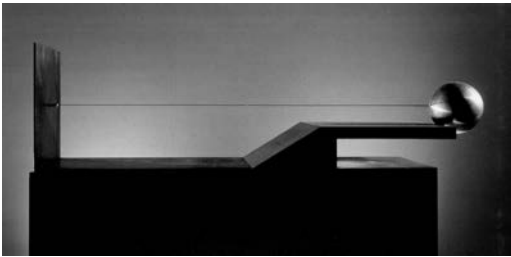
The image of Matthew Barney struggling against gravity in his vertical jumps and tracing variable trajectories in the air can seemingly be glimpsed



6



7



8

6 Anish Kapoor with Cecil Balmond. *ArcelorMittal Orbit* (2012), Queen Elizabeth II Olympic Park, London, 2014.
© Fabio Quici

7 *ArcelorMittal Orbit* and the visitors, 2014.
© Fabio Quici

8 Raimund Abraham. *Sphere Project*, Museum für angewandte Kunst, Wien, 1991. Photo of the model: Gerhard Zugmann

5 Cf Oliver Wainwright, "London has unveiled its bombastic Olympic icon, but what does it say about the city's image for the 2012 Games?", *Domusweb* 9 (2011).

6 Roberto Masiero, *Estetica dell'architettura* (Bologna: Il Mulino, 1999), 225.

7 John Dewey, cit., 6.

8 Lebbeus Woods, "Raimund Abraham's Urwelt", in *Raimund Abraham. [Un]built*, ed. Brigitte Groihofer (Wien, New York: Springer-Verlag, 2011), 224.

in the non-linear geometry of ArcelorMittal Orbit (2010–2012), the 115-metre tower designed by Anish Kapoor for Queen Elizabeth Olympic Park in London [6]. Here, the artist's vision goes beyond the typical paradigms of towers, resorting to the image of a frozen movement that becomes dynamic again in the eyes of the public invited to walk around and through the structure. The hypertrophic structure designed by Cecil Balmond to give concrete form to Kapoor's artistic gesture counters gravitational forces without dissimulating the tensions that are generated. The tensions are instead enacted with the purpose of giving life to a dismantled, intentionally unstable image, a shape that looms over visitors [7]. Whether defined as a "contorted tangle of loops," as an "imploded rollercoaster," or as a "tortured scrunch of entrails, stretched and knotted into oblivion,"⁵ the tower conceived by Kapoor has become the late-coming monument to the aesthetics of deconstruction: an aesthetics that has seen the forms of architecture prepared for the event and "placed into the interstices between order and disorder, weight and lightness, stability and instability, intimacy and inhospitality, opacity and transparency, symmetry and dissymmetry harmony and disharmony, proportion and disproportion, form and function, superfluousness and purpose, decoration and structure."⁶ But it is precisely in the very circumstances when one is at the mercy of opposites – when we confront the unusual, when the forms of art and architecture, overcoming the reassuring conventions, defy our resistance by enacting tensions rather than seeking balance – that our "sense of immediate living" is intensified.⁷

These tensions were addressed by Raimund Abraham when he conceived his Sphere Project (1991). A large, metal sphere had been designed by the Austrian architect to appear perched in precarious equilibrium at the outermost edge of a concrete platform at the end of a podium to be placed on the Terrassenplateau of Vienna's Museum of Applied Art (Museum für angewandte Kunst – MAK) [8]. The sphere was to have been held in place by a single steel cable anchored to a wall, whose variations in tension due to changes in temperature were to be offset by special mechanisms inside the sphere. Seen from below, the sphere would have appeared precariously balanced; seen from the podium on the terrace, it was to have given the impression of being about to plunge downward. If built, the installation would have enacted a mechanical and compositional game aimed at alluding to a condition of uncertainty of society as a whole. Lebbeus Woods wrote about the project: "Abraham's sphere, and the unity it presupposes, is only one element in an ensemble, the fragility and temporariness of its position corresponds to the post-Enlightenment condition of instability, uncertainty and indeterminacy which modern life presents and which reason alone cannot be codified as a status quo, as – or in a fixed and deterministic state."⁸



9



10



11



12



13

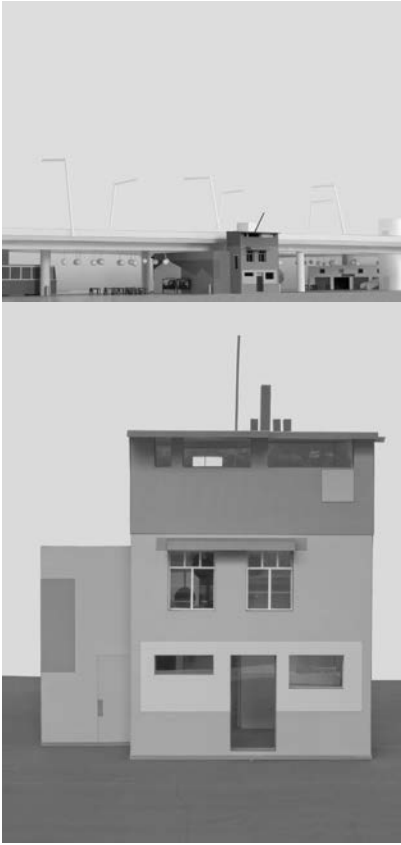
- 9 Giulio Romano. Dettaglio del primo cortile di Palazzo Tè (1524-1534), Mantova.
© Dida Biggi (from Casabella 559, 1989)
- 10 Peter Eisenman. Wexner Center for the Arts (1989), Columbus, Ohio, 1995.
© Fabio Quici
- 11 Anton García-Abril. *Balancing Act*, 12th International Architecture Exhibition, La Biennale di Venezia, 2010.
© Fabio Quici
- 12 *Maria Matilde House*, Lisboa, Portugal, 2022.
© Fabio Quici
- 13 Rachel Whiteread. *House*, London, UK, 1993.
© John Davies (courtesy John Davies)

While architecture is by its very nature the art of equilibrium, of stability, its forms are not always conceived solely to withstand stresses or to give reassuring shape to our housing. In countering gravity and bounding space, architecture also casts into plain view those invisible forces that it counters, making them visible. “Architecture is the adaptation of forms to opposing forces” according to John Ruskin’s popular aphorism. While Raimund Abraham’s sphere may in fact be considered the architectural counterpart of Trisha Brown’s *Man Walking Down the Side of a Building* performance piece, on many occasions architects have given visibility to these invisible forces by working precisely with those structural elements called into question in the pursuit of Vitruvian *firmitas*. But given that achieving equilibrium and proportion in architecture appears to soothe the senses and urge only passive contemplation, at times we look to the ‘category of the sublime’ rather than to that of the ‘beautiful’, in order to display “strength and fatigue” (to paraphrase Edmund Burke) through the use – and even the artificial use – of discrepancies and alterations of shapes and of the equilibria themselves. Therefore, if the metope and the triglyph at Mantua’s Palazzo Tè (1524–1534) slide downward [9] by the effect of those same forces that transformed into a ruin the magnificence of the classical architecture observed by Giulio Romano, centuries later, the ‘representation of instability’ takes the forms of a pillar suspended in the air [10] at Peter Eisenman’s Wexner Center for the Arts (Columbus, Ohio, 1989).

On the occasion of the 12th Venice Biennale of Architecture, it was to be Antón García-Abril to make the forces of resistance in action visible in the installation *Balancing Act* (2010). By inserting a second structural line, taut and unstable as well as dissonant with the original one of the *Corderie dell’Arsenale*, García-Abril aimed to undermine the perception of the reassuring structural lines of the sixteenth-century longitudinal space. Two double T prefabricated concrete beams placed one on top of the other, one of which burdened by a concrete weight and counterbalanced by a large spring placed at the opposite end [11], highlighted, in the Biennale’s spaces, the potential aesthetics of the concept of weight and resistance. Gravity, which for centuries has transmitted its load to the Arsenale building and been distributed through the large masonry columns, found a way to combine and react with the new diagonal structure, generating ‘an intense friction’ that gave rise to a new, unsettling reading of the involved space.

Oppositions

In cities, one may encounter on a daily basis expressions of resilience by the population, manifested in the form of exceptions to the urban fabric’s



14



15

9 Cf Anthony Vidler, *Warped Space. Art, Architecture, and Anxiety in Modern Culture* [2000] (Milano: Postmedia, 2009), 119.

10 Jean Nouvel, "Emotion and reason," interview by Walter Mariotti in *Jean Nouvel. Invention springs from character*, supplement to *Domus* 1063 (2021): 9.

14 Caruso St John Architects and Thomas Demand. *Nagelhaus* (2007), Zürich, Switzerland. (courtesy Caruso St John Architects)

15 The famous Nail House in Chongqing remained isolated within the construction site, 2007.

gradually transforming logic. A popular example has become that of Edith Macefield's small house in Seattle's Ballard neighbourhood. Besieged by a modern commercial development in 2006, Edith's little house, dating to the 1950s, survived even her death in 2008 thanks to the popularity it enjoyed after it inspired Pixar's popular animated film *Up* (2009). And near the Belém Tower in Lisbon, while crossing the pedestrian bridge over Avenida da Índia, one may encounter a unique house that seems to have sunk into the pavement of a plaza. This is the house of Maria Matilde [12], which dates to the nineteenth century. Now forgotten by Lisbon's toponymy and having been left with no street address, the house held out against the demolitions in the modernization of the Restelo quarter, and now stands as mute testimony to the history of the area and of a lifestyle, with its exterior plants and hanging laundry, that people nowadays almost wish to conceal. Seen in this way, in its isolation, the house of Maria Matilda seems ready to become one of Rachel Whiteread's casts, with which the British artist 'preserves the everyday' and 'gives authority to the forgotten things'. Even her famous House (1993–1994), the cast of a London terrace house that was to be demolished [13], was seen as a "monument to an unhealthy and claustrophobic past" and subjected to attacks by the London Country Council.⁹

In fact, in spite of their anonymity, these forms of resilience seem almost intended to affirm, by their simple presence, the noble ideal — recently evoked by Jean Nouvel in the magazine *Domus* — of an architecture intended as "resistance against the system, against physical globalisation that does not respect the genius loci, the spirit of places, the context, the differences between people."¹⁰

In China, the so-called 'Nail Houses' have themselves become symbols of resistance to and opposition against the devastating urban renewal policies following the Asian giant's economic revolution. In this case as well, these are small, anonymous houses isolated in the urban context, whose owners — considered 'troublemakers' — refused to abandon them so as to make way for the new, intrusive constructions favoured by the government's policies. Called dingzihu in Chinese, these Nail Houses, in addition to being a symbol of opposition, have at times also become the last trace of an urban memory now inevitably lost and entrusted only to urban fragments or period photographs.

In 2007, the British architecture studio Caruso St John Architects, in collaboration with the German artist Thomas Demand, drew inspiration from one of these Nail Houses to enter a major public art competition for the city of Zürich [14]. That very year, the battle waged by the owner of a modest, two-storey brick home in Chongqing against the builders who had literally left a void around it [15] became an Internet sensation due to the extraordin-



16

16 Herzog & de Meuron. *Elbphilharmonie - The construction site as a common ground of diverging interests*, installation at the 13th International Architecture Exhibition, La Biennale di Venezia, 2012.
© Fabio Quici

11 Jacques Herzog and Pierre de Meuron.
“Elbphilharmonie — The construction site as a common ground of diverging interests” in *Common Ground*, catalogue of the 13th International Architecture Exhibition, La Biennale di Venezia, ed. David Chipperfield (Venice: Marsilio, 2012), 90.

ary images that documented the events. In spite of Ms. Wu Ping's well-compensated surrender in April of 2007, the citizens of Chongqing still expressed their admiration for her opposition to the government and to the developers, bestowing upon her the nickname 'Stubborn Nail'. This was the inspiration for Nagelhaus, the winning entry by Caruso St John Architects and Thomas Demand. The project interpreted the difficult contextual conditions of a former industrial area undergoing dramatic transformation near Escher Wyss Platz. It consisted of two modest prefabricated timber buildings placed beneath a road viaduct, containing a Chinese restaurant, public toilets, and a kiosk. Their volumes, in relation to the different scale of the road infrastructure looming over it, were to give the impression of having stood there previously, appearing almost as 'archaeological fragments.' With their milled timber boards painted inside and out, they aimed to provide only an abstract and approximate image of the Chinese original, almost to demonstrate how their sources were only poor-resolution photographs obtained from the Internet. The project would then have become the representation of a representation — an operation in full Thomas Demand style — laden with political and social implications. However, as fate would have it, this kind of 'memorial to the resistance' of the single individual holding out against the powers that be found a different type of resistance in Switzerland: that of public opinion. Far-right political groups uninclined to justify the high costs for building the project (evidently too conceptual to be understood by a broad public) led the citizens of Zurich to put a stop to the initiative.

At the Common Ground (2012) edition of the Venice Biennale of Architecture curated by David Chipperfield [16], Herzog & de Meuron demonstrated that the making of a public work is, in its essence, the result of patient mediation among conflicting positions. In submitting the design of the Hamburg's Elbphilharmonie then underway, the two Swiss architects aimed above all to show how the enormous work site in HafenCity had been gradually transformed from an emblem of civic pride into "a battlefield" between three main players: the client (the City of Hamburg), the general contractor and the architect/general planner. «Ideally, the construction site of every building project is a platform of interaction that engages these three main forces; in this case, it relentlessly exposed conflicting interests and requirements. The story of the Elbphilharmonie provides, as an example, an insight into the extremes that mark the reality of planning and building today.»¹¹

In Santiago (Chile), the social conflict that broke out in October of 2019 with a series of demonstrations — known as the Estallido social — against corruption and the high cost of living, found in the Gabriela Mistral Cultural Center (arch. Cristian Fernandez + Lateral Arquitectura) an ideal



17



18



19



20

17 The Gabriela Mistral Cultural Center (arch. Cristian Fernandez + Lateral Arquitectura) in Santiago del Chile, December 2019.
© Fabio Quici

18 Some of the protest images on the walls of the Gabriela Mistral Cultural Center in Santiago del Chile, December 2019.
© Fabio Quici

19 A tourist takes a selfie in front of the Gabriela Mistral Cultural Center, December 2019.
© Fabio Quici

20 How to Guide: Makeshift Tear-Gas Mask. Illustrated by Marwan Kaabour, at Barnbrook; from *Disobedient Objects* exhibition, Victoria and Albert Museum, London, 2014.

12 *Disobedient Objects*, Gavin Frindon and Catherine Flood curators, Victoria & Albert Museum, London, 26 July 2014 – 1 February 2015.

location for highlighting representations of discontent [17]. On street level, the main façade in pierced copper of the cultural centre on Avenida Libertador Bernardo O'Higgins became, in the winter of 2019, a gallery of social protest in the form of a vast repertoire of street art techniques: posters, tagging, stencils, stickers, installations, and wheatpaste [18]. This spontaneously created gallery gave visibility to the mistreatment and abuses of power perpetrated against the demonstrators by the national police and the army. From the streets and public squares where the demonstrations took place, civil society had chosen an architecture conceived as a social condenser to gather the representations of its own resistance. Like the tables displayed by Herzog & de Meuron at the Venice Biennale, which collected and exhibited the newspaper articles and images that had accompanied the events at their work site as they unfolded, in Santiago the façades of the Gabriela Mistral Cultural Center had been chosen to draw the attention of public opinion not only to what took place during those weeks, but also to the various forms of injustice that afflicted the 'social work site' of a country in transformation.

While in Santiago it was above all the aesthetic and artistic qualities [19] of these forms of protest, as they put themselves on display in an open-air exhibition gallery, that reached the uninformed tourist just happening by, in 2014 the 'products' of the protests found official place at a prestigious exhibition venue.

The 'powerful role of objects in movements for social change' was examined for the first time at the Disobedient Objects¹² show at London's Victoria & Albert Museum. This was a case not of celebrating popular artistic expressions by street artists, but of demonstrating how political activism is also capable of nourishing design ingenuity and celebrating collective creativity by producing objects that 'defy standard definitions of art and design'. The forms of resistance thus took on the appearance of ingenious objects assembled with common materials, useful for propaganda, for personal defence, but also for violent action: makeshift tear-gas masks; bucket pamphlet bombs; book bloc shields; lock-on devices; changing designs for barricades and blockades; experimental activist-bicycles; etc. Every exhibited item was also accompanied by videos, flyers, and photographs showing the geographic and political context and the battles for which they had been created – an identity at times already declared by their own technical and morphological characteristics [20].

The show at the Victoria & Albert Museum demonstrated precisely how the shape of objects is a 'transmissible representation of the correspondence among acts of resistance', a representation capable of keeping alive the memory of peoples' ability to create but also to destroy and subvert. In the end, the fragments of the Berlin wall we find today scattered throughout the



21



22



23



"THE FAÇADE OF MY HOUSE EXPRESSES MY PERSONAL STYLE. IT IS MY SHIELD."
ŠUTKA RESIDENT

~ FAMILY HOUSE, ROMA NEIGHBORHOOD, SKOPJE ~

24

21 Bosa District, Bogotá, Colombia, 2010.
© Fabio Quici

22 The decorations on the facades of the houses in Bogotá, Colombia, 2010.
© Fabio Quici

23 Fences in Bogotá, Colombia, 2009.
© Fabio Quici

24 Marjetica Potrč. *Pattern Protects 2007*; from *Making Worlds*, 53rd International Art Exhibition, La Biennale di Venezia, 2009

13 Rao Vyayanthi, "Slum as Theory", *Lotus International*, 143 (2010): 10-17

14 Cf Carlos Basualdo, "Dell'espressione della crisi," *Dreams and Conflicts: The Dictatorship of the Viewer*, ed. Francesco Bonami, catalogue of the 50th International Art Exhibition, La Biennale di Venezia, (Venice: Marsilio, 2003), 243.

15 Ibid, 244.

world, from Richmond, Virginia to Paris, from Toronto to Brussels, in the Vatican Gardens or beside the university library of Cottbus, remind us precisely of this: ‘resistance is a right’.

Self-Determinations

An expression of the ‘positive freedom of people’, self-determination is manifested through actions and objects that speak of the aspirations of peoples and of their strength to transform the places they inhabit. In spite of the commonly negative definition commonly given to the results of the spontaneous transformations resulting from these aspirations, the theoretical research that has been done on favelas, barrios, zhopadpattis, kampungs, and the world’s peripheries demonstrates the extreme liveliness and interest that these phenomena show from the social, political, architectural, and urban perspective. As anthropologist Vyayanthi Rao, director of the Terreform Center for Advanced Urban Research in New York, has observed: “the slum appears over and over as a theoretically productive spatial ecology.”¹³

The Argentine Carlos Basualdo, curator of the section entitled *The Structure of Survival* at the 50th Venice Biennale (2003), had collected the interpretations provided by more than 25 international artists for the current situations in favelas and shantytowns. Defining shantytowns as “spaces of resistance,” Basualdo saw in these places a production of original forms of sociality, of alternative economies, and of “various forms of aesthetic strength.”¹⁴ In these places of the unpredictability and negotiation resulting from crisis situations, the aesthetic act was seen as the “moment of asserting the person’s autonomy with respect to a possible world, while living through and overcoming crisis.”¹⁵

Only when walking the streets of the informal city can one comprehend how the uncontrolled development of these places is not just an act of necessity connected to housing, but also contains forms of affirmation passing by way of forms of visibility [21]. In Bogotá, paint shops have become the new cathedrals of the informal city. Amid dwellings in continuous transformation, with their truncated concrete pillars and open rebar ready to accommodate new floors, the use of colour and of now coded geometric motifs in the façades is not only decoration but recounts a progressive emancipation, both economic and social, of the family unit while it takes place [22]. Colour restores identity and recognizability in an otherwise homologating context. Recovering identity is a necessity virtually ignored by the Bogotá administration, which continues to offer new row housing and blocks of multi-storey houses with balcony access without understanding the social dynamics and the aspirations of the population that will have to inhabit them. The fences



26



27

16 Yona Friedman, "Basic & Irregular," *Domus* 893 (2006): 74.

26 Torre David in Caracas

27 Novi Beograd, Serbia, 2014.
© Fabio Quici

protecting the properties, as a form of resistance among equals, whether in Bogotá, Caracas, or Guatemala City, become forms of identity and aesthetic expressions [23]. It is no coincidence that the Slovenian architect Marjetica Potrč, for her architectural case studies shown at art galleries around the world, takes her inspiration from the spontaneous settlements in South Africa, Colombia, Brazil, and many other places, to recount the difficult conditions (environmental, social, economic, political, etc.) that gave shape to their existence, while at the same time highlighting the creativity of resistance in its various manifestations [24]. In Marjetica Potrč's well-trained eyes, as in the eyes of any architect willing to pay attention to the suggestions provided by both consolidated and expanding cities, the population's needs and aspirations emerge in the urban fabric with similar manifestations, albeit in very different social contexts. There are telling connections that tie Potrč's architectural case studies, inspired by the personal and ingenious housing solutions of South American urban agglomerates, to her designs that look to the Balkan populations and to their way of opposing the inheritance of Soviet-style modernist utopias – and these utopias' dream of the anonymous individual in the metropolis [25]. Both cases show the rejection of anonymity while celebrating improvisation and adaptation as categories of an organic housing more responsive to the changing needs of individuals.

Yona Friedman, in his praise for irregular structures, highlighted not only the formal richness that derives from them, but also their “exceptional tolerance for imprecision” that makes them accessible even to non-professional builders, with important social consequences: “Irregular structures not only admit improvisation, they also admit that each person can make improvements to them.”¹⁶

However, the regular structure of a skyscraper can also become a manifesto of resistance and self-determination in the absence of adequate responses by public institutions. The Torre de David (or Centro Financiero Confinanzas) in Caracas has become an emblematic case of adaptation and self-regulation of the community of squatters inside a stiff, modular structure apparently extraneous to the organic complexity of informal settlements. The 45-storey skyscraper in downtown Caracas, never finished and left in a state of abandonment in the early 1990s, has become a heterotroph, an informal vertical settlement, an ambiguous space, following its occupation by 200 homeless families in October of 2007 [26]. Over the years, the number of families grew to 750, and the inhabitants, with great resourcefulness, began to fill and conform the spaces based on their needs, and to an extent proportional to their ability to obtain materials, and therefore to their own economic possibilities. This community, organized into a cooperative that self-regulates the tower's life and its relations with the outside in the same manner as



25

17 Simone & Lucien Kroll. *Une architecture habitée*, (s.l.: Actes Sud, 2013), 230.

18 Ibid, 310.

25 Marjetica Potrč. *Caracas: Growing Houses* (2012), Staatliche Museen zu Berlin, Nationalgalerie; 2013 purchased by the Stiftung des Vereins der Freunde der Nationalgalerie für zeitgenössische Kunst © Staatliche Museen zu Berlin, Nationalgalerie / Jan Windszus (courtesy the Staatliche Museen zu Berlin, Nationalgalerie)

a condominium on Park Avenue in New York, has been the subject of social, anthropological, economic, urban, and architectural studies. Nevertheless, the aesthetic impact of the photographs of the Torre de David by the Dutch photographer Iwan Baan were essential to making this reality known to the world at large, and for bringing it into galleries and into the most prestigious international art exhibitions. One of the most well-known photos, the one depicting a portion of the tower's exterior face with the storeys plugged variously with bricks and curtains, does not offer an image that is, in substance, so alien in its formal heterogeneity. Even in the completeness of the housing in our cities, where room is left for self-determination there is no lack of individualism manifested by occupying and modifying exterior spaces as well. Loggias enclosed in various ways, the building of glassed-in verandas and winter gardens, window coverings, satellite dishes and air conditioners: everything contributes towards recounting an inadequacy of the architectural response to people's need to help give shape to their own homes [27]. An act of resistance, then, is the non-conformism shown by architects like Yona Friedman (1923–2020), Lucien Kroll (1927–2022), and Ralph Erskine (1914–2015), with their design philosophy based upon participatory criteria. Initiatives like Lima's experimental housing project (PREVI) in the 1960s – with its metabolist approach and its natural inheritance represented in the more recent Incremental Housing Projects by the Elemental Chile studio led by Alejandro Aravena – were equally non-conformist.

The forms of self-determination that give shape to the large urban agglomerations are to be considered as expressions of resistance by the individual who wishes to be the causal agent in his or her own life and in the creation of his or her own living environment. "The inhabitant still possesses a treasure lost by architects: a culture of scale and of domestic complexity, a *bonhomie* that makes landscapes liveable,"¹⁷ said Lucien Kroll. "In essence, you should never design a façade 'like an architect.' One must obstinately seek the 'gesture of the inhabitant' and safeguard his or her complexity."¹⁸

Bibliography

- Basualdo, Carlos. "On The Expression of the Crisis". In *Dreams and Conflicts: The Dictatorship of the Viewer*, catalogue of the 50th International Art Exhibition, La Biennale di Venezia, edited by Francesco Bonami, 243- 244, Venezia: Marsilio, 2003.
- Bouchain, Patrick (ed). *Simone & Lucien Kroll. Une Architecture Habitée*. s.l.: Actes Sud, 2013.
- Brillembourg, Alfredo and Klumpner, Hubert Urban Think-Tank, ETH Zürich (ed). *Torre David: informal vertical communities*, Zürich: Lars Müller Publishers, 2012.
- Deleuze, Anna. "Vivere di avversità: l'arte della precarietà". *Lotus International*, 143 (2010): 122-129.
- Dewey, John. *Art as Experience* [1934] (New York: Wideview/Perige Books, G.P. Putman's Sons, New York 1980).
- Eleey, Peter (ed). *Trisha Brown: so that the audience does not know whether I have stopped dancing*, catalogue of the exhibition, Minneapolis: Walker Art Center, 2008.
- Flood, Catherine and Grindon, Gavin (eds). *Disobedient Objects*. London: Victoria & Albert Pubns, 2014.
- Friedman, Yona. "Basic & Irregular." *Domus*, 893 (2006): 66-75.
- García-Abril, Anton. "Balancing Act". In *People Meet in Architecture. Biennale Architettura 2010*, catalogue of the 12th International Architecture Exhibition, La Biennale di Venezia, edited by Kazuyo Sejima, 158. Venezia: Marsilio, 2010.
- García-Huidobro, Fernando and Torres Torriti, Diego. *El Tiempo Contruye! Time Builds!. The Experimental Housing Project (PREVI)*, Lima: genesis and outcome. Barcelona: Editorial Gustavo Gili, 2008.
- Hendel Teicher (ed). *Trisha Brown: Dance and Art in Dialogue, 1961-2001*. Andover, Mass.: Addison Gallery of American Art, Phillips Academy Essays, Andover, distributed by the MIT Press, 2002.
- Herzog, Jacques and de Meuron, Pierre. "Elbphilharmonie - The construction site as a common ground of diverging interests". In *Common Ground*, catalogue of the 13th International Architecture Exhibition, La Biennale di Venezia, edited by David Chipperfield, 90. Venezia: Marsilio, 2012.
- Maak, Nikolaas. "Some houses stay, some houses go, some pop-up somewhere else". In *People Meet in Architecture*, catalogue of the 12th International Architecture Exhibition, La Biennale di Venezia, edited by Kazuyo Sejima, 106-108. Venezia: Marsilio, 2010.
- Masiero, Roberto. *Estetica dell'architettura*. Bologna: Il Mulino, 1999.
- Matthew Barney. Prayer Sheet with the Wound and the Nail*, catalogue of the exhibition at the Schaulager Foundation, Laurenz Foundation (ed.). Basel: Schwabe AG Verlag, 2010.
- Matthew Barney: drawing restraint*, catalogue of the traveling exhibition Kanazawa - Seoul - San Francisco (2005-2006), s.l., s.n.
- Mazzaglia, Rossella. *Trisha Brown*. Palermo: L'Epos Società Editrice, 2007.
- Mitchell, William John Thomas "Architecture As Sculpture As Drawing: Antony Gormley's Paragone". In *Antony Gormley: Blind Light*, edited by Anthony Vidler and Susan Stewart. London: The Hayward Gallery, 2007.

<https://www.antonygormley.com/resources/texts/architecture-as-sculpture-as-drawing-antony-gormley-s-paragone>

Simone & Lucien Kroll. *Une architecture habitée*. Sous la direction de Patrick Bouchain. s.l.: Actes Sud, 2013.

Vidler, Anthony. *Warped Space. Art, Architecture, and Anxiety in Modern Culture*, Cambridge, Mass.: MIT Press, 2000.

Rao, Vyjayanthi. "Slum as Theory". *Lotus International* 143 (2010): 10-17.

Wainwright, Oliver. "London has unveiled its bombastic Olympic icon, but what does it say about the city's image for the 2012 Games?". *Domusweb* 9, 2011.

<https://www.domusweb.it/en/opinion/2011/11/09/untangling-the-orbit.html>

Woods, Lebbeus. "Raimund Abraham's Umwelt. Austrian Cultural Institute in New York and the Sphere Project in Vienna". In *Raimund Abraham [UN]BUILT*, edited by Brigitte Groihoffer, 224-225. Wien-New York: Springer-Verlag, 2011.

de casa ob pietre



Arcangelo Sassolino and the Italian School of Engineering

Tullia Iori

Arcangelo Sassolino and the Two Souls of the Italian School of Engineering

In this essay I interweave art, science, engineering, philosophy, materials and forms. The text focuses on concrete and how during the twentieth century the Italian School of Engineering has interpreted this material to create works of art according to two different approaches: the naturalist approach and the positivist approach. To more easily understand the difference between the School's two souls, which fraternally coexisted, I use the work of an Italian artist, Arcangelo Sassolino. I first frame his work, which is that of an artist-engineer, as evident in his installation at the Venice Biennale 2022; then, through the analysis of other previous works, I show how resistance by form (naturalist approach) and coactions (positivist approach) are always present in his production to address the stability and strength of materials.

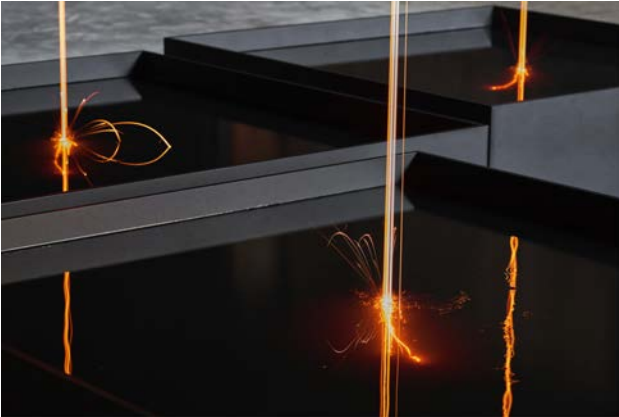
An Artist-Engineer

Arcangelo Sassolino's last work was exhibited at the 2022 Venice Biennale with the title *Diplomazija Astuta*. It is not entirely clear what the title of the work — *astute diplomacy* — means. The work was presented in the Biennale's Malta Pavilion rather than the Italian, as he won a competition announced by the Maltese government to seek both the curators of the Malta Pavilion and the work to be exhibited within. The work is a homage to the *Beheading of Saint John the Baptist* of 1608, a painting by Michelangelo Merisi da Caravaggio placed in the Co-Cathedral of St. John, Valletta, Malta. Caravaggio arrived in Malta after killing a man in Rome, possibly his rival in love. A bounty was levelled to hand him over to the judges who would certainly condemn him to death. Caravaggio fled to Naples and then to Malta aboard a ship of the Order of Knights of St. John. Protecting him was Alof de Wignacourt, the Grand Master of the Order. Wignacourt knighted Caravaggio and in return obtained for Malta the exclusive work of one of the most brilliant painters of all time. Caravaggio produced at least three paintings in Malta: *Beheading of Saint John the Baptist* and *Portrait of Alof de Wignacourt and his Page* (later sold and now housed in the Louvre); and finally, *Saint Jerome Writing*, which remains in Malta after a theft and return. Caravaggio's time in Malta was short-lived, but there is no doubt that Alof de Wignacourt carried out an operation of “astute diplomacy”.

The context of Caravaggio's *Beheading* is dark. There are seven subjects in the painting: the Baptist, the jailer, the executioner who is about to enact the final blow, a young woman carrying the basket in which she will



1



2

1 Arcangelo Sassolino, *Diplomazija Astuta*, Malta Pavilion, Venice 2022. Source: Photo Agostino Osio Alto Piano

2 Arcangelo Sassolino, *Diplomazija Astuta*, Malta Pavilion, Venice 2022. Source: Photo Agostino Osio Alto Piano

collect the head, an elderly woman distraught at the horror and two prisoners watching from behind the grates. The light strikes only the protagonists; they are the ones making the light; then the light scatters upon the surface of the floor.

Sassolino's immersive installation, not unlike Caravaggio's painting, is also dark. There are seven tanks filled with water. Inside these huge vessels fall, in the same number as the protagonists in the painting, seven bands of white light coming from above, however it is *not* light, but molten steel; he turns steel into light [1].

Sassolino notes that *“The empty darkness of that wall, of those stones, of everything inanimate – in Caravaggio’s painting, that void seems to be the very condition of the scene, what makes possible the vibrant, throbbing light that makes those bodies live and move. This radical contrast between light and darkness makes the scene into something that happens before our eyes, and not merely something that will happen or has already happened. It is this contrast that interests me, or rather the idea that only through the conflict and unresolved tension of forces we can see, even if only for an instant as a blinding light, the origin of things—an origin that, coming from nothing and destined to return into nothing, exists only in the ‘here and now’ of its appearance. An origin that appears and that at the very moment of its appearance is no longer there [2]. What I am trying to capture is the change of state, that instant in which something is becoming something else, that energy and power that exist in the flash of absolute instability between the moments of equilibrium that are the before and the after”*.

Only through a change of state, and thus only in living time, does steel become light. Molten metal is incandescent; when poured it becomes a white beam of moving—liquid—light. On contact with water, steel hisses, cools and disperses to the bottom, retreating into darkness [3].

Sassolino adds, *“I want to free metal from that closed form, to expose its luminous liquid origin. Once melted, metal is no longer simply static, no longer something that merely exists, unchanging – instead, it expands within a chronological dimension of appearance and disappearance: it becomes time itself. Steel is created only at very high temperatures, and when energy and heat bring it back to its original liquid state, it glows with red-hot light; it becomes stolid hardness only when that light goes out. Only in the change of state, and therefore only in living time, does steel become light.”*

Metal is transformed by an induction process, like that of the new generation cooking stoves without open flames. The steel passing through the magnetic field goes from zero to 1500 degrees in half a second. The melting is repeated in a 6-minute cycle.



3

- 1 Keith Sciberras and Jeffrey Uslip, *Diplomazija astuta* (Malta: Midseabooks, 2022).
- 2 Luca Illetterati and Arcangelo Sassolino, *6Words 20works* (Padova: University Press, 2016).

3 Arcangelo Sassolino, *Diplomazija Astuta*, Malta Pavilion, Venice 2022. Source: Photo Agostino Osio Alto Piano

During the seven months of the Biennale 25,000 kg of steel will have been melted. This is an expensive but conceptually ‘responsible’ project: the work ultimately achieves Carbon Neutrality. Greenhouse gas emissions have been reduced to a minimum, for example by using energy from renewable sources and by recovering the steel, which will be re-melted and then recycled (at 80%) in a local production facility. A voluntary international standard has been applied and the carbon dioxide equivalent emissions produced are certified by a third-party audit. Additional emissions are offset by a forest protection project.

The offsetting process (simplified): if there is a portion of CO₂ in the production process that is incompressible and despite all the precautions and the use of renewable sources, there is a residual, to balance this residual a CO₂ credit is purchased on the market and in practice, another CO₂-absorbing project is financed. In this case the credits used to balance the 81 residual tons of CO₂ from Sassolino’s project are generated by the Ntakata Mountains REDD project, launched in May 2017 in Tanzania, Africa, which involves local communities engaged in protecting their villages’ forest reserves. This, too, is “astute diplomacy”.

Sassolino concludes that “This is a work about continuous loss, about the impossibility of holding back, about the inexorable and unstoppable flow of all things. But it’s also about the fact that being is only revealed in vanishing, that light is an evanescent interval of darkness. Something keeps dissipating, consuming, yielding; the molten drops ceaselessly appear, fall, and vanish. I am trying to scan time – that which both creates being and consumes it – through something equally elusive. Maybe mine is, at its core, a work about the open wound that is life. Why can’t sculpture flow like time instead of being a cold, rigid monolith devoid of the vital energy that produced it? Instead of fixing the instant of the passage, making it once again something static, I show the passage itself, the appearance and the disappearance, the glowing, ephemeral limit that divides and connects the twin darknesses of the before and the after”.¹

To create this poetic passage (appearance and disappearance), Sassolino works like an engineer, but no engineer could ever do what he does.² Sassolino is not trained as an engineer; his training history is rather anomalous. He was born in 1967 in Vicenza, Italy, where he lives and works. In the late 1980’s he enrolled in a degree program in engineering at the University of Padua. But life took him elsewhere, first to the United States, as a toy designer where his 1989 patent, *Compounded Polyhedron for Ability Games*, piqued the curiosity of a New York-based Japanese company. It was in New York that Sassolino discovered his inclination for art and trained at the School of Visual Arts. He then returned to Italy and moved to Pietrasanta,

- 3 Tullia Iori, *Il cemento armato in Italia dalle origini alla seconda guerra mondiale* (Roma: Edilstampa, 2001).

near Massa, where he began sculpting marble, and finally back home, where he started a full-fledged workshop within which he generated his artistic engineering works.

Sassolino had unknowingly inherited the DNA of the Italian School of Engineering. In October 2020 he was awarded an honorary degree in Construction Engineering-Architecture by the University of Rome Tor Vergata, where the lessons of the masters of Italian engineering would have found their place. In receiving this honorary degree Sassolino can be seen as the embodiment of the two souls of the Italian School of Engineering based on two approaches: one naturalist and one positivist. Specifically, the naturalist approach is based on resistance by form, while the positivist approach is based on resistance by coaction. It is a juxtaposition that repeats between nature and technique, between natural and artificial.

The Two Souls of the Italian School of Engineering

The opposition between nature and technique maps its way through the histories of philosophy and science; it impassioned Aristotle and it coursed through Descartes' postulates. Nature is defined as "other than man", it is by definition in opposition 'to', and to begin to understand the two souls of the Italian School of Engineering it is necessary to face the positivist approach in order to better understand the naturalistic one.

During the 20th century the goal of all Italian structural designers was to optimize the behaviour of the material. The material to be optimized was predominantly concrete because it was the only readily available material. Italy has no iron mines; therefore the country produces very little steel. Instead, there is an abundance of cement marl quarries. Clay and limestone quarries are ubiquitous in Italy. Cement is Italy's main kilometer-neutral material.

Reinforced concrete, in all its forms and variations, is Italy's structural material of choice.

It arrived in Italy from France as it did in all European countries. Reinforced concrete was first used as a cheaper substitute for wood and steel. In the second half of the 1920s it was understood as having enormous, autonomous potential, different from that of other materials. The marriage of cement and steel creates a composite material in which you can seamlessly vary the percentages of one and the other, actually obtaining materials with different behaviours; changing the ratio of materials changes the strength, ductility, weight, elasticity³. And herein are the two interpretations the Italian School gives to the material: nature and technique.

- 4 See: *SIXXI. Storia dell'ingegneria strutturale in Italia*, eds. Tullia Iori and Sergio Poretti (Roma: Gangemi, Vol 1, 2014; Vol 2, 2015; Vol 3, 2015; Vol 4, 2017; Vol 5, 2020).

The positivist soul, which foregrounds technique, is convinced that it is possible to improve materials, to enhance them, to perfect them beyond what nature offers. This optimism is coupled with the belief that the engineer must play an active role in the behaviour of buildings: the engineer must not be content with solutions found in nature but invent more efficient models. The designer must be God's helper, Nature's helper. Nature must be corrected; materials must be imbued with new enhanced capabilities. Structures, according to this logic, must be trained to respond to stresses for which they are not suited. And this can be achieved by imparting artificial coactions to bodies, previously determined by calculation, capable of correcting the natural equilibrium state of the structures themselves. One definitive application of this idea is prestressing: prestressing teaches concrete to resist tensile stresses, stresses that concrete would not be able to withstand but which, once prestressed with tensile steel, it can easily handle by loosening the initial prestress.

Conversely, the naturalist approach argues that it is not necessary to teach structures how to behave. Structures should be left free to adapt spontaneously to loads while also making up for any gaps in knowledge on the part of the designer. This belief in the inherent resources of nature leads to a clarification of the engineer's role: the engineer should observe nature, study it, interpret it, understand it, not necessarily imitate it but certainly be in tune with it.

Naturalists are skeptical about the possibility of mathematically interpreting, at the desk, the response of the structure; therefore, they rely on stress calculating machines, that is 'small-scale models' that are subjected to load tests in the laboratory. In using the small-scale model as a tool the engineer only needs to learn to read nature's responses: it is nature that will explain to the experimenter how it will behave at full scale.⁴

It is now clear how both positions were equally stimulating to Italian engineers. The naturalist approach was manifested through the work of engineers like Pier Luigi Nervi and Sergio Musmeci who sought the answer to their problems—though in very different ways—in the observation of natural forms. Riccardo Morandi, on the other hand, did not passively wait for the intervention of nature but immediately implemented those artificial coactions capable of ensuring more favorable distributions of internal stresses and is why he promoted, at all levels, with unwavering commitment, the spread of the prestressed concrete.

Nervi defined and worked with resistance through form. Ferrocement, the material he invented during World War II, was excellent for shaping, curving, and bending because of its workable thinness. Nervi never designed original static organisms in terms of balance, he always used traditional

domes and vaults – statically simple. What he invented was *the way* to build them; he broke down his domes into thousands of small pieces, which he then reconnected like a huge three-dimensional puzzle. Nervi used small-scale models to verify forces and form because mathematical analytical calculations could not explain the natural behavior of his structures.⁵

On the other hand Morandi was a "God's Helper" engineer. He corrected nature; he applied counterweights, added forces to balance others, composed forces, forced the structure into a dynamic, seemingly unstable equilibrium. If there was a thrust, he applied a counterthrust. In his most famous arch bridges the natural thrust of the arch is offset by the presence of inclined struts that act the opposite direction. The struts act as forces inward to the arch, correcting the pressure curve. Most importantly, he used prestressed concrete. In his futuristic subtended tie-rod structures, Morandi not only used prestressed concrete to construct beams and roofs, but applied tie-rods at the ends that deformed the beam in an opposite and symmetrical way to the action of the external loads: Morandi played with composition of forces, dynamic balance, thrust and counterthrust⁶.

Sergio Musmeci also had a naturalist approach but a bit different. For Musmeci, everything revolved around form. Regarding resistance he had an entirely original way of thinking. Musmeci said, "In this problem, what form answers optimally? The form is not given but must be calculated from the boundary conditions of the problem?" And he would set off in search of the limit form, a problem that is easily solved only in the simplest of cases. For example, the "limit arch": if I have a material with a certain compressive strength and specific weight and I want to make an arch, there is a span beyond which it is not possible to go. This limit span corresponds to a very specific shape that Musmeci calls the "limit arch." The span of this arch can be calculated and is equal to Pi times the strength of the material divided by its specific weight. Concrete resists 100 kg/square meter and weighs 2500 kg/metrocube: if we divide the strength with the specific weight it results in about 400 meters. Multiplying Pi by 400 meters, the result is 1250 meters. This is a limiting span that cannot be exceeded by a concrete arch and to which corresponds a definite shape that, in turn, corresponds to the function: $y=\log\cos x$. If the arch has a weight to carry, the shape remains the same but the limit span is smaller: the shape is invariant.⁷

Musmeci argued that the good structural engineer does not calculate assigned shape but assigns shapes. The engineer must "calculate form", not verify an assigned form. The engineer should not design calculation methods to find the stresses but should design the stresses. For example, in his Basento bridge, since it is a concrete membrane, Musmeci designs uniform



4



5



6



7

4 Arcangelo Sassolino, Untitled, GNAM, Roma, 2018.
Source: Photo Tullia Iori

5 Arcangelo Sassolino, Untitled, GNAM, Roma, 2018.
Source: Photo Tullia Iori

6 Arcangelo Sassolino, Untitled, GNAM, Roma, 2018.
Source: Photo Tullia Iori

7 Arcangelo Sassolino, Untitled, GNAM, Roma, 2018.
Source: Photo Tullia Iori

stresses in all directions with a complete absence of flexural disturbances. And from this he calculates form.

Sassolino's DNA

These are just the main protagonists of the Italian School. Two whole generations of structural designers have been conditioned by these approaches, but those who we do not hesitate to call philosophical, humanist and culturally complex.

How does Sassolino's work help us understand these ways of proceeding? How does he stand in relation to these two souls of the School, and in what sense did he inherit the DNA of both lines of thought?

To explore these questions I refer to one of Sassolino's early concrete works—*Untitled*— that is on view at the National Gallery of Modern Art in Rome (GNAM), next to a *Cretto* by Alberto Burri, another famous Italian artist who used concrete [4]. It is a thin resistant vault by form with a pleated shape that gives it enough inertia to remain hanging without changing shape. It is like "the nameless vault" of Musmeci's Basento Bridge in Potenza.

This seems to be a naturalist approach. But how was this work made? Sassolino took a sheet of polycarbonate and pre-stressed it with threaded bars, thus placing it in co-action with the bars, creating a coaction between steel and polystyrene [5]. On the polystyrene, Sassolino arranged a thin electro-welded mesh carefully shaped to the folds of the panel that is provided with hooks to hang the finished work. He then projected by hand against the panel, lying on the ground, an anthracite-colored, quick-setting cement mixed with fine aggregates and iron oxide. The projection of the compound generated a sheet of cement of varying thickness, three or four centimeters, but thin near the edges [6].

When the setting is complete, panel and foil are placed vertically, and the polycarbonate is separated from the cement. The act of their separation is a tear – violent. The polycarbonate panel resumes its state of stillness, it is no longer in coaction, but its material tension, its co-action, has been transferred to the cement sheet whose jagged edges forever record the violence of the detachment.

There is not only resistance by form. There is also the idea of solidifying the energy stored by the compressed polycarbonate [7] In some sense this is the same operation Sassolino uses regarding other works in which he is aided by complex calculations, conducted by experienced engineers, that push his works to the "limit form", just as Musmeci loved.



8

For example, when he stretches chestnut wood beams (*Untitled*, 2007) between the groans and slurries of the material until they break [8] Or in the more recent *Physis*: two heavy bodies of granite and concrete, moved away and brought closer, in a daily cycle, with a solar-powered piston, from 2022 part of the permanent collection of Arte Sella, in the area of Malga Costa in Val di Sella, in Borgo Valsugana (Trento); and above all, *Tempo piegato*, presented at Art Basel 2022 where—Sassolino says—"a glass is bent to the limit of its resistance: there is a conflict in the act; somehow the material is suffering; it could not resist; the time is compressed into the sculpture."

Resistance by form, typical of a natural approach, but also coactions between materials and artificial stresses, indicating a positivistic approach. In short: works of art between nature and technique, full of engineering, full of the influence of Italian School of Engineering.

Bibliography

Iori, Tullia. *Il cemento armato in Italia dalle origini alla seconda guerra mondiale*. Roma: EdilStampa, 2001.

Iori, Tullia. *Pier Luigi Nervi*. Milano: Motta Architettura, 2009.

Iori, Tullia and Poretti, Sergio. *Pier Luigi Nervi. Architettura come Sfida. Roma. Ingegno e costruzione. Guida alla mostra*. Milano: Electa, 2010.

SIXXI. *Storia dell'ingegneria strutturale in Italia*, edited by Tullia Iori and Sergio Poretti. Roma: Gangemi, Vol 1, 2014; Vol 2, 2015; Vol 3, 2015; Vol 4, 2017; Vol 5, 2020.

Illetterati, Luca and Sassolino, Arcangelo. *6Words 20works*. Padova: University Press, 2016.

Keith Sciberras, Jeffrey Uslip (eds). *Diplomazija astute*. Malta: Midseabooks, 2022.

Iori, Tullia. "Sergio Musmeci and the calculation of the form". In *Imagine Math 8 - Dreaming Venice*, edited by Michele Emmer and Marco Abate, 235-254. Springer International Publishing, 2022.

che cove



il
tra
e

copolla) san d

Warped Versus Regular Surfaces

**A Form of Resistance to
Canonical Shapes, from Reims
Cathedral to Le Corbusier**

**José Calvo-López
Enrique Rabasa-Díaz**



1

- 1 Joël Sakarovitch, *Épures d'architecture* (Basel-Boston-Berlin: Birkhäuser, 1998), 185-283.

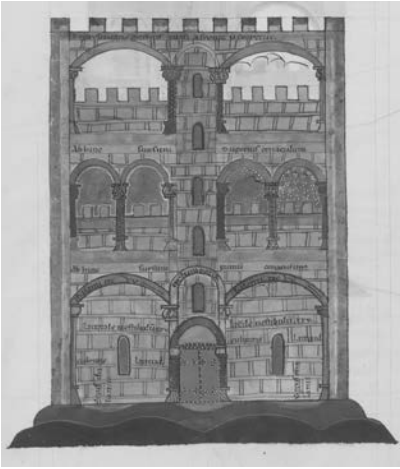
- 2 Euclid, *Geometry*, c. -300, book 11, definitions 2, 11 and 17.

When Le Corbusier visited Sagrada Familia in Barcelona, he was not impressed with the naturalistic design of the towers or, of course, with the Gothic Revival plan. What attracted mostly his attention was the warped surface in the roof of a small building, scarcely larger than a shed, housing a provisional school.

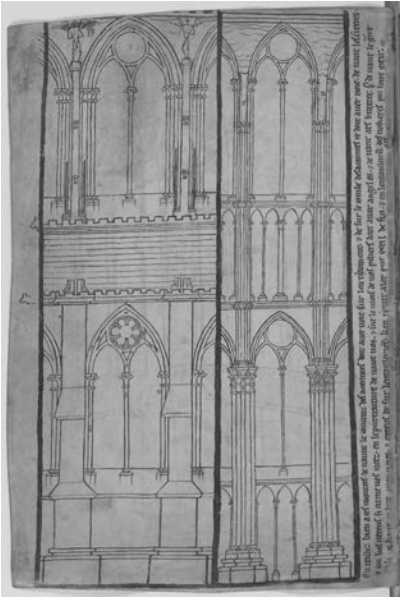
Such interest is not surprising: in contrast with his disdain for the architectural instruction of the *École de Beaux-Arts*, Le Corbusier had a high regard of the pedagogical model of the *École Polytechnique*, a Parisian school endeavouring to provide basic scientific instruction to engineers of all disciplines. Later on, the students coming out of this school completed their studies in a number of *écoles d'aplication*, that is, schools that allowed them to apply the scientific knowledge learnt at the *École Polytechnique* to practical, technical issues. The founder of the *École Polytechnique*, Gaspard Monge, was also the father of Descriptive Geometry.¹ It comes as no surprise, then, that the concepts, figures and methods of this science appear frequently in Le Corbusier's oeuvre, in particular in the later periods, when he was trying to escape the narrow bounds of the minimalist vocabulary of the rationalism of the Twenties: hyperbolic paraboloids in the Philips pavilion in Brussels, one-sheeted hyperboloid in the Assembly Hall in Chandigarh [1], a double curvature surface in the roof of Ronchamp, or shadow theory in the Tower of Shadows, also in Chandigarh.

This issue is not as simple as it may seem at first sight. We usually take for granted that descriptive geometry deals with surfaces in a neutral, scientific, aseptic way. However, the construction of the notion of surface as presented by descriptive geometry has undergone a long historical process, walking on the line between artisanal practices and learned science. First, Euclid defines the concept of surface in his *Geometry*² as a face of a solid and uses it to describe the notions of solid angle and diameter of a sphere, but this is all. Also, there is nothing in classical geometry about orthogonal projection and only some theorems about central or conic projection in Euclid's *Optics*. This fact is essential; until the advent of Computer Science, the most efficient, visually intuitive, and historically relevant way to control the properties of ruled, developable, warped, or double curvature surfaces was orthogonal projection, as we will see.

Admittedly, Archimedes and other Classical geometers dealt with the area and the volume enclosed by specific surfaces, such as the sphere, the cone, and the cylinder. In the long run, these abstract problems metamorphosed in a typically Medieval science, practical geometry, which should not be confused with the abstract geometry of Euclid or the ruler-and-compass geometry of medieval artisans, in particular stonemasons. This practical geometry, studied by clerics such as Hugh of Saint Victor and Gundissalin-



2



3

2 Richard of Saint Victor, "Commentary to Ezekiel", c. 1175.

3 Villard de Honnecourt, "Sketchbook", c. 1230. Longitudinal section and side elevation of Reims cathedral.

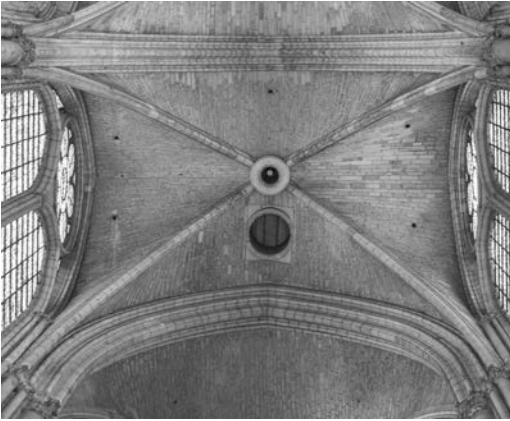
- 3 Hugh of Saint-Victor, *Practica Geometriae*, c. 1120; Dominic Gundissalinus, *Liber De Divisione Philosophiae in Partes Suas*, c. 1150.
- 4 Roger Baron "Note sur les Variations au XIIe Siècle de la Triade Géométrique Altimetria, Planimetria, Cosmimetria," *Isis* 48, no. 1 (1957): 30–32; Stephen Victor, *Practical Geometry in the High Middle Ages. Artis Cuiuslibet Consummatio, and the Pratique De Geometrie* (Philadelphia: American Philosophical Society, 1979); Hugh of Saint-Victor, *Practical Geometry: Practica Geometriae. Attributed to Hugh of St. Victor. Translated and with an Introduction by Frederick A. Homann* (Marquette: Marquette University Press, 1991).
- 5 José Calvo-López, *Stereotomy: Stone Construction and Geometry in Western Europe 1200–1900* (Cham: Birkhäuser-Springer Nature, 2020), 610–612.
- 6 Gianfilippo Carettoni et al., *La Pianta Marmorea di Roma Antica. Forma Urbis Romae* (Roma: Arti grafiche M. Danesi, 1960); Emilio Rodríguez-Almeida, *Forma Urbis Marmorea. Aggiornamento Generale 1980* (Roma: Edizione Quasar, 1981); Jennifer Trimble et al., "Digital Forma Urbis Romae", <https://exhibits.stanford.edu/ur>; accessed August 16, 2022; Sakarovitch, *Épures d'architecture*, 27.
- 7 Sakarovitch, *Épures d'architecture*, 23.
- 8 Richard of Saint-Victor, "Commentary on Ezekiel", [ca. 1171–1190] MS lat. 14516, Bibliothèque Nationale de France, Paris; Walter Cahn, "Architectural Draftsmanship in Twelfth-Century Paris: The Illustrations of Richard of Saint-Victor's Commentary on Ezekiel's Temple Vision," *Gesta* 15, (1976): 247–254; Walter Cahn, "Architecture and Exegesis: Richard of St.-Victor's Ezekiel Commentary and Its Illustrations," *The Art Bulletin* 76, (1994): 53–68; Karl Kinsella, "Richard of Saint Victor's Solutions to Problems of Architectural Representation in the Twelfth Century," *Architectural History* 49, (2016): 3–24.

us,³ had three branches. Planimetry dealt with the measure of planar areas; Cosmimetry taught how to measure volumes and surface areas of solids; and finally, Altimetry solved the problem of the computation of the height of inaccessible objects.⁴ Of course, Cosmimetry brought back Archimedean problems and surfaces, although it dealt again with simple bodies: the sphere, the cone, or the cylinder. However, it is worthwhile to mention that the methods of Altimetry, dealing with similar triangles, have some points of contact with those of Late Medieval and Renaissance masons, who also used triangulation.⁵

That brings back the issue of orthogonal projection. Before dealing in depth with this subject, we must define the term. Etymologically, “to project”, from the Latin “proiectāre” means “to cast forward”; there is no projection when a drawing depicts objects placed on the same plane. Although this may be striking, the examples of Antique architectural or technical drawings in orthogonal projection, in this restricted sense, are virtually non-existent. Such a remarkable piece as the *Forma Urbis Romae*, a huge marble plan of Imperial Rome, preserved as a large series of fragments, depicts the town as a foundation plan, leaving aside the hills and valleys of the city.⁶ As far as we know, the artifact that comes closer to an orthogonal projection in all Antiquity is a papyrus in the Petrie collection, depicting a small Egyptian shrine in the shape of a pyramid frustum in front and side views. Although the slope of the edges of the frustum is slightly different, both views attain to the same height.⁷ All this suggests the idea of an orthogonal projection, although the condition of the papyrus, reduced to a series of elongated fragments, and its uniqueness, does not allow to reach firm conclusions.

Our present conception of orthogonal projection seems to have taken shape in the 12th and 13th centuries, between the clerical and the artisanal media. Some miniatures in the “Commentary to Ezequiel” by Richard of Saint Victor depict arcades drawn frontally, with no foreshortening [2], clearly passing in front of battlements and walls, also depicted frontally.⁸ It is worthwhile to remark that, according to John of Toulouse, Richard was a student of Hugh of Saint Victor, although this fact is contested by some scholars. In any case, it is generally accepted that Hugh had lived in the Parisian abbey of Saint Victor from 1115 to his death in 1141, while Richard was the prior of the same abbey from 1162 until his death in 1173, so both Richard and his illuminators were probably aware of the geometrical work of Hugh.

The miniatures in the “Commentary on Ezekiel” do not need to represent exactly arcades and walls; in contrast, architectural plans and elevations, even the simplest ones, require the precise placement of pillars, ribs,



4

- 10 Roland Recht et al., *La Cathédrale de Strasbourg, Dessins et Plans* (Strasbourg: Les éditions des Musées de Strasbourg, 2015); Hans Koepf, *Die Gotischen Planrisse der Wiener Sammlungen* (Wien: Böhlau, 1969); Johann Josef Böker, *Architektur Der Gotik-Gothic Architecture. Bestandskatalog der Weltgrössten Sammlung an Gotischen Baurissen ... Im Kupferstichkabinett Der Akademie Der Bildenden Künste Wien ...* (Salzburg-Munich: A. Pustet, 2005); Valerio Ascani, "Le Dessin d'architecture Médiéval en Italie," In *Les Bâtisseurs des Cathédrales Gothiques*, ed. Roland Recht (Strasbourg: Éditions les Musées de la Ville de Strasbourg, 1989), 255-277; Antonio Ruiz Hernando. *Las Trazas de la Catedral de Segovia*. (Segovia: Diputación de Segovia-Caja de Ahorros de Segovia, 2003).

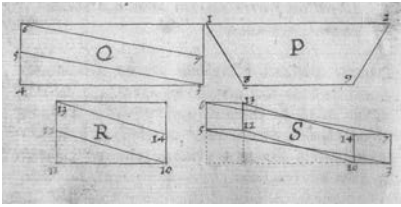
- 9 Villard de Honnecourt, et al., "Sketchbook" [ca. 1225]. MS fr. 19093, Bibliothèque Nationale de France, Paris. Villard de Honnecourt and Carl F. Barnes, *The Portfolio of Villard de Honnecourt: A New Critical Edition and Color Facsimile* (Farnham: Ashgate, 2009). There is an unresolved dispute about whether this artifact is an "album", that is, a blank book whose sheets were drawn afterwards, or a "portfolio", that is an assortment of originally independent sheets that was bound afterwards. Thus, we will use the neutral term "sketchbook".
- 11 Hernán Ruiz el Joven, "Libro de Arquitectura", [ca. 1560], MS R-39. Biblioteca de la Escuela de Arquitectura de la Universidad Politécnica de Madrid, f. 46v; Rodrigo Gil de Hontañón, "Manuscrito" [ca. 1560], included in Simón García, "Compendio de Arquitectura y Simetría de los Templos", 1681, MS 8884, Biblioteca Nacional de España, Madrid, f. 25r; Alonso de Vandelvira, "Libro de Trazas de Cortes de Piedras", [ca. 1580], copy, MS R-10, Biblioteca de la Escuela de Arquitectura de la Universidad Politécnica de Madrid, f. 96v.

triforia, socles and windows. Several plans in the Villard de Honnecourt sketchbook, such as the one for the cathedral of Meaux and the church designed with Pierre de Corbie “inter se disputando”, provide clear examples of horizontal projection, depicting both the pillars and the plan layout of the vault ribs. At the same time, the sketchbook includes an internal longitudinal section and an external side elevation of the nave of Reims cathedral [3]. Both drawings depict objects in clearly distinct planes, thus furnishing a neat example of vertical projection. The elevation includes both the aisle external walls and the clerestory, which are separated by the width of the aisles. In the same way, the section shows the socle and the aisle windows, as well as the nave pillars, the triforium and the clerestory.⁹

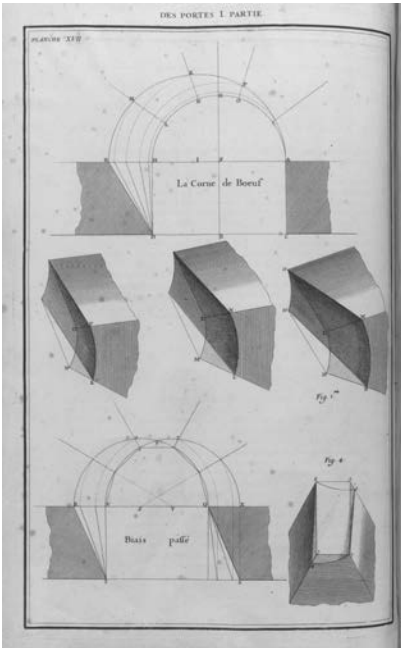
From this moment on, orthogonal projection took the place of the representation tool of choice in architectural drawing. As in the Reims drawings, both orthogonal elevations and plans are used to control the complexities of Gothic spatial geometry, as the remarkable collections of Gothic drawings in Strasbourg, Vienna, Siena, and Segovia show.¹⁰ It is worthwhile to remark that in this large corpus of drawings, orthographic projection was used in strictly architectural drawings **both for plans and elevations**, as in the Villard sketchbook. However, when preparing construction diagrams, such as the German *Grundrisse* or the Spanish ones included in the manuscripts of Hernán Ruiz, Rodrigo Gil de Hontañón or Alonso de Vandelvira,¹¹ Gothic masons used orthographic projections **only for the plans**. In contrast, in elevations they used a disarticulated scheme that showed all ribs, including diagonals and tiercerons, in true shape. If they had shown these ribs in true orthogonal projection, the result would have been elliptical arches, since these ribs are oblique to the projection plane. At this moment, nobody in Europe knew how to draw an elliptical arch representing the projection of an oblique circular arc. Further, such a representation would have been useless for masons, who were interested in the true shape and curvature of the ribs.

19th century elevations and 21st century scans of rib vaults show that ribs of quadripartite vaults do not overlap with transverse arches when seen in vertical projection. This showcases a crucial change in the geometrical vocabulary in medieval architecture. Generally speaking, Romanesque architecture uses simple surfaces, or, at most, combinations of them: half cylinders for barrel vaults, portions of cylinders for pointed barrel vaults, half or quarter spheres for domes and semidomes, intersections of cylinders for groin vaults, lunette vaults and windows in round walls. Intrados joints between courses are, generally speaking, parallel, except in domes; this layout generates ruled surfaces.

Anyhow, in quadripartite Gothic vaults it is quite difficult, or indeed impossible, to lay out the intrados joints as parallel or convergent lines [4],



5



6

- 12 John Fitchen, *The Construction of Gothic Cathedrals* (Chicago: University of Chicago Press, [1961] 1981), 117-122.
- 13 Vandelvira, "Libro de Trazas de Cortes de Piedras", ff. 58r, 58v, 60r; Ginés Martínez de Aranda, "Cerramientos y Trazas de Monteá", [ca. 1600], MS. 457, Biblioteca Central Militar, Madrid, 222-223.
- 14 Martínez de Aranda, "Cerramientos y Trazas de Monteá", 223.

- 15 Philibert de l'Orme, *Le Premier Tome de L'architecture* (Paris: Frédéric Morel, 1567), 126v.

5 Ginés Martínez de Aranda, "Cerramientos y trazas de monteá", c. 1600. Diagram showing warped surfaces.

6 Jean-Baptiste de la Rue, *Traité de la coupe des pierres*, 1728. Biais passé.

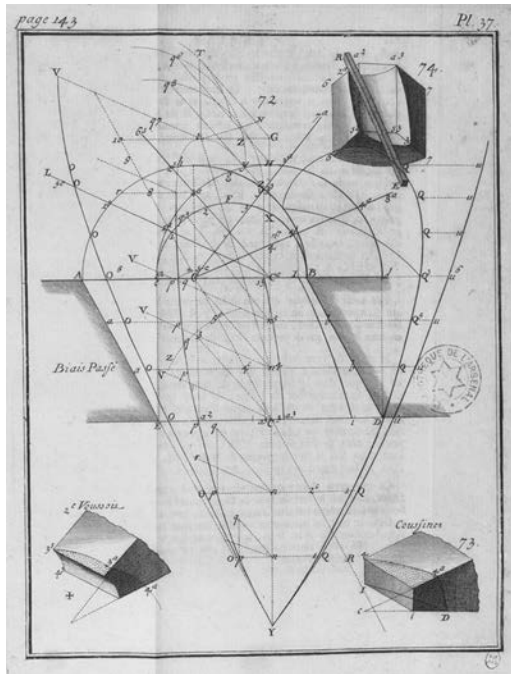
- 16 "Por haber de estar los artifices continuamente asidos a la materia ..." Martínez de Aranda, "Cerramientos y Trazas de Monteá". The sentence is included in the first page of the unnumbered prologue to the manuscript.

since diagonal and transverse ribs do not overlap in elevation. This led to the use of warped surfaces in the severies of quadripartite vaults, a first form of resistance against the simple, canonical surfaces in Romanesque architecture. Further, Gothic masons did not attempt to depict the intrados joints of the severies; they simply laid them out using cerces or light struts connecting two ribs.¹² This explains why, while mastering the horizontal layout of very complex sets of ribs in Late Gothic, masons did not use orthogonal elevations in construction drawings, by contrast with architectural drawings of the period.

However, Renaissance construction in ashlar required precise elevations, coordinated with horizontal projections, in particular to control the layout of warped surfaces. Nineteen-century geometricians will later point out that generatrices that are neither parallel nor convergent lead to warped, non-developable surfaces. Much earlier, this notion was identified by Renaissance stonemasons on a purely empirical basis. Spanish texts, such as Alonso de Vandelvira or Ginés Martínez de Aranda, allude to these surfaces as “engauchidas”, from the French “gauche”, left-handed.¹³ Of course, the term carries a strong connotation of sloppiness and irregularity.

Martínez de Aranda showed in a remarkable didactical drawing the notion of *gauche* or warped surface [5].¹⁴ First, we must remember that while two straight lines in a plane may be either parallel or convergent, in a spatial geometry there is a third possibility: both lines may be skew lines, that is, lines that are not parallel but do not intersect. In space, two parallel or convergent lines determine a plane; that is, there is one and only one plane that passes through both lines. In contrast, skew lines do not determine planes; in fact, no plane can pass simultaneously through two skew lines. Thus, skew lines may not be represented in a single projection. In order to show the skew condition of a pair of lines, we must provide at least two different projections, as Martínez de Aranda does. The result resembles a pair of helicopter blades. Other stonemasonry writers, such as Philibert de l’Orme, also present these apparently intersecting lines, although they are not as explicit as Martínez de Aranda about the concept.¹⁵ These surfaces generated by skew lines are *gauche* surfaces; according to Descriptive Geometry, no template, either rigid or flexible, can be applied exactly over a *gauche* or warped surface.

All this does not mean that Martínez de Aranda was thinking in the same mental frame that 19th century geometers. Quite to the contrary, he defined masons, including himself implicitly, in the introduction of this manuscript as “men who stick to physical matter”, and his understanding of these issues seems to be purely empirical.¹⁶ In particular, he constructs and applies templates to warped surfaces, in contrast with other writers, in



7

- 7 Amedée-François Frézier, *La théorie et la pratique de la coupe des pierres et des bois ...* 1737-1739. Biais passé with a cylindrical intrados and elliptical intrados joints.

- 17 Vandelvira, "Libro de Trazas de Cortes de Piedras", 46r.

- 19 Derand, *L'architecture des Voûtes*, 172-175.
 18 Mathurin Jousse, *Le Secret d'architecture* (La Flèche: George Griveau, 1642), 14-17; François Derand, *L'architecture des Voûtes* (Paris: Sebastien Cramoisy, 1643), 122-126; Jean-Baptiste De la Rue, *Traité de la Coupe des Pierres* (Paris: Imprimerie Royale, 1728), 27-28, plate 17.
 21 Derand, *L'architecture des Voûtes*, 122-126.
 20 Amedée-François Frézier, *La Théorie et la Pratique de la Coupe des Pierres et des Bois ... ou Traité de Stéréotomie* (Strasbourg: Jean Daniel Doulsseker; Paris: Charles Antoine Jombert, 1737-1739), 1: 33-34, 2:35-39.

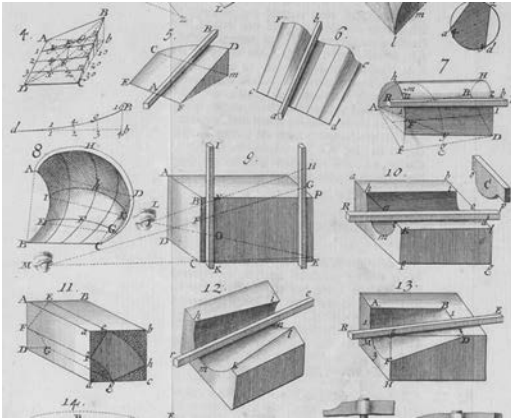
- 22 Frézier, *La Théorie et la Pratique de la Coupe des Pierres*, 2:137-140, plate 37. See also Enrique Rabasa Díaz, "Los Arcos Oblicuos en la Trazas de Cantería," *EGA Expresión Gráfica Arquitectónica*, no. 2 (1994): 145-53.

particular Alonso de Vandelvira.¹⁷ Although this author constructs templates for rere-arches, a particular constructive element resting on a lintel and an arch, he states clearly that these should be used only as an auxiliary device for the computation of angles between the edges of the voussoirs and that the voussoirs for rere-arches should be dressed using the tiresome and time-consuming squaring method. By contrast, Martínez de Aranda's templates are meant to be applied directly on warped surfaces. In other words, Martínez de Aranda put together another form of resistance against the canonical status of non-warped surfaces.

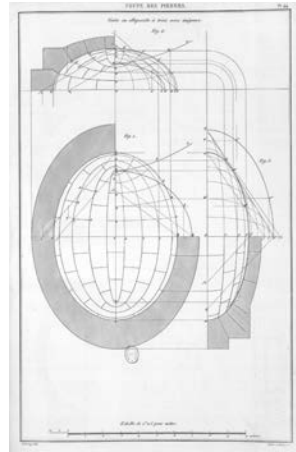
Most stonecutting writers of the 17th and early 18th centuries, such as Mathurin Jousse, François Derand and Jean-Baptiste de la Rue marched in the opposite direction. Admittedly, they dealt with pieces involving warped surfaces, such as the *corne de vache* and the *biais passé*, two kinds of skew arches with one or both oblique springers [6]. However, they did not use templates on these surfaces; rather, they resorted to the time-and-material-consuming squaring method.¹⁸ In contrast, taking their cue from De l'Orme, they used approximate cylindrical and conical developments for non-warped surfaces, which is quite reasonable considering that the generatrices of a cylinder are parallel, while those in a cone are convergent.¹⁹

All this led Amedée-François Frézier to differentiate between the aristocracy of non-warped surfaces, which he labelled as "regular" and the plebeian *gauche* surfaces.²⁰ As in any class stratification, there was also a middle class, those surfaces he called *régulièrement irrégulieres*. At the same time, the class segregation launched by Frézier went much further than the stance of Derand.²¹ This author eschewed templates for warped surfaces; however, when the squaring method involves planes orthogonal to the face of an arch, as in the *biais passé* and the *corne de vache*, the loss of material and effort brought about by the squaring method is limited, and in this case, he placed no objection against warped surfaces dressed by the squaring method.

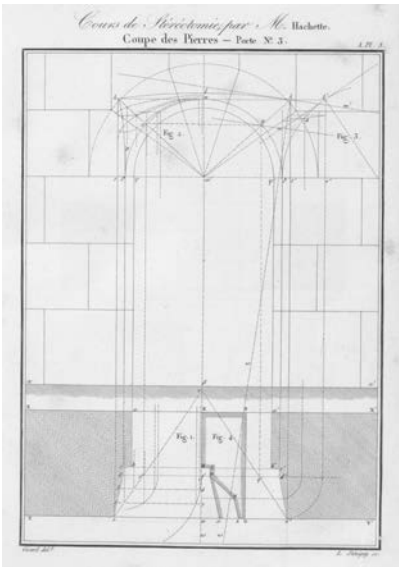
Thus, while Derand's mistrust of warped surfaces stemmed from practical considerations, Frézier's rejection was based on conceptual reasons. The *biais passé* had been built by centuries and Frézier, as a result of his Encyclopaedic approach, explained the traditional solution to the piece. However, he tried to put forward a *réguliere* version of the piece, while keeping the dressing advantages of the orthogonal bed joints [7]. This led him to design an improved variant of the *biais passé* with a cylindrical intrados cut by planes orthogonal to the faces of the arch, but oblique to the springers.²² The intrados joints of the piece are oblique sections of an elliptical cylinder, resulting in elliptical curves. Paradoxically, all this leads to a much more



8



9



10

8 Amedée-François Frézier, *La théorie et la pratique de la coupe des pierres et des bois ...* 1737-1739. Using the straightedge while dressing stones.

9 Charles Leroy, *Traité de Stéréotomie*, 1844. Ellipsoidal vault solved using lines of curvature.

10 Jean-Nicolas Hachette, *Traité de Géométrie Descriptive*, 1822. Arrière-voussure de Marseille.

23 Frézier, *La Théorie et la Pratique de la Coupe des Pierres*, 2: pl. 28.

24 Leonhard Euler, "De Solidis Quorum Superficiem in Planum Explicare Licet," *Novi Commentarii Academiae Scientiarum Petropolitanae*, no. 16 (1772): 3-34.

25 Gaspard Monge, "Des Lignes de Courbures de la Surface de l'Ellipsoïde," *Journal de l'Ecole Polytechnique*, no. 2 (1796): 145-65.

26 José María Gentil Baldrich and Enrique Rabasa Díaz, "Sobre la Geometría Descriptiva y su Difusión en España," in *Geometría Descriptiva*, Gaspard Monge (Madrid: Colegio de Ingenieros de Caminos, Canales y Puertos, 1996), 55-93; Sakarovitch, *Épures d'architecture*, 309-313; Enrique Rabasa Díaz, *Forma y Construcción en Piedra. De la Cantería Medieval a la Estereotomía del Siglo XIX* (Akal: Madrid, 2000), 296-302.

complex tracing and dressing process. As far as we know, no built example of Frézier's enhanced *biais passé* has been found.

It is worthwhile to remark that the concepts of "ruled" or "developable" surfaces do not play an important role in Frézier's treatise, other than his insistence on the use of the straightedge [8] in the dressing process.²³ Of course, he seems to be thinking of the sphere, the most perfect surface for Renaissance theorists, as a "regular" surface and in fact he associates it usually with the cone and the cylinder. This state of events was to change in 1772, when Leonhard Euler published "De Solidis Quorum Superficiem in Planum Explicare Licet", that is, "About solids whose surfaces may be developed into a plane", putting forward the equations that such surfaces must fulfil in order to be classified as developable.²⁴ This issue has a host of applications, as time will show, but it seems that Euler was mainly interested in cartography.

Anyhow, Gaspard Monge, the founder of Descriptive Geometry, was to take back the subject to the field of stonecutting. He was Professor of the Theory of Stonecutting in the Military Engineering School at Mézierès. Remarkably, his extensive scientific production about a host of different subjects includes little more than a single paper on stereotomy, the science of the division of solids, which includes stonecutting as a practical application.²⁵ Trying to illustrate a new concept, lines of curvature, Monge used as an example a rather far-fetched problem in stone construction, that of an ellipsoidal vault with three different axes or scalene ellipsoid. He imposed two constraints to the problem: bed joints should be generated by orthogonals, or more strictly speaking, normals to the intrados surface. Also, these joints should be developable surfaces. Both constraints had some practical sense. The generation of bed joints by normals to the intrados surface avoids acute angles between the voussoir faces, which may suffer dents during the transportation, hoisting and placement processes. At the same time, the developable nature of these surfaces allowed the application of flexible templates to the bed joints. However, oval vaults had been built for centuries without the use of such sophisticated control methods; to consider them as mandatory seems rather excessive from a practical standpoint. In order to generate a developable surface, normals to the intrados surface must follow lines of curvature. In contrast with traditional oval vaults, lines of curvature drawn in the surface of a scalene ellipsoid do not lay on horizontal planes, but rather go up and down [9]. Monge was so proud of his findings that he proposed to build the Assembly Hall of the French Republic, under discussion at this moment, in the shape of a scalene ellipsoid, with ribs following lines of curvature, and even that the speaker should be placed under a node of lines of curvature called the umbilical point.²⁶



11

27 Gino Loria, *Storia della Geometria Descrittiva, dalle Origini sino ai Giorni Nostrì* (Milano: Ulrico Hoepli, 1921).

28 Jean-Nicolas-Pierre Hachette, *Traité de Géométrie Descriptive....* (Paris: Corby, [1822] 1828), 96.

29 Hachette, *Traité de Géométrie Descriptive*, 315–318. See also Rabasa, *Forma y Construcción en Piedra*, 278–286.

30 Enrique Rabasa Díaz, "Arcos Esviados y Puentes Oblicuos. El Pretexoto de la Estereotomía en el Siglo XIX," *OP*, no. 38 (1996): 30–41; Sakarovitch, *Épures d'architecture*, 313–319.

11 Antoni Gaudí, Palacio Episcopal de Astorga, rerearch over the main door, 1899-1893. Photograph: José Calvo.

This suggests that Monge was enforcing here the same concept of orthodoxy than Frézier, excluding all forms of resistance to “regular” surfaces, not only for practical reasons, but rather on conceptual grounds. Anyhow, the reader may ask whether an ellipsoid with three different axes, a non-developable surface, may qualify as “regular” surface. It seems that the acceptance of the scalene ellipsoid in the canonical realm of accepted surfaces stems from analytical, not strictly geometrical, reasons. The ellipsoid, whether the scalene variant or the well-known ellipsoid of revolution, with two axes of the same length, is a quadric or second-degree surface, just as the sphere, the cylinder and the cone. Such simple mathematical representation must have been quite pleasing to the eyes of the scientists of the Enlightenment and the French Revolution.

Trying to “push further the boundaries of this happily conquered realm”, in Gino Loria’s words, one of Monge’s students, Jean-Nicolas Hachette, went further.²⁷ As Monge with the lines of curvature, he had proved a theorem that he needed to illustrate. Hachette’s theorem is highly abstract: it states that if two ruled surfaces have a common generatrix and they share the same tangent plane in three points, then they share the tangent plane all along the common generatrix.²⁸ Monge had insisted in the practical applications of Descriptive Geometry in the introduction to his text, so Hachette needed a practical application of his theorem. He found it in the *Arrière-voissure de Marseille*, a classical stonemasonry piece designed to solve a door or window opening with a wooden frame crowned by a semicircle [10]. Using a segmental arch for the inner face of this piece prevents the window pane to collide with the surface of the vault covering the opening.²⁹ However, all three surfaces in the intrados of this piece are warped. Once again, as Monge with the lines of curvature and the scalene ellipsoid, *Arrière-voissures de Marseille* had been built for two centuries without the need of Hachette’s sophisticated procedure, and in fact, it is impossible to tell traditional *Arrière-voissures* built using the traditional solution from the ones dressed by means of Hachette’s sophisticated technique.³⁰ Thus, we may surmise that Hachette’s focus did not lie on the practical application of the piece, but rather in his use as an illustration of his theorem.

From this moment on, Descriptive Geometry textbooks, taught as a foundation subject in the host of Polytechnic Schools that spread through Continental Europe, included not only second-degree warped surfaces as hyperboloids and paraboloids, but also other warped surfaces as the *Arrière-voissure de Marseille*, the *corne de vache* and the *biais passé*, that could not present the same analytic credentials, trying again to push forward the frontiers of this new science.



12

12 Félix Candela, Los Manantiales Restaurant, Xochimilco, 1956. Photograph: Dge. [CC BY-SA 3.0](https://creativecommons.org/licenses/by-sa/3.0/)

31 Charles-François-Antoine Leroy, *Traité de Géométrie Descriptive ...* (Paris: Carilian-Goeury, 1834); Charles-François-Antoine Leroy, *Traité de Stéréotomie ...* (Paris: Bachelier, Carilian-Goeury et Dalmont, 1844).

32 Sakarovitch, *Épures d'architecture*, 243-244.

33 Frézier, *La Théorie et la Pratique de la Coupe des Pierres ...* 2: 484-486.

The focus of these issues went back to Spain as a result of a strange turn of events. While most architectural schools in Continental Europe adopted the pedagogical model of the Paris *École de Beaux-Arts*, at the start of the 19th century, the architectural instruction of the *Academia de Bellas Artes de San Fernando* in Madrid followed the model of the *École Polytechnique*, with a strong emphasis on Descriptive Geometry, construction and, in particular, Stereotomy. In the wake of the Catalan *Renaixença* movement, a new architectural school was opened in Barcelona. It lacked any kind of support from the Spanish central government, up to the extent that it had to be financed by the Barcelona municipality and provincial administration. This school had enough difficulties to open a new front about didactic choices and, basically, adopted the pedagogical model of the Madrid school, which had gained its independence from the San Fernando academy in 1844.

As a consequence, Antoni Gaudí, trained in the Barcelona school, had a solid background in Descriptive Geometry and Stereotomy, which led him to an innovative use of warped surfaces and other figures in the catalogue of 19th century Descriptive Geometry. In addition to double-curvature surfaces in Casa Milá and many other locations, a clear example of his approach to warped surfaces can be seen in a remarkable rear-arch, leaning in a round and a pointed arch, in the Episcopal Palace in Astorga, an example of his early Gothic Revival style [11]. Rear-arches span the area between a lintel and an arch, or two arches, as in the *Arrière-voussure de Marseille*, but these arches are usually round or segmental. There is not a single example in Gaudí's most probable sources, Leroy's treatises on Descriptive Geometry and Stereotomy of a rear-arch resting on a pointed arch.³¹ This suggests that Gaudí did not limit himself to a mechanical application of Leroy's models; rather, he assimilated the methods explained in 19th century stereotomy treatises in order to innovate in the field of warped surfaces, putting forward again a new form of resistance against the canonical use of developable and "regular" surfaces.

Monge's text was disruptive in another sense. Up to this moment, warped surfaces had been connected almost exclusively with stonecutting. As Sakarovitch stressed, the carpenter works with lines, and the coppersmith with developable surfaces; in the preindustrial world, warped surfaces can only be materialised in stone, brick or earth.³² Frézier had tried to extend the field of application of his new science to woodwork, to justify the title of his book: *La theorie et la pratique de la coupe des pierres et des bois ... ou traité de stéréotomie*. However, the section on woodworking in his book is surprisingly short and, in any case, deals with thin veneers that can only be materialized as developable surfaces.³³ Monge was much more ambitious: he tried to extend the field of application of Descriptive Geometry to all



13



14

34 Gaspard Monge, *Géométrie Descriptive, Leçons Données aux Écoles Normales, l'an 3 de la République ...* (Paris: Baudouin, 1799), 1-4.

35 Eduardo Torroja y Caballé, *Teoría Geométrica de las Líneas Alabeadas y de las Superficies Desarrollables*. (Madrid: Fortanet, 1904).

36 Colin Faber, *Candela the Shell Builder* (New York: Reinhold Publishing Corporation, 1963).

13 Le Corbusier, Philips Pavilion at the Brussels Universal Exhibition, 1958. Photograph: Wouter Hagens. [CC BY-SA 3.0](https://creativecommons.org/licenses/by-sa/3.0/)

14 Le Corbusier, Roof, Assembly Hall, Chandigarh. 1951. Photograph: Eduardo Guiot. [CC BY 2.0](https://creativecommons.org/licenses/by/2.0/).

branches of the nascent industrial technology.³⁴ In the context of the Industrial Revolution, the difference between developable and warped surface was essential, since warped surfaces cannot be materialised in sheet metal without cutting the sheet; of course, such process brings about material waste and execution difficulties.

Le Corbusier used to quote Auguste Perret saying that “We are building in concrete, but we still think about stone”. In addition to his own oeuvre, a breakthrough in these fields was driven by two Spaniards. Eduardo Torroja y Caballé was a full professor of Descriptive geometry at the Universidad Central de Madrid, who had published a *Teoría Geométrica de las líneas alabeadas y las superficies desarrollables* (Geometric Theory of Warped Lines and Developable Surfaces).³⁵ His son Eduardo Torroja Miret, an outstanding civil engineer, used single-sheeted hyperboloids on the roof of the Hipódromo de la Zarzuela Madrid (1941), and in the Cuba de Fedala in Morocco (1956).

While Torroja Miret stayed in Spain after the Civil War, Félix Candela went to exile in Mexico, after his involvement with the Republican Army as Engineers Captain. He had followed the architectural courses at the Madrid school, but he got his degree in 1935, in the eve of the Spanish Civil War. In Mexico, he carried out some projects as an architect, but he worked more frequently as a builder, offering to architects a sensible and inexpensive construction method based in thin concrete shells in the shape of a hyperbolic paraboloid; he was familiar with this warped surface as a result from his instruction in Descriptive Geometry in the Madrid school [12].³⁶ In this way, warped surfaces leapt the increasingly narrow frontiers of ashlar construction to the expanding realm of one of the 20th century typical materials, concrete.

Candela’s most fruitful years, the Fifties and the Sixties, overlap with Le Corbusier’s late period, where the vocabulary and methods of Descriptive Geometry furnished him a way to break the limits of the “regular” surfaces of the Twenties, such as cylinders and cuboids, to delve into a free and complex language including the hyperbolic paraboloids in the Brussels Expo Philips Pavilion [13], the one-sheeted hyperboloid in Chandigarh’s Assembly Hall, [1] [14] or even shadow theory in the Tower of Shadows in the same complex. Thus, this “form of resistance” involving warped surfaces, in contrast with the “regular” forms in his early production, can be seen as a chain in a long process that has its roots in Medieval architecture.

Bibliography

- Ascani, Valerio. "Le Dessin d'architecture Médiéval en Italie," in *Les Bâisseurs des Cathédrales Gothiques*, edited by Roland Recht, 255-77. Strasbourg: Éditions les Musées de la Ville de Strasbourg, 1989.
- Baron, Roger. "Note sur les Variations au XIIe Siècle de la Triade Géométrique Altimetria, Planimetria, Cosmimetria." *Isis* 48, no. 1 (1957): 30-32.
- Böker, Johann Josef. *Architektur der Gotik-Gothic Architecture. Bestandskatalog der Weltgrössten Sammlung an Gotischen Baurissen ...* Salzburg-Munich: A. Pustet, 2005.
- Cahn, Walter. "Architectural Draftsmanship in Twelfth-Century Paris: The Illustrations of Richard of Saint-Victor's Commentary on Ezekiel's Temple Vision." *Gesta* 15 (1976): 247-54.
- Cahn, Walter. "Architecture and Exegesis: Richard of St.-Victor's Ezekiel Commentary and Its Illustrations." *The Art Bulletin* 76 (1994): 53-68.
- Calvo-López, José. *Stereotomy: Stone Construction and Geometry in Western Europe 1200-1900*. Cham: Birkhäuser-Springer Nature, 2020.
- Carettoni, Gianfilippo; Antonio; Colini, Lucos; Cozza, and Guglielmo Gatti, *La Pianta Marmorea di Roma Antica. Forma Urbis Romae*. Roma, 1960.
- De la Rue, Jean-Baptiste. *Traité de la Coupe des Pierres*. Paris: Imprimerie Royale, 1728.
- De l'Orme, Philibert. *Le Premier Tome de d'architecture*. Paris: Frédéric Morel, 1567.
- Derand, François. *L'architecture des Voûtes*. Paris: Sebastien Cramoisy, 1643.
- Euclid. *Geometry*. - 300.
- Euler, Leonhard. "De Solidis quorum Superficiem in Planum Explicare Licet." *Novi Commentarii academiae scientiarum Petropolitanae* 16 (1772): 3-34.
- Faber, Colin. *Candela the Shell Builder*. New York: Reinhold Publishing Company, 1963.
- Fitchen, John. *The Construction of Gothic Cathedrals*. Chicago: University of Chicago Press, 1961.
- Frézier, Amedée-François. *La Théorie et la Pratique de la Coupe des Pierres et des Bois ... Ou Traité de Stéréotomie*. Strasbourg-Jean Daniel Doulsseker; Paris-Charles Antoine Jombert, 1737-1739.
- Gentil Baldrich, José María, and Enrique Rabasa Díaz. "Sobre la Geometría Descriptiva y su Difusión en España," in Gaspard Monge, *Geometría Descriptiva*, 55-93. Madrid: Colegio de Ingenieros de Caminos, Canales y Puertos, 1996.
- Gil de Hontañón, Rodrigo. "Manuscrito." [ca. 1560]. Included in Simón García, "Compendio de Arquitectura y Simetría de los Templos". 1681. Biblioteca Nacional de España, MS 8884.
- Gundissalinus, Dominicus. *Liber de Divisione Philosophiae in Partes Suas* c. 1150.
- Hachette, Jean-Nicolas-Pierre. *Traité de Géométrie Descriptive....* Paris: Corby, 1828.
- Honnecourt, Villard de, et al. "Sketchbook." [ca. 1225]. Bibliothèque Nationale de France, MS fr. 19093.

Honnecourt, Villard de, and Carl F. Barnes. *The Portfolio of Villard De Honnecourt: A New Critical Edition and Color Facsimile*. Farnham: Ashgate, 2009.

Jousse, Mathurin. *Le Secret d'architecture*. La Flèche: George Griveau, 1642.

Kinsella, Karl "Richard of Saint Victor's Solutions to Problems of Architectural Representation in the Twelfth Century." *Architectural History* 49 (2016): 3-24.

Koepf, Hans. *Die Gotischen Planrisse der Wiener Sammlungen*. Wien: Böhlau 1969.

Leroy, Charles-François-Antoine. *Traité de Géométrie Descriptive, avec Une Collection d'épures ...* Paris: Carilian-Goeury, 1834.

Leroy, Charles-François-Antoine. *Traité de Stéréotomie Comprenant les Applications de la Géométrie Descriptive a la Théorie des Ombres, la Perspective Linéaire, la Gnomonique, la Coupe les Pierres et la Charpente*. Paris: Bachelier, Carilian-Goeury et Dalmont., 1844.

Loria, Gino. *Storia Della Geometria Descrittiva, dalle Origini sino ai Giorni Nostri*. Milano: Ulrico Hoepli, 1921.

Martínez de Aranda, Ginés. "Cerramientos y Trazas de Monteá." [c. 1600] Biblioteca Central Militar, Madrid. MS 457.

Monge, Gaspard. "Des Lignes de Courbures de la Surface le l'ellipsoïde." *Journal de l'Ecole Polytechnique* 2 (1796): 145-65.

Monge, Gaspard. *Géométrie Descriptive, Leçons Données aux Écoles Normales, l'an 3 de la République ...* Paris: Baudouin, 1799.

Rabasa Díaz, Enrique. "Arcos Esviados y Puentes Oblicuos. El Pretexto de la Estereotomía en el Siglo XIX." no. 38 (1996): 30-41.

Rabasa Díaz, Enrique. *Forma y Construcción en Piedra. De la Cantería Medieval a la Estereotomía del Siglo XIX*. Madrid: Akal, 2000.

Rabasa Díaz, Enrique. "Los Arcos Oblicuos en la Traza de Cantería." *EGA Expresión Gráfica Arquitectónica* 2 (1994): 145-53.

Recht, Roland, et al. *La Cathédrale de Strasbourg, Dessins et Plans*. Strasbourg: Les éditions des Musées de Strasbourg, 2015.

Rodríguez-Almeida, Emilio. *Forma Urbis Marmorea. Aggiornamento Generale 1980*. Rome: Edizione Quasar, 1981.

Ruiz el Joven, Hernán. "Libro de Arquitectura." [ca. 1560]. Biblioteca de la Escuela de Arquitectura de la Universidad Politécnica de Madrid, MS Raros 39.

Ruiz Hernando, Antonio. *Las Trazas de la Catedral de Segovia*. Segovia: Diputación de Segovia-Caja de Ahorros de Segovia, 2003.

Saint-Victor, Hugh of. *Practica Geometriae*. c. 1120.

Saint-Victor, Hugh of. *Practical Geometry: Practica Geometriae. Attributed to Hugh of St. Victor. Translated and with an Introduction by Frederick A. Homann*. Marquette: Marquette University Press, 1991.

Saint-Victor, Richard of. "Commentary on Ezekiel." Bibliothèque Nationale de France, 1171-1190.

Sakarovitch, Joël. *Épures d'architecture*. Basel-Boston-Berlin: Birkhäuser, 1998.

Torroja y Caballé, Eduardo. *Teoría Geométrica de las Líneas Alabeadas y de las Superficies Desarrollables*. Madrid: Fortanet.

Trimble, Jennifer, et al. *Digital Forma Urbis Romae*. Stanford: Stanford University, c. 2000.
<https://exhibits.stanford.edu/fur>.

Vandelvira, Alonso de "Libro de Trazas de Cortes de Piedras." [ca. 1580]. Copy in Biblioteca de la Escuela de Arquitectura de la Universidad Politécnica de Madrid, MS Raros 10.

Victor, Stephen. *Practical Geometry in the High Middle Ages. Artis Cuiuslibet Consummatio, and the Pratique De Geometrie*. Philadelphia: American Philosophical Society, 1979.

un fondale di oppositi



ce in contrapposizione

The Resilience of Small Numbers

From Self-Construction to Symbol

Aldo Aymonino



1



2



3

- 1 Trabucco in Termoli
- 2 Laura Federici - Trabucco - private collection, Rome
- 3 Adriatic Trabucco in Peschici

At the end of the summer of 2022, the threshold of eight billion human beings on earth was crossed. The staggering increase in inhabitants, coupled with increasing consumption and travel, decreasing mortality and dominant urbanization, implies a vision of the space in which we act dominated and governed by the unlimited numbers of mass society. However, for the past 30 years or so, a contrary trend has been emerging, especially in the most crowded places on the planet. Beginning with examples from minor, vernacular and local history, this paper attempts to reason through a few projects about the personal need for solitude, the gaze, and the thought of the sacred and symbolic through modestly sized but no less necessary projects.

Self-Construction

The so-called ‘Adriatic room’, the sea called on maps until two centuries ago ‘the Gulf of Venice’, is one of the few places in the Mediterranean where common cultural, social, spatial traits are found along its shorelines.

The repetition, with small variations, of similar building modes, functions, and settlements make it a unicum that has no equal both on land and water.

One of its architectural (and poetic) constants is the presence of fishing huts called ‘Trabocchi’: a design theme of which we find built examples dotting the coast from the Venetian lagoon to Apulia, and which combine the apparent conceptual oxymoron between isolated object and deep rootedness to a *genius loci* not already only local but of the Adriatic basin as a whole.

[1]

Not only that. The essentiality and fierce interdependence of the parts with the whole; the diagrammatic system of assembling and joining the elements; the resistance and flexibility to static and dynamic stresses; the clarity of the technological elements and the randomness of the overlapping of the parts coming from a poor and imaginative but never paltry or ragged reuse; the variety of technicality and formality — typological? — dictated by different modes of fishing and experimentation combined with knowledge acquired and consolidated by centuries of practice, make it a peculiar, but by no means minor, architectural and landscape theme. [2]

If the elements are reduced to their primary functional essence, the volumes disappear, the homogeneity and poverty of the materials is disarming, other categories take, with a new and completely autonomous force, the place of the traditional ones: the lines of the cables, the sequences of the pillars and poles that support the nets, the material grains of the woods and iron, the shadows that are never extended and sharp but always formed by series of similar but not equal objects, the reflection on the water. [3]



4

The localization of the hut at the boundary of the landscape, at the transition point between land and water also marks its fate as an architectural limit, of solitude, of *non plus ultra*. [4]

Urban Origami

On the contrary, there is no doubt that tourist pressure is increasingly changing the face of the 'Venice System'. The nearly thirty million presences a year are going to impact, almost without any kind of filter or corrective, a system in precarious balance of only — as the countdown of the display of the now famous Rialto pharmacy inexorably recites — 49,999 residents in the historic center.

Quickly changing the picture are added phenomena unknown or numerically insignificant until very few years ago, such as Bed & Breakfasts, which have in fact decisively transformed the structure of hospitality in the lagoon city, or the 'discoveries' by mass tourist itineraries, of new areas in the fabric of certain sestieri (Ghetto, Misericordia, the Greeks, Santa Marta, etc.) to be transformed and 'put to income'.

However, new phenomena, new ways of spatial and social use of the city and the extraordinary natural environment that contains it, are slowly spreading in the edge areas, in the border 'fringes' between land and water that so profoundly influenced the whole history of the Venetian territory.

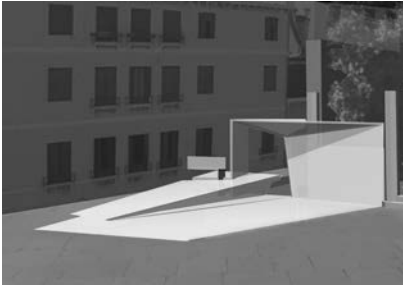
Venice, the city of the perfect superposition of systems, described by Le Corbusier by resorting to the anatomical metaphor of blood circulation, manifests its most complex reality.

It used to accumulate wealth through the constant mobilization of goods from one place to another. Now, with the replacement of the temporary stopover of goods by the permanent presence of mass tourism, the city-museum-theater of itself witnesses its disintegration through the continuous reinvention of its past.

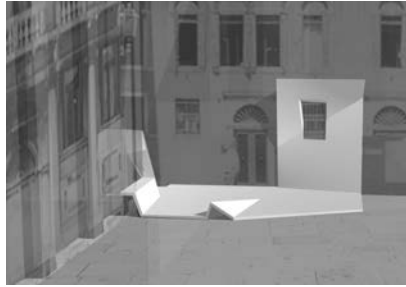
The city has lost its identity (and partly its appearance) and has turned into a place where decay becomes a normalized condition and what was once its persuasive tragicness loses its charm.

The figure of the tourist and his presence become a crucial factor in its existence, monofunctionally a totalizing condition. The tourist-collector collects fragments of images and memories with the sole purpose of being able to prove that he 'was there'. But memory is not a Cartesian space, and perception, often parceled out and distorted by flows and numbers, has become a 'disposable vacuum'.

The stone city par excellence towers above, as Fernand Braudel reminds us, a sunken forest. Stone is above wood, but wood emerges from



5



6



7



8

- 5 Aldo Aymonino - VivereVenezia 2002 - Origami one 1
- 6 Aldo Aymonino - VivereVenezia 2002 - Origami two
- 7 Aldo Aymonino - VivereVenezia 2002 - Newsstand view closed
- 8 Aldo Aymonino - VivereVenezia 2002 - Newsstand view open

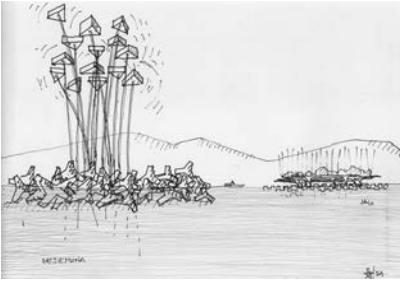
the water steadily in numerous places and is still the formal and perceptual mediation between stone and water. In the Lagoon, the Larch of the *bricole* draws the net that separates the tenuous boundary between practicable paths and shoals, while in the city it becomes the three-dimensionality of landing points. Also made of larch is the ‘temporary’ bridge of the Accademia, built by Eugenio Miozzi in 1933 and never again removed or rethought in modern forms (the 1985 Biennale was a training ground for ingenuity to feed the infinite "analogous Venices" that still inhabit our mind, but operationally it does not count...).

The ‘urban folds’ in Larch wood imagined for Campo Santo Stefano are the tools for a reinterpretation of places that are now overwhelmed: capsules for solitude, where one can regain the pre-eminence of being over moving. The placement of the *urban origami*, light objects declaredly unrelated to the design of current street furniture, allows a different perception of space, today characterized by crossing and private rest areas (bars, restaurants, hotels...). Around each *origami*, an environment is created that is integrated with the current field, which can function as an area of rest and friction to the flow, allowing the citizen and tourist its own privileged corner, which manages to slowly focus on the elements that make up the entity of the urban space, in a vision that goes against the current perception of the field dependent currently only on the economic possibilities and time available. The few, simple elements employed confront the multiplicity of urban activities: stopping, movement, meeting, information, exchange, commerce, public transportation.

The two ‘water gates’ that signal the arrival on the southern side of the Campo of the two canals act as real thresholds that combine, like motionless kaleidoscopes, the water and land systems. Folding in on themselves, they draw seats and shaded areas, a very rare and precious commodity in Venice.

[5] [6]

On the side of the Santo Stefano’s church rests, taking up a centuries-old Italian and European tradition (just think of the cathedral in Ferrara and Piacenza, but also of the Stephansdom in Vienna), the artifact that-containing the newsstand, public toilets and a small garbage tools deposit, compose the new background of the *campo* for those arriving from the Accademia Bridge. Like a Leonardesque machine, the kiosk changes shape and arrangement with the passing of the hours and seasons: tortoise lock in the humid Venetian winter, it lets light leak from its interior only at night [7]; while in fine weather it opens its ‘flap’ display shelves toward the *campo*, integrating with the public space and becoming one of its main protagonists. [8]



9

The Lagoon of Incessant Change.

Then there is water, the founding element of Venetian identity and the continually shifting threshold from which everything started and which, even in contemporary times, marks the point of transition between the two worlds, the urban and the lagoon, which are so intertwined and intersected that even to this day it is difficult to define their boundaries with certainty.

The territory of the Lagoon, a true *lebensraum* of the *Serenissima*, has always housed within it very strong contrasts of functions and modes of use, seemingly irreconcilable with each other. From the splendor of its marble city to the unstable, self-built fishing huts of Pellestrina, at first glance so puny and brittle; from the agricultural crops of Sant'Erasmus to the mussel and shellfish farms; from the glass makers' furnaces that have been churning out fragile masterpieces for centuries to the heavy metal and chemical industries allocated in Marghera; from the delicate flat-bottomed wooden boats to the steel giants built at the root of the Ponte della Libertà, the lagoon space has always managed to hold everything together, often even against common sense.

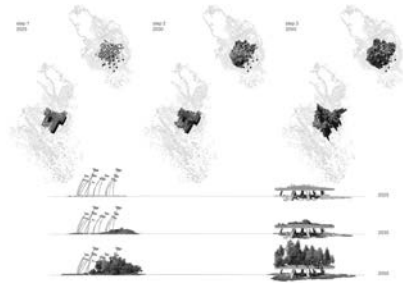
The journey, or rather, the exploration we have attempted through our projects is a critical and synthetic reinterpretation of this world in which formally anything can happen, held together by the common denominator of water and infinite and changing light, which has as its only orography the artificial figures of human production and the distant background of mountains and which makes the Latin motto *contraria sunt complementa* effective and visible.

The different names of the lagoon desert (*velme, ghebi, motte, barene, sacche, valli, casoni*, etc.), have the same toponymic variety as the dense stone city (*calle, campo, campiello, corte, piscina, fondamenta, riva, ruga, sotoportego, sestiere, rio, canale, rio terà*, etc.) and together they form identity constellations capable of precisely locating specific places in the inextricable and constantly surprising labyrinth of the Venetian territory.

The term *motta* or *mota* (small hill, hump) is generally used to refer to an artificial mound of land in the middle of the lagoon, changeable and with uncertain contours, exposed to the sudden variations of the weather.

The two small *motte* di Cà Zane are located in the North Lagoon, about four and a half kilometers northeast of the island of Torcello. These two small strips of land, a few dozen meters apart, may represent the threshold of a new way of understanding the relationship between natural and artificial.

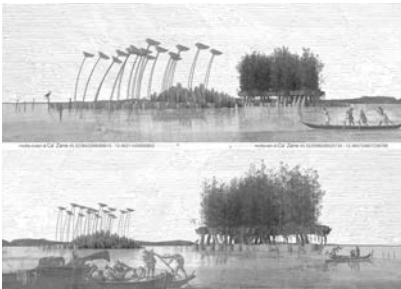
On the one hand, the built, which by its disciplinary statute is subject to the iron law of tectonics, on the other hand, the *Selva* as a phenomenon of environmental autophagy, as a mechanism of violent re-appropriation of terr-



10



11



12

10 Aldo Aymonino, Giuseppe Caldarola, Fabrizio D'Amico - Desdemona e lago - Plans and elevations - 2022

11 Aldo Aymonino, Giuseppe Caldarola, Fabrizio D'Amico - Desdemona e lago - View - 2022

12 Aldo Aymonino, Giuseppe Caldarola, Fabrizio D'Amico - Desdemona e lago - Views - 2022

itories, as an aggression against the artificial to cannibalize it in an anti-romantic way. [9]

The two islands are inhabited by two completely different artifacts: the first, Desdemona, is an artificial soil super-elevated on 13 shaped beams of three different lengths supported by inclined pillars with cubic plinth of the same shape as the basement elements that consolidate the ground of the *motte*, a small territory that is continually invaded by the waters that erase the traces of its pre-existence, and that accommodates the spontaneous vegetation that, growing over time, will make Desdemona a romantic ruin: on its artificial ground, built in such a way that it can also be practicable in its intrados between water and construction, the ashes of Ezra Pound and Igor Stravinsky, two great *foresti* (foreigners), one American and the other Russian, both buried in Venice, could be scattered. [10]

Instead, Iago is a complex machine in perpetual motion: 15 small excavator buckets are mounted on thin metal rods, about 15 meters high, anchored to the cubic concrete plinths of the basement, the same as those supporting Desdemona's traditional structure. The buckets accumulate storm water, wind-blown dust and debris, biological remains of birds nesting in them, and go into 'peak load' when the weight of the debris that accumulates there reaches 2 kilograms, spilling its contents into the lagoon, which, as it accumulates over time will build a new *motta* that growing on the old one will slowly block the rods and bucket mechanism, erase the traces of the pre-existence, turning the machine into a rusty and anti-romantic 'sylvestre ruin', a reminder of the necessary alternation between artificial and natural.

Iago and Desdemona transform themselves by looking at each other: they are perfect bachelor machines, the Pillars of Hercules of the meaning, potentiality and spatiality of the relationship between architecture and landscape; distant points in the rarefaction of the suburban horizon of the Lagoon. [11]

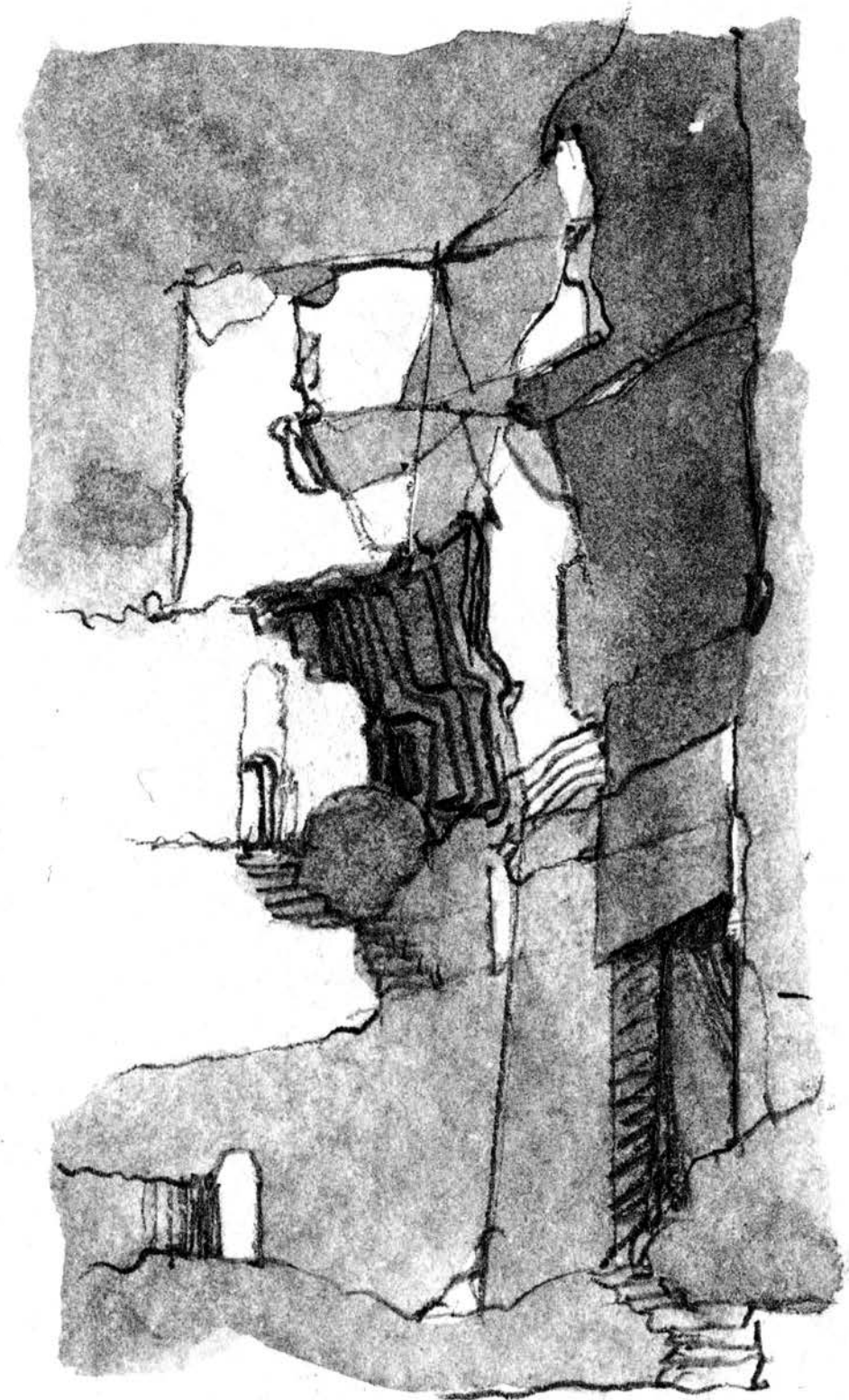
Thus the two ruins, similar yet very different in their *raison d'être*, stand out in the apparent emptiness of the Lagoon, in the ceaseless mutability of its light and reflections, against the motionless background of its distant horizon. [12]

Bibliography

Misino, Paola and Trasi, Nicoletta (curators) *Residenti Leggerezze. Capanni da pesca sulla costa abruzzese*, DAU Pescara-Umberto Sala Editore 1995

Spinelli, Mario; Marzo, Mauro (curators) *viverevenezìa*, pagg. 108-113 Marsilio 2003

Marini, Sara; Moschetti, Vincenzo (curators) *Isolario Venezia Sylva*, pagg. 76-83 Mimesis 2022



Forests of Resistance¹

Memorial Strategies in Forested Landscapes of Socialist Yugoslavia

Vida Rucli

- 1 In Slovene: *Gozdovi odpora*. The title is a reference to the film by Marta Popivoda and Ana Vujanović *Krajine odpora* (*Landscapes of Resistance*) from 2021, which narrates the story of the partisan Sonja Vujanović. I had the pleasure to collaborate with the two directors in 2019, on the theatre piece *Krajine svobode* (*Landscapes of Freedom*) at the Slovensko mladinsko gledališče theatre in Ljubljana.
- 2 Italian: "La Resistenza rappresentò la fusione tra paesaggio e persone".
- 3 Italo Calvino, "Prefazione di Il sentiero dei nidi di ragno," in *Romanzi e racconti* (Milano, Italy: Mediriani Mondadori, 1995 a).
- 4 Jure Mikuš, "The Characteristics of Some Recent Yugoslav Memorials to the National Liberation War," in *Catalogue of the Yugoslav Pavilion, 39th Biennale of Venice*, ed. Zoran Kržišnik (Ljubljana, YU: Modern Galley, 1980).

- 5 Miklavž Komelj, *Kako misliti partizansko umetnost?* (Ljubljana, Slovenia: Založba/* cf., 2009), 369.

- 6 Edvard Kocbek, *Tovarišija* (Ljubljana, Slovenia: Državna Založba Slovenije, 1949), 9.

- 7 As noted by Matteo Giancotti, contemplated landscape is felt by partisans as landscape of inaction and is often related to periods of detention and imprisonment. Landscape is usually observed, studied and interpreted—therefore not experienced—only for strategic reasons. Matteo Giancotti, *Paesaggi del trauma* (Milano, Italy: Bompiani, 2017), 160–164.
- 8 Italo Calvino, "Angoscia in caserma," in *Romanzi e racconti* (Milano, Italy: Mediriani Mondadori, 1995 b), 245.

Introduction: Landscapes of Resistance

*Resistance represented the fusion between landscape and people.*²

Italo Calvino³

Partisan war is by definition characterized by two specific elements: the first is the emotional and physical participation of the whole population, the second is the “complete and successful exploitation of natural features of the countryside as a place of refuge, a place of abode, a place for ambushes and war operations in a difficult country, under the worst possible conditions”.⁴

The concrete and symbolic bond between Partisans and landscape in its entirety and complexity was an intrinsic factor defining the partisan experience expressed by many writers and poets in their post WW2 works. In the case of Yugoslav Partisans, fighting the invasion of Yugoslavia by the Axis powers between 1941 and 1945, the importance of territorial knowledge and of its symbolic understanding is well documented, especially via the wide production of partisan art (mainly poetry and graphics) connected to the meaning of forests, valleys and settled outskirts as places of struggle, but also symbols of “revolutionary crossing, from rooms to open space”.⁵ Edvard Kocbek, a Slovene poet who fought in the *NOB* (*narodnoosvobodilna borba*, Eng. *People’s Liberation War*), wrote in his diary from WW2 (later published under the title *Tovarišija*, Eng. *Comradeship*) the following quote by Saint Bernard: “Trust my experience, in the forest you will find more wisdom than in books”.⁶

The relation the Partisans had to the places of their action is almost symbiotic and radically different to the usual (wo)man–nature relation. Landscape is no longer a contemplative horizon—which it could only be with the necessary visual and conceptual distance between man and nature—but instead coincides with action; it is felt in its totality when a partisan enters and experiences it. Landscape is, therefore, no longer a static view but becomes dynamic, strongly related to the Partisans’ actions in space. This perspectival shift of landscape perception—moving from the *optic* to the *haptic*—made landscape a place of participation, sharing, performance and movement and influenced the production of monuments in Yugoslavia, as in other parts of Europe.

This transformation from *contemplated* landscape⁷ to *lived* landscape is interconnected with the new symbolic interpretation of landscape itself. Landscape could be the metonymy of freedom, as the Italian writer Italo Calvino states: “The grass and the sun and they, walking with their unbuttoned coats between the grass and the sun, were a new symbol, airy and enormous: what people call freedom”.⁸ It could be also perceived as a lands-



1

- 9 Miklavž Komelj, *Kako misliti partizansko umetnost?* (Ljubljana, Slovenia: Založba/* cf., 2009), 243.

- 10 Nick Kaye, *Site-Specific Art* (London, England: Routledge, 2000).

- 11 Richard Serra, "Titled Arc Destroyed," in *Writings and Interviews* (Chicago, US: Chicago University Press, 1994).

- 1 **Garavice Memorial Park by Bogdan Bogdanović in Bihać, today Bosnia and Herzegovina (inaugurated in 1981). Photo by © Giovanni Emilio Galanello.**

- 12 Robert Irwin, *Being and Circumstance – Notes towards a Confidential Art* (Larkspur Landing, US: Lapis Press, 1985), 9.

cape of death, as in the poem by Karel Destovnik Kajuh *Preko smrti stopamo v svobodo* (*Through Death We Walk into Freedom*), where landscapes are “landscapes/of death and dying”.⁹ Landscape, therefore, is a polymorphic and floating concept depending on a partisans personal perception.

The deep relationship between the Partisans and landscape is clear when reading Partisan authors: landscape becomes the external manifestation of internal resonances, its visible form symbiotically expresses one’s feelings, forebodings and sensations. When a partisan’s awareness enters a crisis, this is often reflected in literary texts through the relationship between them and landscape becoming unstable, as if the human figure is no longer integrated in space.

While fighting, the Partisans perceived themselves as consubstantial with landscape, both symbolically and strategically: they blended into the landscape, metamorphically adapting themselves to the natural environment. The chthonic experience of land’s depth, which hides and saves, especially during sweeping actions, has a strong meaning (and remains a strong memory) since it is intrinsically connected to the shock of almost touching death.

These war experiences were shared by many Yugoslav artists and architects who in the postwar period dedicated themselves to designing monuments: the architect Bogdan Bogdanović, for example, was a Partisan in the resistance movement, the sculptor Dušan Džamonja did not fight, but viscerally felt the war as a refugee in Serbia, the sculptor Vojin Bakić lost his three brothers during the war, etc. In their texts and interviews these artists and architects frequently pay attention to the topic of the monument’s space: the relationship between monuments and authentic landscapes of struggle.

Site-Specificity: The Site before the Form

A site-specific work might articulate and define itself through properties, qualities or meanings produced in specific relationships between an ‘object’ or ‘event’ and the position it occupies.

Nick Kaye¹⁰

To move the work is to destroy the work.

Richard Serra¹¹

What characterizes site-specific art is that the site where the work is placed has a fundamental role in how the work is conceived: it is “conceived with the site in mind”.¹² With this specific attention to the location of the sculpture/work of art, a change also occurs in the way the viewer is consid-

- 13 See: Michael Fried, "Art and Objecthood," *Artforum*, 5 (1967): 12–23. Rosalind Krauss, *Passages in Modern Sculpture* (New York, US: The Viking Press, 1977). Rosalind Krauss, *The Originality of Avant-Garde and Other Modernist Myths*. (Cambridge, US: The MIT Press, 1986).
- 14 Nick Kaye, *Site-Specific Art* (London, England: Routledge, 2000).
- 15 The word sitedness was coined by Rosalind Krauss when speaking of Richard Serra's sculptures. Rosalind Krauss, "Richard Serra: Sculpture," in Richard Serra, ed. Hal Foster, (Cambridge, US: The MIT Press, 2000), 99–146.
- 16 See: Bogdan Bogdanović, "O postavljanju spomenika" *Arhitektura Urbanizam* 10 (1961): 26–32; 47–48. Tonko Maroević, "Foreword," in Zdenko Kolacio, *Spomenici i obilježja, 1953–1982*, (Zagreb, YU: Globus, 1984), 13–21.
- 17 See: Edvard Ravnikar, "Arhitekt-ova anketa o spomenikih NOB," *Arhitekt*, 9 (1953): 31. Dušan Džamonja, "Spomenik — izraz iskustva i uvjerenja," *Četvrti Jul* 917 (1980): 14.
- 18 Bogdan Bogdanović, "O postavljanju spomenika," 26–32.
- 19 Marjan Šorli * (1915–1975), Jaroslav Černigoj (1905–1989), Boris Gabršček, Bogdan Bogdanović* (1922–2010), Edvard Ravnikar (1907–1993), Branko Kocmut (1921–2006), Marko Šlajmer (1927–1969). * These architects took part in the National Liberation War (NOB).
- 20 Tone Fajfar (1913–1981), partisan and politician.

red. In fact, site-specificity is not solved only with the special position the setting gains, but it also includes a displacement of the spectator's attention from the work itself towards the environment the object and the viewer are part of.¹³ If for the minimalist sculpture of the 1960s this meant an attention to the rooms where the sculptures were included and to the viewer's position towards the room and the work of art,¹⁴ for the memorial production of the same years in Yugoslavia, similarly to the American Land Art production, this meant a stronger attention to the natural environment and the landscape into which the monument and visitor were immersed, it meant defining landscape as the material (one of the materials) of the artwork, nature as part of a production procedure and the *sitedness of vision*¹⁵ as the central point of some of the best memorials.

Within the cultural debate of the 1950s, 60s and 70s in Yugoslavia, the term site-specificity was never used. However other terms and sentences expressed the same interest towards the topic of *sitedness*: various artists and critics wrote about the "relation to the place" the monument should develop,¹⁶ or about the monuments as spatial sculptures that should "complete the existing ambiance",¹⁷ or about the central role of the observer's point of view,¹⁸ etc. In the following section I will analyze different voices from different periods, coming to the conclusion that *sitedness*—or a monument's contextuality—was one of the most discussed topics of interest when designing and writing about contemporary monument production.

In 1953 the Slovene architecture journal *Arhitekt* published a survey on NOB monuments built from the end of the war until then, asking three questions: 1) What do the interviewees think about the present production? 2) How should we view these monuments: "with the eyes of those who will come after us" or should we be led by our present inclinations? 3) What is the quality of Slovene production in comparison to monuments built in other Yugoslav republics? Seven architects¹⁹ and one politician²⁰ were interviewed, among them two of the most prolific architects in Yugoslavian memorial production in the years to come: Edvard Ravnikar and Bogdan Bogdanović.

In 1953 the two architects were in very different situations: Bogdanović had only built the Jewish Memorial in Belgrade (*Spomenik jevrejskim žrtvama*, 1951–52), while Edvard Ravnikar had already completed several memorials, including his best known project, Kapor Memorial (1953) on the island of Rab, designed together with Miloš Bonča, Savin Sever, Branko Kocmut and Marko Šljajmer (the last two were also interviewed by *Arhitekt* in the same survey), and some of his most poetic monuments, like the

- 23 Edvard Ravnikar, "Arhitekt-ova anketa o spomenikih NOB," 31.
- 21 See: Berislav Stojanović, "Spomeničko obeležavanje značajnih događaja naše revolucije," *Arhitektura Urbanizam* 10 (1961): 48. Zoran Žunković, "Naši spomnici danas," *Arhitektura Urbanizam* 10 (1961): 24.
- 22 Bogdan Bogdanović, "Arhitekt-ova anketa o spomenikih NOB," *Arhitekt* 9 (1953): 31.
- 24 The article was originally published in the newspaper *Delo* (1956), n. 10, and partially re-published five years later in *Arhitektura Urbanizam* (1961), n. 10, an issue dedicated completely to monuments and memorials.
- 25 Bogdan Bogdanović, "O postavljanju spomenika," 31.
- 26 *Ibid.*, 29.
- 27 Dušan Plenča, "Likovna kritika čuti," *Četvrti Jul* 717 (1976): 12.

Hostage's Cemetery in Begunje and Draga pri Begunjah (1952÷53), considered at the time one of the best examples of spatial monuments.²¹ Edvard Ravnikar in his concise answer, and the young Bogdan Bogdanović—at the time 31—with his elaborate text, expressed very similar ideas on how a monument should relate to its context.

Monuments should, “when developed spatially, enable a real and genuine experience”, states Bogdanović,²² while Ravnikar, stressing the importance of correct siting, hopes for the production of solutions which “complete the existing ambience and create a new balanced environment”.²³

Three years later²⁴ Bogdanović writes a lengthy article regarding the importance of positioning monuments in space, describing examples from different European cities (Place la Concorde in Paris, Piazza del Popolo in Rome, Karlův most in Prague, Amaliemborg Slotplads in Copenhagen etc.) while illustrating some of the fundamental principles of the relations between objects and space. After describing how ancient populations dealt with monuments and considering how Renaissance and Baroque artists used to build monuments and what effects they could achieve, he points out that “very often the quality of a monument depends on the way it is positioned in space”.²⁵ Moreover, he highlights that at the center of his own reflections there is always man, that everything should be considered in relation to his position in space and his relation to the objects he shares space with.²⁶

In the mid-1960s, creative freedom gave a new expansion to sculpture, including memorial sculpture, ‘the art of the free form’ brought new principles to the forefront: ‘instead of optic, a tactile sensibility, instead of a superficial image, penetration into matter’s depth, instead of a description of real form, forms in space...’ The new social climate and a reinforced humanitarian function of art helped in the stylistic changes and contributed to the creation of a new type of memorial sculpture.

Dušan Plenča²⁷

In the 1960s reflections around monument spatiality became more common and more advanced, as, for example, those reflections of the art critic Antoaneta Pasinović and the art historian Eugen Franković, both from Zagreb and writing in 1966.

In the journal *Život Umjetnosti*, Antoaneta Pasinović published an article expressing modern ideas about the role of space in the design of memorials. Her article is strongly inspired by Henri Focillon’s book *Vie de formes: Éloge de la main* (1939), newly translated in Yugoslavia in 1964 with the

28 Henri Focillon, *Vita delle forme: Elogio della mano* (Torino, Italy: Einaudi, 2002).

29 *Ibid.*, 4.

30 Antoneta Pasinović, "Prostorna analiza spomenika" *Život Umjetnosti 2* (1966): 25–29.

31 Evgen Franković, "Javnost spomenika," *Život Umjetnosti 2* (1966): 17–24.

title *Život oblika: pohvala ruci*. Titled “Spatial Analysis of the Monument,” the article recognizes in the spatial project of the monument the main characteristics for the monument’s quality. Using Focillon’s quotes “the space is the place of the work of art”²⁸ or “the work of art is the measure of space: it is form”²⁹, Pasinović stresses the importance of spatiality, developed within memorial projects. In the same article she states: “Up until now we considered a monument through its temporality, through its historical determination. However, asking ourselves about the motivation and about the resulting thematic functioning of the monument, we overlooked its reality, its specificity, its mode of being and existing. The monument, however, exists as a form, as a sculpture, as a spatial reality”.³⁰

Eugen Franković’s article, published in the same issue of *Život Umjetnosti* as Pasinović’s, starts by ascertaining that monument *sitedness* is usually, in the majority of projects, especially in the case of minor monuments of local importance, not considered at all. He defines three ways in which the monuments do not take the context into consideration: 1) The monument, seen as “imposing on the landscape” (orig. “nametanje pejzažu”), creates a conflict with the environment. He gives the example of August Augustinčić’s monument in Banja Luka; 2) The monument ignores the environment as if it was a “stiffened scene showing to the viewers its autonomous play, now — by chance — here, spiritually temporary, but physically permanent.” Here he refers to Vanja Radauš’s works; 3) The third reason for the avoidance of a landscape/monument relation is the sculptor’s self-sufficiency (orig. “samodovoljnost kipara”). The “best (actually worst) example” is, again, Augustinčić’s monument to Moša Pijade on the battlefield of the Proletarian Brigades.

“The mentioned problem with space demands our attention as it is an indicator of crucial significance since the relation between the space (environment, ambiance) and the monument is the relation between stillness and change showed by the monument — here [on the relation between the monument and space] lies therefore all the weight of the experience”.³¹ Here Franković opens the topic of the monument’s experience, recognizing the possibility of a complex relationship between the monument, the environment and the perceiver, and since “communicability is the function of all public monuments,” the monument’s *sitedness* is what gives the “monument its character, the core of its appearance and significance.”

For the first time in Yugoslavia an art critic and art historian writing about memorial production considers space, how a monument deals with it, how it completes it and how the monument’s character is also built by the context as a fundamental element of the monument. What at the beginning was considered only by architects as the vital element of the real



2



3



4

2 Documentation of the building process of Spomenik na Šipku by Vladimir Braco Mušič, near Špitalič, today Slovenia (1958). Source: *Arhitekt journal*, 2, 1960.

3 Documentation of the building process of Spomenik na Šipku by Vladimir Braco Mušič, near Špitalič, today Slovenia (1958). Source: *Arhitekt journal*, 2, 1960.

4 Monument to the Revolution by Dušan Džamonja & co., on Mrakovica (Kozara mountain), today Bosnia and Herzegovina (1972). Photo by © Giovanni Emilio Galanello.

32 Giulio Carlo Argan, Dušan Džamonja (Beograd, YU: Jugoslovenska revija, 1981), 9.

33 Evgen Franković, "Javnost spomenika," 17-24.

34 Gojko Jokić, Jugoslavija. Spomenici revolucije (Belgrade, Yugoslavia: Turistička štampa, 1986).

35 Until the 1960s among 14.000 monuments, 3.500 were authentic monuments ("avtentični spomenici"), i.e. remains from the war, all the others were "spomenici u čast" (monuments in honor of something). See: Heike Karge, *Steinerne Erinnerung – versteinerte Erinnerung? Kriegsgedenken im sozialistischen Jugoslawien* (Wiesbaden, Germany: Harrasowitz, 2010).

36 Informbiro: Serbo-Croatian word for Cominform, the Soviet Communist Information Bureau

monument's experience, after the 1960s becomes a shared belief: the *sitedness* of the monument is a way of making the experience of the monument richer, of making the viewer, by means of perception, the subject of the work.

Giulio Carlo Argan, an influential Italian art critic and historian, describing the opus of the sculptor Dušan Džamonja, addresses several key topics about Džamonja's *NOB* monuments, but also generally about monument sculpture in Yugoslavia notes that "*The monument, before being a form, is a site*".³²

Authentic Forests and Memorial Practices

While seeking an authentic expression of our relation toward the meaning of the war, the authentic traces of the conflict are of specific importance. We should understand this importance, and present it with a certain interpretative power, so that it can be understood by everyone.

– Eugen Franković³³

Among all the different rural landscapes where the People's Liberation Struggle was fought, *forests*—as places which are hardly readable, wild and fragmented—had a central role in the Yugoslav partisan warfare. This role could be recognized from the fact that several forested territories where WW2 took place after the war acquired the status of national parks, not only because they were characterized by natural beauty, but most notable because they contained important traces of the war, which the new socialist state would preserve, as they were the exact locations where the Partisan war and the Socialist Revolution, which Yugoslavia recognized the need to nurture, took place: these areas were defined as *forests with historical character*.³⁴

The authentic locations of war events were not always of direct interest to people and politics. In fact, especially in the years immediately after the end of the war, "to remove war marks" was one of the most repeated slogans that could be interpreted by verbatim meaning—removing the traces of the war in cities and landscape—or as referring to the peoples' memories of the war.³⁵ Only after 1948, with the Resolution of the Informbiro³⁶ and the split between Tito and Stalin, which had consequences regarding the emancipation of art production, there emerged the need to preserve the sites of the *NOB*, objects and documents. In fact, part of the Soviet strategy when dealing with WW2 events in Yugoslavia was to discredit the role of the Yugoslav resistance movement, incorrectly giving the Red Army credit for the victory

- 38 Zdenko Kolacio, "O prostorima, spomenicima, izvorima umjetnosti," *Arhitektura* 155 (1975): 8.
- 41 Bogdan Bogdanović, "Arhitekt-ova anketa o spomenikih NOB," 31. Vladimir Braco Mušič, "Nekaj misli o spomenikih NOB," *Arhitekt* 2 (1960): 29–31.
- 43 F. Sušteršič, "Sence na naših spomenikih," *Borec* 9 (1959), 444.
- 37 See: Jozo Tomasevich, *War and Revolution in Yugoslavia, 1941–45: Occupation and Collaboration* (Palo Alto, US: Stanford University Press, 2002).
- 39 Marjan Tepina, "O arhitekturi spomenikov padlim borcem," *Borec* 4 (1952): 100–103. Marjan Tepina, "O trajnosti spomenikov, posvečenih narodnoosvobodilni borbi." *Borec* 2 (1956): 85–87.
- 40 Ibid.
- 42 See: Boro Pavlović, "Spomenik i prostor," *Čovjek i prostor* 14 (1954): unknown page number. "Spomenik v skladu z okolico," *Borec* 3 (1958): 141.
- 44 Dragi Milenković, "Spomenici i umetnički spomenici," *Crvena Zvezda* 9 (1955): unknown page number.
- 45 Marjan Šorli, "Arhitekt-ova anketa o spomenikih NOB," *Arhitekt* 9 (1953): 29.
- 46 Zdenko Kolacio, *Spomenici i obilježja, 1953–1982* (Zagreb, YU: Globus, 1984).

against the Axis powers, since the Yugoslav resistance movement had won several war campaigns four years prior to the arrival of the Red Army in Yugoslavia.³⁷

Apart from the political motivations behind the growing interest in the marking and caring for authentic places of struggle, the topic of a place's authenticity, especially when connected to natural contexts, became an important poetic *leitmotif*, for those authors—most of them architects—who derived the concepts for their monuments from the “observation and experience of the place”³⁸

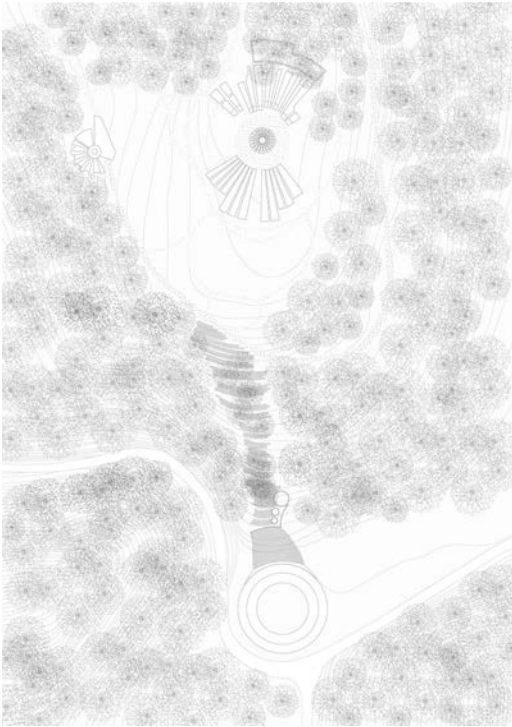
In the 1950s the topic of site-authenticity was not so widely discussed among sculptors, architects and critics. Stress was placed on a monument's materiality and durability³⁹, the monument's monumentality⁴⁰, figurality versus abstraction⁴¹, contextuality⁴², the monument's neglect⁴³, monuments versus art-monuments⁴⁴; all these topics would remain of interest in the following decades.

An architect who already in the 1950s developed a sensibility toward the topic of authentic sites or war events, and consequently the idea of landscape as a palimpsest of memories that the monument should try to interpret, was Marjan Šorli. Šorli was a Slovene architect who took part in the resistance movement (under the name Janez Viher), built several monuments, all of them upon the site of the event the monument was commemorating.

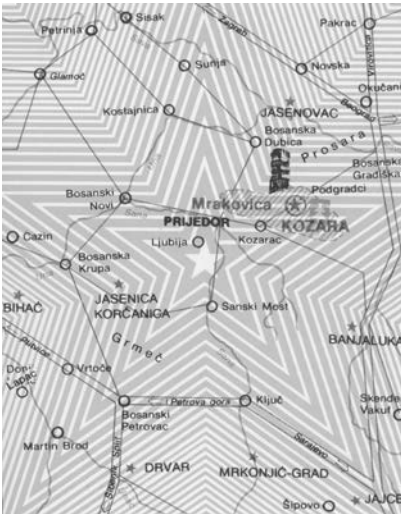
In the 1953 *Arhitekt* survey, he affirmed, fully in line with his practice: “To mark the history of the NOB in the place where it happened is for sure our most necessary task. It is a pity several partisan graves were moved from beautiful places in nature to cemeteries, where they drown among all the others”.⁴⁵

The topic of the authenticity of a site was close to those architects and sculptors who, beside recognizing the importance of spatially ‘collaborating’ with a chosen monument's location, built their poetics in relation to the event that happened in the specific place: beside Šorli, who worked mainly in the 1950s and early 1960s, the architect Zdenko Kolacio and the sculptor Zdenko Sila dedicated some of their best monuments to *faire le site* of a specific event. Several monuments built in the sites of suffering, through their spatial organization, with an architectural or sculptural vocabulary, tend to mark specific points in space, as if they were attempting to explain and point out how the event *took place* or how the space was organized at the time the event occurred.

“The event is the basis. Sometimes even a fragment of an event can lead to the solution. This is why the impression of those who took part in it is precious”.⁴⁶



5



6

5 Masterplan of the Monument to the Revolution by Dušan Džamonja (1972). Source: Author.

6 Map of the Kozara territory. Source: Gojko Jokić, *Turistički vodič: Nacionalni park Kozara*, 1986.

- 47 Jokić, Jugoslavija. Spomenici revolucije.
- 48 Argan, Dušan Džamonja.
- 49 Zdenko Kolacio (1912-1987) was a Croatian architect and urbanist, who dedicated a great part of his career to memorial production, documented specifically in the publication *Spomenici i obilježja* (Monuments and Memorials) from 1984.

50 Zdenko Kolacio, *Spomenici i obilježja*, 1953-1982.

In the creative minds of Yugoslav artists and architects who proposed monuments recalling specific WW2 events, forests became sources of deep poetic potential, where the forest itself, with its vertical geometries, fragmented lights and irregular grounds, played a central role in the monument's design.

The following four examples, very different in form, size and (what kind of language? Material, structural, tectonic?) language, illustrate how forests were interpreted as places where visitors could have an intimate experience with the monument, develop a psychological contact and build a personal relationship with memory and commemoration.

Monument to the Revolution on Mrakovica

Dušan Džamonja & co., 1972

A forest of high pines, dark light entering between them, no grass or low bushes, only the pines and the earth under them. The hill is marked horizontally by three-meter-long low concrete blocks, functioning as stairs and giving a rhythm to the random growth of trees and to your walking. On the top of the hill, at the end of an almost ritual walk, a large light clearing and in the center of the eye's focus a tall concrete cylinder, composed of different vertical segments. The sculpture is encircled by concrete blocks and walls and around them, again, the coniferous forest extends limitless

These words describe the visitors' encounter with the Monument to the Revolution on Mrakovica, one of the peaks of Kozara, a mountain in the northwestern part of Bosnia. The monument, built between 1970 and 1972, was designed by the sculptor Dušan Džamonja together with the architect Marijana Hanžeković and construction engineer Miro Rak.

The monument memorializes one of the *heaviest* and most *famous*, using the words of Josip Broz Tito,⁴⁷ *heroic* and *moving*, borrowing Dušan Džamonja's vocabulary,⁴⁸ struggles of the People's Liberation War in Yugoslavia.

The foundational concept of the monument was to evoke both the sense of oppression of the Partisans and the local population being encircled and the magnitude of the struggle of those partisans who managed to fight, breaking through the forced encirclement and scattering in the forest. When speaking about this monument, Zdenko Kolacio's⁴⁹ words resonate: "The event is the basis. Sometimes even a fragment can lead to a solution".⁵⁰ The interesting operation Džamonja made is the transformation of the description of the events in the Kozara mountains in a spatial vocabulary: the monum-



7



8

- 51 Here we borrowed the terminology used by Rosalind Krauss to describe Richard Serra's spatial sculptures. Krauss, "Richard Serra: Sculpture," 99-146.
- 52 As Richard Serra defines his work "Shift," which was conceived and built in the same two years as Džamonja's Kozara monument, between 1970 and 1972. See: Yves Alain Bois, "A Picturesque Stroll around Clara-Clara," October 102 (1984): 32-62.

- 53 Dušan Džamonja, "Memorijalni spomenik na Mrakovici — Kozara," Čovjek i prostor 234 (1972): 8.

7 Monument to the Revolution by Dušan Džamonja & co., on Mrakovica (Kozara mountain), today Bosnia and Herzegovina (1972). Photo by © Giovanni Emilio Galanello.

8 Monument to the Revolution by Dušan Džamonja & co., on Mrakovica (Kozara mountain), today Bosnia and Herzegovina (1972). Photo by © Giovanni Emilio Galanello.

ent, in fact, besides representing a symbol in the history of the Kozara epopee, transforms it into an experienceable space where the visitor's *living, moving, reacting* body discerns *physically rather than optically*.⁵¹

A monument within a landscape is a marker of the site's specificity that without it could not be legible, it functions as a *machine à observer*, a barometer to read landscape⁵² in a physical, historical and symbolic way. A monument within a landscape is also a pause in space, it is what makes the monument-space and site significant: it redefines the experience, refocuses our attention and calls to the history of the place: a monument brings time's echo into space, which, through such a monument as Džamonja's—that bases its significance and transmission of meaning on the inclusion of man's bodily experience—becomes *embodied, palpable, physical*.

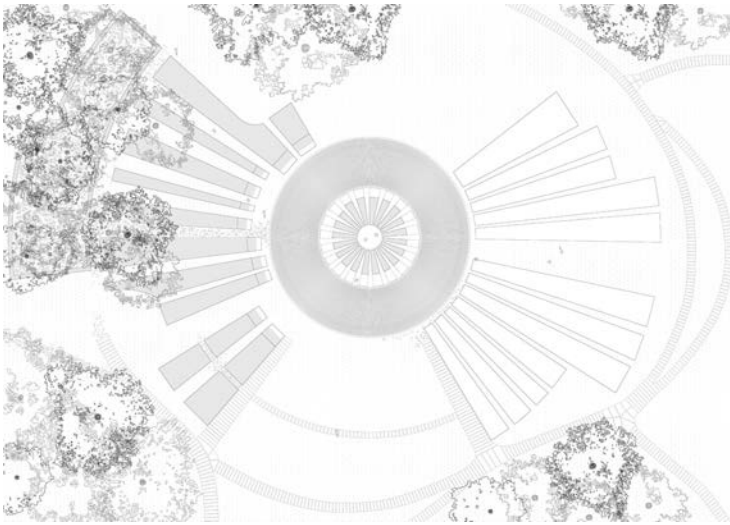
The relation between Džamonja's monument and the surrounding pine forest consists of different ambiances with specific atmospheres created by the way architecture and the forest correspond.

The first forest-defined ambiance is that of the entrance staircase to the memorial area. From the lower plateau we see in front of us a compact staircase in the shape of an amphitheater. Via visual extension the forest behind this first staircase gradually thickens as the stairs penetrate the vegetation while at the same time losing the compact form they have at the beginning. Here begins the first of the several *dematerializations*: the stairs lose their massive formal aspect, their well-defined form and precise margins, adapting to the shape of the land, leave the space to the tree trunks growing between them, emerging as horizontal lines among a mass of verticals.

When first climbing the entry stairs the monument is not in view, we are immersed in the dark atmosphere of the forest, walking under the crowns of the firs. As Džamonja highlighted on several occasions, this initial ambiance is perceived by the visitor through their body while slowly ascending; this ascendant movement functions as a "psychological preparation for the experience" of the monument.⁵³

At the end of the staircase a clearing opens to the visitor. At its center and pushed towards the back stands a vertically fragmented cylindrical tower surrounded by massive concrete blocks.

The main body of the monument develops around the cylinder and behind it another forested ambiance invites the visitor to the terminal space of the complex. Behind the cylinder are 13 radially oriented massive concrete blocks. They mirror the geometry in front of the cylinder, but here they are four-meters high, heavier and bigger. They invite us to walk between them, within their darkness, and here the conifers start to appear between the concrete. And as it happened on the staircase, where some concrete slabs left space for the fir trunks and roots, in some specific spots the concrete walls,



9



10

54 Andrej Ujčič, "Spomenik bojevnikom pohorskega bataljona," *Sinteza* 7 (1967): 35–37.

9 Plan and section of the Monument to the Revolution by Dušan Džamonja (1972). Source: Author.

10 Plan and section of the Monument to the Revolution by Dušan Džamonja (1972). Source: Author.

even if following the geometry of the radial lines, adapt their surface to the presence of trees, becoming concave, hosting the trunks.

At this point the memorial space becomes mysteriously labyrinth-like. Exploring this part of the monument enables us to see that it is actually quite diversified, characterized by small ambiances which already introduce us to the intimate atmosphere of the commemorative space. Behind these blocks lays the last stage of the itinerary: a round wall enclosing part of the forest. This intimate space serves the purpose of commemorating the 9,922 partisans who died in the fighting on Kozara mountain. The presence of the conifers' crowns above our head, filtering the light that softly activates the ground are indirect and delicate and are fundamental in creating the atmosphere of experience. Here the relationship between nature and cast concrete blocks becomes nearly symbiotic, monument and nature share a mutual *mimesis*.

Monument to the Fallen Fighters of the Pohorje Battalion

Branko Kocmut, Slavko Tihec, 1959

The event this monument recalls is *spatially* similar to the one behind the Kozara memorial. In the exact site where the monument is located, on the 8th of January 1943, the Pohorje Battalion lost all its fighters after being encircled by the much more numerous German forces. The monument stands on the site of the Partisans' last fight: high pine trees, an obscure silence and light that barely reaches the ground define the monument-space – the site of the Pohorje Battalion's base. Sixteen years after the event, when the architect Branko Kocmut and the sculptor Slavko Tihec were commissioned to visit the site and propose a monument, they found the remains of the sheds the Partisans used for living and surrounding them the trenches wherein the Partisans had fought their last battle and died. The area is approximately a 100m diameter circular shape. The first proposal by the two artists was to fell the trees that occupied this area and, with this void in the middle of the forest, to suggest to the visitors that they were in a particular place, preparing them for the encounter with the monument.⁵⁴ This circular clearing recalls the circle the German forces formed around the partisan base, a spatial idea with similar premises to Džamonja's solution for Kozara: in that case the sense of oppression of being encircled was produced by the concrete blocks almost squeezing the bodies of the visitors when they would reach the center of the cylinder, while in this case the sensation of being surrounded would be given by the pines themselves surrounding the clearing.

Later this clear idea, which would not need a sculptural element, was abandoned and the memorial place was conceived more traditionally, e. g.,



11

11 Monument to the Fallen Fighters of the Pohorje Battalion by Branko Kocmut, Slavko Tihec (1959), Slovenska Bistrica, today Slovenia. Source: *Sinteza* journal, 7, 1967 (photo by Jože Kovačič).

including a central sculpture and some smaller architectural elements. The remains of the battle positions are marked by thirty-one small stones of almost cubical shapes positioned in a circle—the idea of the circular clearing was therefore replaced by these concrete blocks. The names of the Partisans who died in the battle are inscribed on one side of each of the blocks—one block for every fallen Partisan. Within this circle are fourteen larger stone plates that seemingly levitate over the ground. These plates mark the positions of the trenches where the partisans fought. And finally, on the site of the battalion's command lays the largest stone plate that serves as a pedestal for two bronze figures, a work by the sculptor Slavko Tihec.

Marking specific locations of small buildings connected with partisan life with abstract architectural elements was common practice among architects and artists working with memorial spaces. Big abstract concrete stones mark the positions of the buildings of the Partisan hospital in Grmeč (a project by Ljubomir Denković, inaugurated in 1979), abstract shapes—recalling Robert Morris' beams from 1965—help the visitors understand the masterplan of Javornica partisan hospital (project by Zdenko Kolacio, 1980–81).

The entire memorial complex exudes a subtle horizontal presence among the high pine trees and allows the forest to exist as an intact testimony to the events, highlighting only built structures and transformations of the place. It does not illustrate what happened, it simply marks what might have been forgotten, composted and absorbed by the woods.

Memorial Cemetery in Dovar

Ružica Ilić, 1958

Whereas in the previous two examples are located in forest contexts and develop a fertile relation with it, here we'll approach the concept of the *living monument* (*živ spomenik*)—the idea that the memory of the tragic events of WW2 should be kept alive not by conventional monuments, but by living monuments, i.e. monuments made of natural elements or natural areas, usually forests, which, because of important events that took place there, gain the status of monuments or, as in this case, the status of parks (*spomen park*). The idea of a living memorial instead of an object-based monument became a popular discourse centered around monument practices in the late 1950s, '60s and '70s.

Debates pertaining to memorial parks began to appear at the end of the 1950s. Some of the first articles dealing with park-as-memorial emerged in the journal *Crvena Zvezda* in 1956.



12

- 55 Berislav Stojanović, "O spomenparkovima. Spomengroblje u Titovom Užicu," Crvena Zvezda 2 (1956): unknown page number.

56 Ibid.

- 57 Vladimir Dimitrijević, "Velika akcija gorana. Zeleni spomenici," Četvrti jul (1965): 18.

12 Drawing of the Gorani movement made by the child Olga Očevski. Source: *Četvrti Jul* journal, 04.05.1965.

One article⁵⁵ comments on the result of the competition for the memorial cemetery (*spomen groblje*) of Dovar, the eastern area of the city of Titovo Užice. Describing the winning solution by the architect Ružica Ilić, the author uses the expression—possibly used by the architect herself—*green architecture* (*zelená arhitektúra*), to define the solution for Dovar park.

“In the area of the cemetery, a living temple (*živi hram*) will be built. The walls of this living object will be formed by the high pine forest, while the interior will be a green and floral meadow; in the high pine forest there will be a belt of green paths. In the center of this meadow, a stone plate will be located with the names of the fighters who sleep together here. The most beautiful trees will carry the names of the dead, which will have, as the whole living temple, a symbolic meaning: the memories of the dead and their ideas develop and grow higher and higher”.⁵⁶

Here the architect uses poetic words to express how memorial content could be symbolically made manifested directly through the power of nature. The stone plate at the end of the memorial’s path marks just the center of the memorial site: the landscape that is the harbinger of memory, and the metaphor of the trees as the growing of memory is the message offered by *spomen park*.

Gorani

Participatory Movement, 1960s

The fourth example embodies the highest stage of these monuments’ dematerialization, where even nature is not considered living material, but a pretext for collaborative participatory memorial practices.

The *Gorani movement* is a movement of younger people which arose in Serbia in 1960 and, driven primarily by ecological ideals, first began to take care of the greenery around monuments and later designed monument-forests, parks and tree-lined roads in places where significant events of the NOB took place. This movement shows that, simultaneous to the creation of monument parks and monument territories that began during the same time, there was the emergence of different memorial practices from below.

The actions of Gorani sometimes used spectacle—“In Požarevac, on the Čačalica hill, for each of the 7000 shot patriots 10 red roses will be planted. The hill will burn with red flames”⁵⁷—while at the same time having a strong educative element with the development of ecological and historical awareness and the promotion of the need to nurture revolutionary traditions. With the idea of *green monuments* they shifted the attention from the monument-object (already felt as just a fossilized *memento* of the past) to the monument-landscape, which is dynamic, alive, demands your engagement,

- 58 Robert Smithson, "Frederick Law Olmsted and the Dialectical Landscape," in *The Collected Writings*, (Berkeley and Los Angeles, US: University of California Press, 1996), 157-171.
- 59 Bogdan Bogdanović's Memorial to the Victims of Fascist Terror in Jasenovac (1960-66), Dušan Džamonja's Memorial to the Revolution on Mrakovica hill, Kozara (1970-72), Slavko Tihec's Memorial area in Donja Gradina (designed in 1979 and never built) and Miodrag Živković's Memorial to the Battle on the Sutjeska in Tjentište (1964-1971).

especially in custodial sense, and eventually exposes the signs of your neglect. The author disappears while the focus lies totally on the participatory moment of collectively planting trees or taking care of a monument's surroundings.

Here Robert Smithson's words about Frederick L. Olmsted's New York Central Park resonate:

*"A park can no longer be seen as a 'thing-in-itself' but rather as a process of ongoing relationships existing in a physical region—a 'thing-for-us'".*⁵⁸

Memorial Forests as Activated Nature

The art critic Jure Mikuž, in his curatorial text written for the exhibition of four monuments⁵⁹ dedicated to events related to the People's Liberation War at the Venice Biennale in 1980 wrote: "We can thus say that all these projects are interventions into *active nature* [author's italics], which has its specific historical character and whose elements, saturated as they are with significance, are in themselves the most direct stimulation of the special feeling of the place and its comprehension." With the four examples of forested monuments and activated nature, through the analysis of the debates regarding the relationship between the memorials and the places within which they are immersed, and while examining the projects and scrutinizing the terminology used to critically describe them, an extremely complex composite *landscape of theories and practices* unfolds in front of us—from experiential monuments to ecologically aware participatory experiments—which testifies to the modernity and in some cases even radicality of Yugoslav memorial practices.

Bibliography

- Argan, Giulio Carlo. *Dušan Džamonja*. Belgrade, Yugoslavia: Jugoslovenska revija, 1981.
- Bogdanović, Bogdan. "Arhitekt-ova anketa o spomenikih NOB." *Arhitekt* 9 (1953): 31.
- Bogdanović, Bogdan. "O postavljanju spomenika." *Arhitektura Urbanizam* 10 (1961): 26-32; 47-48. (Original work published 1956)
- Bois, Yves Alain. "A Picturesque Stroll around Clara-Clara." *October* 102 (1984): 32-62.
- Calvino, Italo. "Prefazione di Il sentiero dei nidi di ragno." In *Romanzi e racconti*. Milano, Italy: Mediriani Mondadori, 1995 a. (Original work published 1964)
- Calvino, Italo. "Angoscia in caserma." In *Romanzi e racconti*. Milano, Italy: Mediriani Mondadori, 1995 b. (Original work published 1949)
- Dimitrijević, Vladimir. "Velika akcija gorana. Zeleni spomenici." *Četvrti jul* (1965): 18.
- Džamonja, Dušan. "Memorijalni spomenik na Mrakovici - Kozara." *Čovjek i prostor* 234 (1972): 8-9.
- Džamonja, Dušan. "Spomenik - izraz iskustva i uvjerenja." *Četvrti Jul* 917 (1980): 14.
- Focillon, Henri. *Vita delle forme: Elogio della mano*. Torino, Italy: Einaudi, 2002. (Original work published 1939)
- Franković, Evgen. "Javnost spomenika." *Život Umjetnosti* 2 (1966): 17-24.
- Fried, Michael. "Art and Objecthood." *Artforum* 5 (1967): 12-23.
- Giancotti, Matteo. *Paesaggi del trauma*. Milano, Italy: Bompiani, 2017.
- Irwin, Robert. *Being and Circumstance - Notes towards a Confidential Art*. Larkspur Landing, US: Lapis Press, 1985.
- Jokić, Gojko. *Jugoslavija. Spomenici revolucije*. Belgrade, Yugoslavia: Turistička štampa, 1986.
- Karge, Heike. *Steinerne Erinnerung - versteinerte Erinnerung? Kriegsgedenken im sozialistischen Jugoslawien*. Wiesbaden, Germany: Harrassowitz, 2010.
- Kaye, Nick. *Site-Specific Art*. London, England: Routledge, 2000.
- Kocbek, Edvard. *Tovarišija*. Ljubljana, Yugoslavia: Državna Založba Slovenije, 1949.
- Kolacio, Zdenko. "O prostorima, spomenicima, izvorima umjetnosti." *Arhitektura* 155 (1975): 8-11.
- Kolacio, Zdenko. *Spomenici i obilježja, 1953-1982*. Zagreb, Yugoslavia: Globus, 1984.
- Komelj, Miklavž. *Kako misliti partizansko umetnost?*. Ljubljana, Slovenia: Založba/* cf., 2009.
- Krauss, Rosalind. *Passages in Modern Sculpture*. New York, US: The Viking Press, 1977.
- Krauss, Rosalind. *The Originality of Avant-Garde and Other Modernist Myths*. Cambridge, US: The MIT Press, 1986.

Krauss, Rosalind. "Richard Serra: Sculpture." In *Richard Serra*, edited by Hal Foster, 99–146. Cambridge, US: The MIT Press, 2000. (Original work published 1986)

Maroević, Tonko. "Foreword." In *Spomenici i obilježja, 1953-1982*, 13–21. Zagreb, Yugoslavia: Globus, 1984.

Mikuž, Jure. "The Characteristics of Some Recent Yugoslav Memorials to the National Liberation War." In *Catalogue of the Yugoslav Pavilion, 39th Biennale of Venice*, edited by Zoran Kržišnik, Ljubljana, Yugoslavia: Modern Gallery, 1980.

Milenković, Dragi. "Spomenici i umetnički spomenici." *Crvena Zvezda* 9 (1955): unknown page number.

Mušič, Vladimir Braco. "Nekaj misli o spomenikih NOB." *Arhitekt* 2 (1960): 29–31.

Pasinović, Antoneta. "Prostorna analiza spomenika." *Život Umjetnosti* 2 (1966): 25–29.

Pavlović, Boro. "Spomenik i prostor." *Čovjek i prostor* 14 (1954): unknown page number.

Plenča, Dušan. "Likovna kritika čuti." *Četvrti Jul* 717 (1976): 12.

Ravnikar, Edvard. "Arhitekt-ova anketa o spomenikih NOB." *Arhitekt* 9 (1953): 31.

Serra, Richard. "Titled Arc Destroyed." In *Writings and Interviews*, 193–214. Chicago, US: Chicago University Press, 1994. (Original work published 1969)

Smithson, Robert. "Frederick Law Olmsted and the Dialectical Landscape." In *The Collected Writings*, 157–171. Berkeley and Los Angeles, US: University of California Press, 1996. (Original work published in 1973)

"Spomenik v skladu z okolico." *Borec* 3 (1958): 141.

Stojanović, Berislav. "O spomenparkovima. Spomengroblje u Titovom Užiču." *Crvena Zvezda* 2 (1956): unknown page number.

Stojanović, Berislav, "Spomeničko obeležavanje značajnih događaja naše revolucije." *Arhitektura Urbanizam* 10 (1961): 15–17, 48–49.

Šorli, Marjan. "Arhitekt-ova anketa o spomenikih NOB." *Arhitekt* 9 (1953): 29.

Sušteršič, F. "Sence na naših spomenikih." *Borec* 9 (1959), 444.

Tepina, Marjan. "O arhitekturi spomenikov padlim borcem." *Borec* 4 (1952): 100–103.

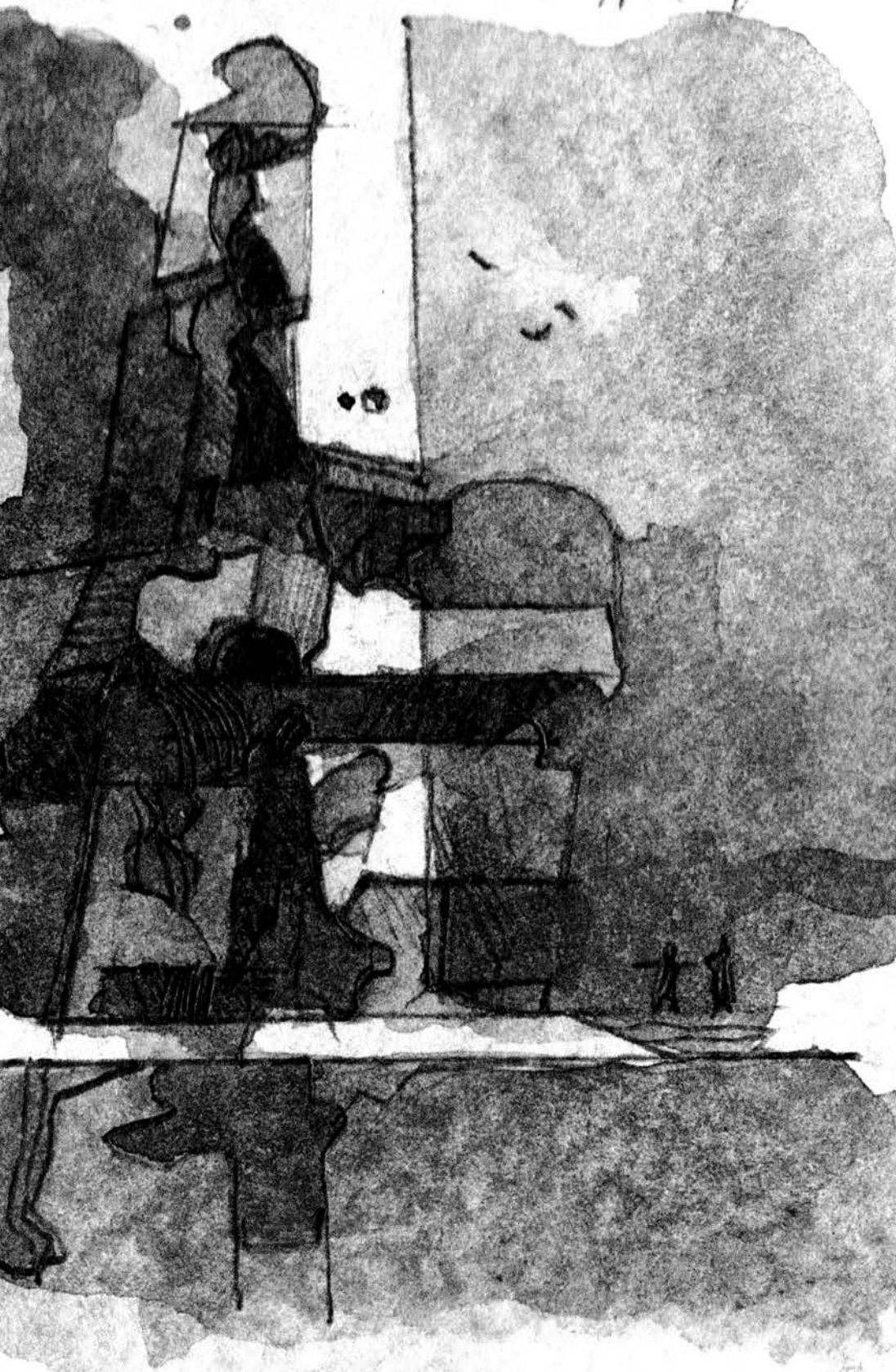
Tepina, Marjan. "O trajnosti spomenikov, posvečenih narodnoosvobodilni borbi." *Borec* 2 (1956): 85–87.

Tomasevich, Jozo. *War and Revolution in Yugoslavia, 1941-45: Occupation and Collaboration*. Palo Alto, US: Stanford University Press, 2002.

Ujčić, Andrej. "Spomenik bojevnikom pohorskega bataljona." *Sinteza* 7 (1967): 35–37.

Žunković, Zoran. "Naši spomnici danas." *Arhitektura Urbanizam* 10 (1961): 22–25.

— Hotchkiss —

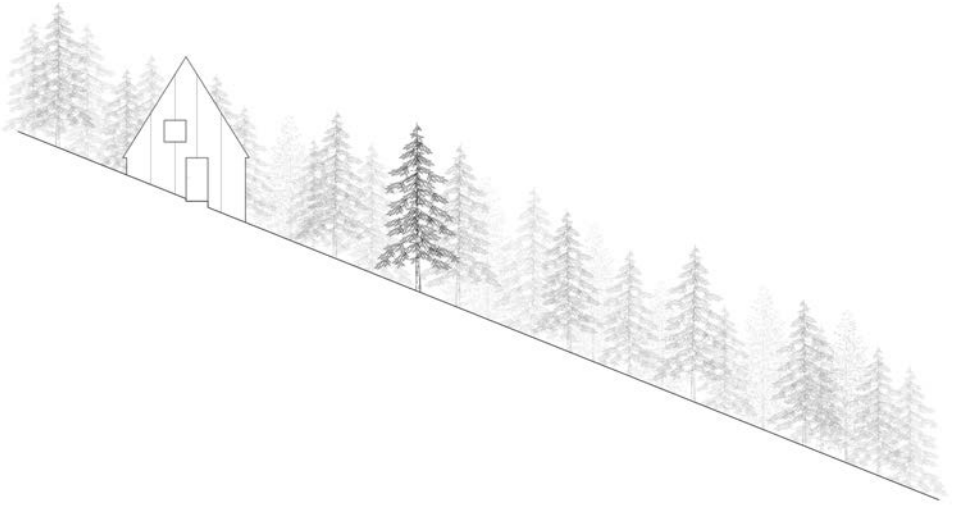


House in Tateshina

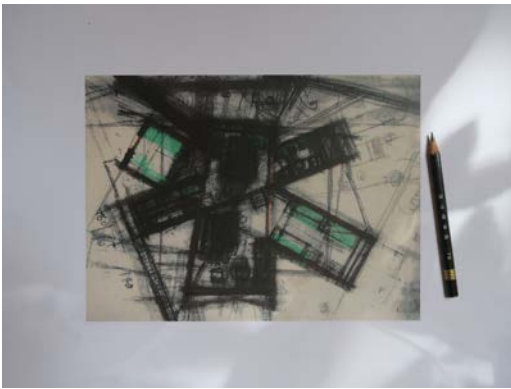
Kazuo Shinohara's

Transformational Space

Giorgia Cesaro



1



2



3

1 *House in Tateshina*, entrance elevation

2 Kazuo Shinohara, *House in Tateshina*, first design sketch, 1985 / Giorgia Cesaro personal archive

3 The ideogram *sui* [水] traced with a brush.

1 Cf. Marcello Ghilardi, *Arte e pensiero in Giappone. Corpo, immagine, gesto*, (Milano: Mimesis, 2011), 11.

*Doesn't have nothing
my winter hut.
It has everything.*

Matsuo Bashō

House in Tateshina, Kazuo Shinohara's latest project began in 1985 to end, unrealized, with his death in 2006. The idea of a hut in the mountains of Nagano Prefecture is the project of a small space (46, 24 m²) developed over a very long time (21 years).

Like much of what is intensely Japanese, the first drawing of the latter project drawn up by the hands of Shinohara is a map of signs; and if this map is correctly read it does not lead to the discovery of a hidden treasure but turns out to be a treasure itself. These first traces of the spatial composition of House in Tateshina, indeed, offer the possibility to observe the schematic finding of a first language, an elementary grammar (whose terms seem to be conjugated in apparently meaningless sentences), but through which it is possible to grasp and learn to assimilate a language. Although for the final structure of the project there is a more direct precedent in subsequent drawings, this sketch of House in Tateshina is certainly an indication of the impulse value that this organism so distant from the architect's aspiration to spatial unity and the plastic continuity of the envelope, but so methodologically explicit in the identification of the constituent elements of the spatial discourse and in the experimentation of their compositional opportunities, may have acquired for Shinohara. It seems right thus to assign to this model at least the function of recalling similar experiments that can be found in the final project drawings, and on which we will have the opportunity to focus later.

Certainly, the features, the drives, the qualities of the lines and colours of this first drawing do not reflect the harmony of Japanese calligraphic art, but from the point of view of the purposes and meanings they seem to recall it anyway. This sketch of House in Tateshina is very similar to a *kanji*, because *kanji* are essentially images.

Between the real world and the artistic world, the notion of 'image' can reveal a special way of understanding the relationship between sensitivity and perception: in Japanese, the notion of *zō* [象] indicates both the 'image' and the 'phenomenon', thus specifying that in the Japanese horizon of the sense interacting with images, shaping or preserving them, contemplating or processing them, means intervening directly on the real, i.e., on the world of things and their infinite universe of ongoing processes.¹

Highlighting the similarity between the first image of House in Tateshina and the character *sui* [水], as well as renewing the appeal for a comparis-

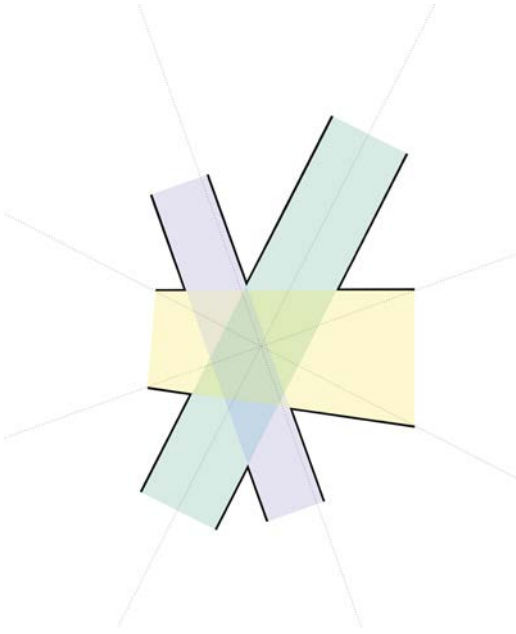
on between the compositional signs of architecture and those of ideographic writing, is useful to show the ‘order of movement’ that the architect intends not only to test, but also to convey through these stenographic signs of a creative impulse. The ideogram *sui* [水], which means ‘water’, ‘liquid’ or ‘flow’, is in fact the ultimate product of a series of signs that indicate the action of flowing.²

According to what the Japanese notion of *zō* [象] indicates, each calligraphy that represents the ideogram *sui* [水] not only shows its own and unique rhythm of execution, but also refers to a specific one and equally unique experience that has as its content the object – but it would be better to say the process – called ‘flow’: the flow of things in images, of emotions in thoughts, and why not, also of bodies in space.³ Distinguishing these movements in the drawing of House in Tateshina, grasping the graphic structure and tracing back to a possible meaning of the form by observing in it those signs that, even today, retain in their structure the reflection of an ancient message of knowledge, can be a seductive, albeit unusual, way to interpret the compositional language of the first drawing of House in Tateshina as that of a sign that wants to make the spatiality of the house a verbalization of an action or a progression.

At this point in the discussion, however, one might wonder if seeing in the drawing of House in Tateshina the graphic transcription of the ideogram *sui* [水] is actually able to render the dynamic quality of the ideal spatiality of the project: the sign, even when it has no phonetic basis, isn’t it always, and in any case, a geometrization of a changing reality, a stiffening of the dynamic processes it wants to represent? Isn’t it also for ideograms, as for the characters of a phonetic-based language, the impoverishment of a reality that would like to be interwoven with facts, actions, processes, dynamic events?

It is precisely in correspondence with these legitimate questions that the art of the dynamic rendering of the space of House in Tateshina is situated. Indeed, it could be said that this first model maximizes the representative possibilities of a writing already deeply connected to the dynamic qualities of things and events. If ideographic writing had the typographical form as its only possibility of expression, the advantages it would present with respect to phonetic writings would be considerably reduced.⁴ The difference therefore lies precisely in the practice of calligraphy.

The movement from the calligraphic sign of the *kanji* to the space of the drawing can then be read as the simple passage from one relationship structure to another, from one scale to another. As happens in the calligraphic practice of *kanji*, the sketch of House in Tateshina can contain a double reference: on the one hand, to a physical entity, on the other, to an abstract-



4

4 Optical convergences inscribed in the structure of the first sketch of *House in Tateshina*

5 The lecture given in 1984 at Yale University was transcribed and published two years later. See: Kazuo Shinohara, "A Program for the Fourth Space", *The Japan Architect* 353 (1986): 28–35. For references to the city of Tokyo see: Kazuo Shinohara, "The Context of Pleasure", *The Japan Architect* 353 (1986): 22–27. See also: Kazuo Shinohara, "Towards Architecture", *The Japan Architect* 293 (1981): 30–35.

ion, i.e., to an entity thought philosophically and poetically. Hence, architectural design can be used to suggest a seductive mysticism, or to specify clear intentions of structural dynamics. In this, in my opinion, Shinohara was very precise. Extreme precision implies an intrinsic relationship between the drawing and the design idea. Understanding this relationship we can identify the essential lines of the composition – lines which, however, are quite visible.

Observing the internal volumes of the house projected into the plane, it can be seen that the lateral axis of the first rectangle, the central axis of the second and the diagonals of the third, meet at the centre of a circumference and, forming angles of 45° , divide it into equal parts.

These lines are certainly a reflection of the architect's personal dedication to elementary geometry. By stating this, however, only a partial explanation of the significance of the configurative design of the house would be offered. The meaning of these lines is to place the human body at the centre of the space. This presence is of course something invisible, which however can be sensed in these lines that fluctuate through suggestions of materiality and emptiness. The lines seem, indeed, to have been traced by Shinohara, rather than for the construction of the design, to make an ideal user perceive a certain spatial quality. Imagining a person within this space, it can be seen how his movement identifies a sort of force field determined by the interaction with the envelope which, thanks to the use of accelerated and slowed perspective, i.e., amplifying or contrasting the optical convergence of the receding lines in perspective, alters the spatial perception, thus giving the sensation of an environment more or less deep than reality.

In the final drawing these 'lines of force' will then be hidden and reduced to the extent of other lines of sight. Their foreshadowing intensity is imagined having been replaced by construction practice. However, it is precisely in this sacrifice that the possibilities of the space inscribed in the plan and in the final sections of House in Tateshina will be defined and preserved, and Shinohara's creative impulse will acquire strength and integrity.

In 1984, the year before the first formulation of the House in Tateshina project, Shinohara – as Eero Saarinen Visiting Professor – was invited to lecture at the Yale University School of Architecture.⁵ Before showing his projects, before his realizations, he presented the urban structure of Tōkyō, his city. He explained that the atmosphere that pervades the everyday life of its inhabitants is very different from that which he had perceived during his recent visits to the great European cities, informed by the ancient fires, the places of coexistence of the Greek and Roman tradition, and ordered by modern urban axes, large tree-lined avenues and pedestrian paths. He also said that he recognized in Tokyo – “where the theory of the modern city



5

6 Shinohara, "The Context of Pleasure," 22.

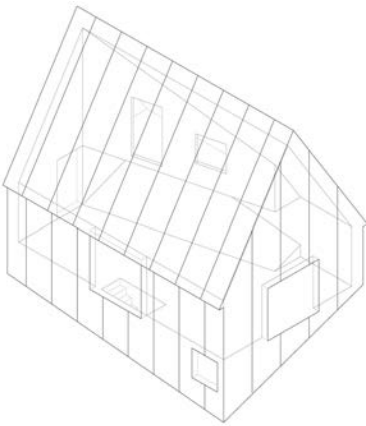
7 *Ibid.*

8 Shinohara, "Towards Architecture," 32.

9 *Ibid.*, 33.

10 *Ibid.*, 32.

11 Shinohara, "A Program for the Fourth Space," 29.



6

12 *Ibid.*, 34–35.

5 Visual cacophony of the city signs, Tokyo, 2017.

6 *House in Tateshina*, axonometry of the last conformation of the project.

13 *Ibid.*, 29.

seems so far away from the dreams of the urbanists”⁶ – a typical beauty of its own, which he demonstrated in the vitality of its growth and expansion, in the freedom of the combination of the most disparate building types and in the visual cacophony of the shapes and colours of the signs of the shops and businesses that populate its streets.

With respect to this special “vitality of chaos”,⁷ which, speaking of the urban context of Tokyo, the architect had exalted in an almost paroxysmal way by calling it the “progressive anarchy”⁸ of the city, Shinohara had explained that, according to him, the only logical answer could be the construction of a new quality of domesticity, from which to start again to give meaning to the compositional gesture. He had argued, in fact, that since “the illogical gap between the ordered space and the disorder of the city is what nourishes the vitality of chaos”⁹, any building that purported to be only a part of this chaos would never be able to deal with the anarchy of the city.¹⁰

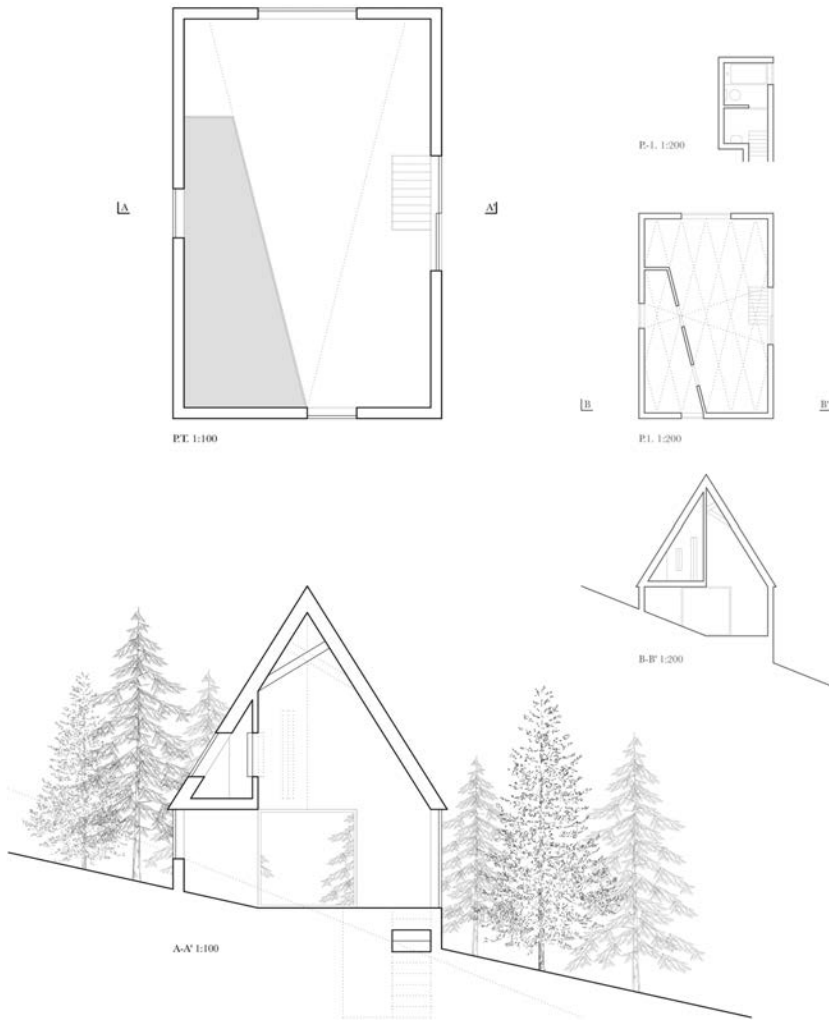
To highlight the idea that had informed his new theory of residential design, in which “the concept of architecture directly intersects with the situation of urban anarchy”,¹¹ during the conference, he quoted the words he once read in an article written by a biologist for a scientific journal:

*For any system – whether it is a computer or a biological system – if it has no capacity to accommodate random resources, then nothing new can be produced by that system.*¹²

For an architect worried about not being a mere copyist of traditional forms, history had to be considered important more than for the problems solved for those left open, for the experiences that have not proved their purpose and still possess the values of freedom. In fact, the effort to see an order, or rather, a structural method within a chaotic and wild urban nature is an indication of Shinohara’s commitment to discovering a new principle of explanation for the art of building.

The latest drawings of House in Tateshina are not devoid of that ‘vitality’ that he saw pervading the city of Tōkyō: they seem to re-present it, compressing and condensing it into a composition of simple geometries, underlined by the lightness of their volumes and from the echo of their spaces.

As clear and linear as the final layout of the House in Tateshina project is, in fact, inside it ‘lines of movement’ complicate the compositional aspects, as if to remind us that the architect’s main concern was to investigate the degree of complexity, or of chaos, compatible with the apparent simplicity of the form.¹³ While favouring regular compositions and balanced proportions, Shinohara had often shown that he was able to use distortion to produce unexpected effects. In my opinion, the last floor plan of House in



7

Tateshina is a masterful example of this, as it is played on the delicate relationship between symmetry and asymmetry.

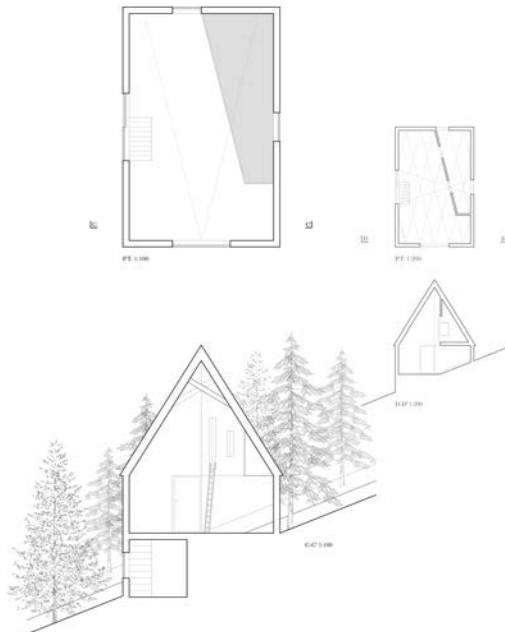
Although in plan the shape of the house is a rectangle of 4,9 m x 7,5 m, the walking surface has been reduced by the intrusion of a floor that follows the slope of the land on which the house insinuates its foundations. In this way, the shape of the house appears perfectly rectangular and symmetrical, a symmetry that Shinohara had contradicted by using this and other simple solutions, i.e., by inserting dynamic components within the regularity of the form capable of making the 'vitality' of the space evident. The complexity of the city was thus summarized by Shinohara in a few gestures made of rigor and asceticism, where the pure lines of Euclidean geometry are confused with the equally pure ones, albeit full of asymmetrical tensions, of the city areas full of houses irregularly placed, or with a neighbourhood subject to unpredictable developments. This agitation of forms always has as its purpose the elevation of our consciousness, the emerging in us of latent emotions, keeping our attention and vigilance awake, even in the obsessive repetition of daily gestures, to compose and recompose order and disorder.

Imagining crossing the threshold of House in Tateshina, the small space of this hut appears in its entirety: three windows illuminate it, two placed in the centre of the transverse axis and a third cantered on the longitudinal axis of the volume. Corresponding to this last window there is the entrance door which, however, is located on the right side of the axis, thus giving those who open it an immediate impression of subtle imbalance. This perception is accentuated by the volume of earth that penetrates the interior of the house, and by a second volume which, following the shape of the first, is suspended over the space creating a mezzanine, accessible by a stepladder. Symmetry therefore governs the composition, but it is the asymmetry that insinuates itself into specific parts of the whole that dynamically transforms the static structure of the project.

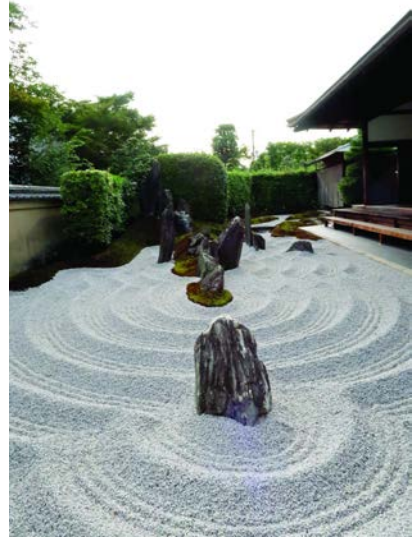
The method and purpose followed by Shinohara seem to have been animated by the desire to produce a perspective acceleration effect towards the back wall which, by capturing the distant landscape in its wide opening, aims to fix a few privileged points, or to open the building towards the landscape to better enclose it inside.

For this double movement Shinohara had relied on the inclinations of the different floors, through which the shadow, and above all the reflections of light that propagate in it become an exceptional means to break the dynamism of nature into the deepest layers of the house.

Thus, introducing into the regular perimeter of the hollow space the perspectives generated by the distortion of the volumes and the light that follows the inclination and the trend, one can imagine that Shinohara wanted to



8



9

16 The term *gūzen* [偶然] literally means: 'what is' [然, *zen*] 'accidental' [偶, *gū*]. This term therefore corresponds to 'chance', but also has the value of 'contingency', understood as 'coincidence', that is, 'what happens in a particular circumstance'. For a deeper understanding of the concept of 'case-contingency' in Japanese philosophy see: Shuzo Kuki, *Gūzensei no mondai*, [偶然性の問題, "The Problem of Contingency"] (Tōkyō: Iwanami Shoten [岩波書店], 1935).

14 Cf. Kazuo Shinohara, "Kaihotekina kūkan to iu imi, Nihonkenchiku no seikaku" [開放的な空間という意味、日本建築の生活, "The Meaning of Open Space, The Nature of Japanese Architecture"], *Papers* 57, (1957).

15 Harold Rosenberg, *The de-definition of art: Action Art to Pop to Earthworks*, (Chicago: The University of Chicago Press, 1972), 56.

17 Understood by Japanese aesthetics as 'what is starting from itself', or 'spontaneity'. See: Ghilardi, *Arte e pensiero in Giappone. Corpo, immagine, gesto*, 73-76.

8 *House in Tatেশina*, floor plan and section.

9 *Karesansui* [枯山水, "dry garden"] of the zen temple Daisen-in (XVI sec.), Kyoto, 2017.

bring the viewer to participate in this ‘adventure of movement’, inviting him subliminally to cross the house and look towards the entrance wall.

The vision altered by the tightening of the seen, i.e., by a decelerated perspective elicited by the staggering of the two lateral bodies with respect to the longitudinal axiality of the main volume, now makes the space appear as an interior which, closing in on itself, shrinks with respect to its actual size. By imagining a person inside the raised volume, one can imagine how the eye, following the transverse axis of the house, can see the outside through the openings on the wall of the raised volume and the shell of the house.

A system, that of House in Tateshina, of a disarming simplicity. Yet, this simplicity encloses and secretes an interlocking play of one room within another, of a space within another, of a point of view that encompasses other points of view. In the clear geometric regularity of the proportional system of the project, Shinohara, composing the space in its internal bonds and connections (i.e., in the struggle and in the ‘space machine’ of which he had always spoken about: a model of ‘space’ [虚空, *kokū*] i.e., ‘where all things can be everything without obstacles’.¹⁴

As Harold Rosenberg wrote about the minimalist work of art that “instead of deriving principles from what it sees, it teaches the eye to ‘see’ principles”,¹⁵ so the project of House in Tateshina highlights that even when Shinohara thought the project outside from large urban centres at least an idea of the Japanese city was still present in its architecture. More precisely, he proposes a call to ‘vitality’ even in an isolated project on the side of a mountain. The reference to the ‘recourse of chance’ or ‘fortuity’ [偶然, *gūzen*],¹⁶ that is to the contingency of what grows and expands spontaneously, can, in fact, manifest itself both in the urban context and within ‘nature’ [自然, *shizen*].¹⁷ There is simply the problem of how to act in it, of interacting with spontaneity, and with its contingency to build a place of contemporary culture. Making nature and culture coincide therefore means seeking in them a ‘principle of common understanding’ [理会, *rikai*] that acts as a ‘unifying reference’, or what is called in Japanese aesthetics *kiai*.

The term *kiai* [気合] literally means: ‘union’, ‘meeting’ or ‘agreement’ [合, *ai*] of *ki* [気], i.e. of ‘energy’ or ‘vital breath’. *Kiai* is then the ‘meeting of the breath’, understood as harmonization through a synchronous breathing between two entities, e.g., as between painter and landscape. Ultimately, therefore, *kiai* is ‘harmony’, but also ‘attention’ and ‘sensation’. This term is, in fact, used both to indicate an ‘affinity’, an interpersonal ‘sympathy’, and a ‘deep concentration’ with which one dedicates oneself to an ‘important task’ [機会, *kikai*]. In an artistic sense, *kiai* therefore involves the ability to harm-

- 18 For a deeper understanding of the concept of *kiai* [気合] in Japanese art and culture see: Tetsuro Watsuji, *A Climate. A Philosophical Study* [風土——人間学的考察], trans. Geoffrey Bownas, (Tōkyō: Iwanami Shoten [岩波書店], 1935).
- 19 Cf. Donald Keene, *Japanese Literature. An Introduction for Western Readers*, (London: John Murray, 1953), 4.
- 20 Fujiwara no Teika (1162–1241) was one of the greatest classical poets of Japanese literature. His poems were collected within the collection entitled *Shinkokinshū* [新古今集, “New Collection of Ancient and Modern (Japanese Poetry)”], the eighth imperial anthology of *waka* poetry compiled starting from 905 AD. and ended with the *Shinkokinshū* around 1439. Together with *Man’yōshū* [万葉集] and *Kokinshū* [古今和歌集], *Shinkokinshū* is one of the most influential poetic anthologies in the history of Japanese literature.
- 21 *Shinkokinshu*, XIV:1320.

onize the artistic gesture with the changing and super-personal rhythm of the existing.¹⁸

But how to find this principle of intelligibility, of harmonization with nature, in something that develops in an unpredictable or casual way, and manifests itself in an irregular way?

To identify the principle of *kiai*, what regulates this paradoxical ‘harmony of randomness’ can help the images described through the *kakekotaba* [掛詞, ‘pivot-word’]: i.e. rhetorical figures, peculiar to Japanese poetry, based on the superimposition of two or more images through the homophony of the words. For example, the word *shiranami* [白波] which literally means ‘white-crested wave’, or the white trail behind a boat, can suggest to a Japanese the word *shiranu* [知らぬ] which means ‘unknown’, or *namida* [涙] which means ‘tears’.¹⁹ From the point of view of the intellectual content it seems that there is no logical connection between these words, yet these simple verbal associations, from the point of view of the emotional meaning, allow the emergence of emotions which, in a poem, can be offered as a perfectly coherent totality. It is not difficult, in fact, to understand how a poet can create a poem from these three images: a boat goes into the unknown, a woman in tears looks at the white-crested wave left by the boat of her beloved. A famous example is the Fujiwara no Teika’s *tanka*:²⁰

きえわびぬうつろふ人の秋のいろに身をこがらしのもりの白露²¹

*Kiewabinu utsurō hito no aki no iro ni mi o kogarashi no mori
no shiratsuyu.*

Two very different interpretations can be given of these verses. Thanks to the chain of *kakekotaba* they can, in fact, mean at the same time: “Alone and sad I hope for the end, and I torment my heart to see how inconstant her love is. I slip away, like tears of dew” but also “The white dew already disappears, in this forest where the colour of autumn changes, and an icy wind blow”. The image of a natural phenomenon and the image of the end of a love match perfectly because in the mind and in the word of the poet there was a continuous shift from one order of images to another. The tendency to perceive the connection between words even only within their *kiai*, i.e., without considering the logical connection of their conceptual meaning, ensure that the image of the dew, which will be soon carried away by the autumn wind, melts and becomes one with the image of the woman who was abandoned by her lover, sated of her. Indeed, the word ‘dew’ was not used as a simple metaphorical expedient to describe a woman’s state of mind, or to recall the idea of her tears; rather, as can be seen from the second poetic image, it has been used in its complete and proper meaning as a natural phenomenon. The author’s intention was that the two interpretations were accepted and received at the same time, so that the two different meanings,

complete and autonomous in themselves, are indissolubly enclosed in each other.

Although not all Japanese poetry always reveals such complexity, nevertheless the 'harmony of randomness' seems to be a characteristic of Japanese, which is certainly one of the most evocative languages in the world, as revealed by its sentences in which everything they want to say always seems to tend to vanish in doubt, in indeterminacy or in the multiplicity of possibilities: 'maybe', 'who knows?'.

The House in Tateshina project is also exemplary in this sense, where the coexistence of different perspectives, their multiplicity, inscribes dynamic sequences in the space that make a fundamentally simple and unitary system complex and articulated. In its clear geometric organization, in fact, a measure is already evident at first glance, yet we are unable to discover a rule that forms its basis. It is *kiai*: one can only grasp it intuitively, knowing that it is not possible move any of its parts elsewhere.

In this long-studied composition, Shinohara then seems to have concentrated more on situations than on facts, more on relationships than on objects, on the discipline of the processes of spontaneity rather than on that of the definition of space, as is perceived by observing the way in which he organized the environment through landscapes that allow us to pass from place to place in an almost sensual way; a principle that seems destined to become the legacy of his way of designing.

House in Tateshina therefore speaks of a world without hierarchies, where different spaces come together, each with their own inclinations, each playing their role while participating in the unity of the whole.

In a space that enhances the interminable succession of brief moments of the present, the stimulus is drawn to think of architecture as something alive, based on the flow of emotion, of what is perceived here and now.

By creating residues of meaning, in this latest project, Shinohara has managed to present space as a pending question, raised to the most physical stage of fragility. On this occasion, indeed, the architect seems to have sought that subtle point of balance where the sense of space is brought up to where it is no longer possible to ask other questions.

Bibliography

Fazzioli, Edoardo. *Caratteri cinesi. Dal disegno all'idea*. Milano: Mondadori, 1986.

Rosenberg, Harold. *The de-definition of art: Action Art to Pop to Earthworks*. Chicago: The University of Chicago Press, 1972.

Ghilardi, Marcello. *Arte e pensiero in Giappone. Corpo, immagine, gesto*. Milano: Mimesis, 2011.

Keene, Donald. *Japanese Literature. An Introduction for Western Readers*. London: John Murray, 1953.

Kuki, Shuuzo. *Gūzensei no mondai* [偶然性の問題, "The Problem of Contingency"]. Tōkyō: Iwanami Shoten [岩波書店], 1935.

Pasqualotto, Giangiorgio. *Yohaku. Forme di ascesi nell'estetica orientale*. Padova: Esedra, 2001.

Rosenberg, Harold. *The de-definition of art: Action Art to Pop to Earthworks*. Chicago: The University of Chicago Press, 1972.

Shinohara, Kazuo. "Kaihotekina kūkan to iu imi, Nihonkenchiku no seikaku" [開放的な空間という意味、日本建築の生活, "The Meaning of Open Space, The Nature of Japanese Architecture"], *Papers* 57, (1957).

Shinohara, Kazuo. "Towards Architecture," *The Japan Architect* 293 (1981), 30–35.

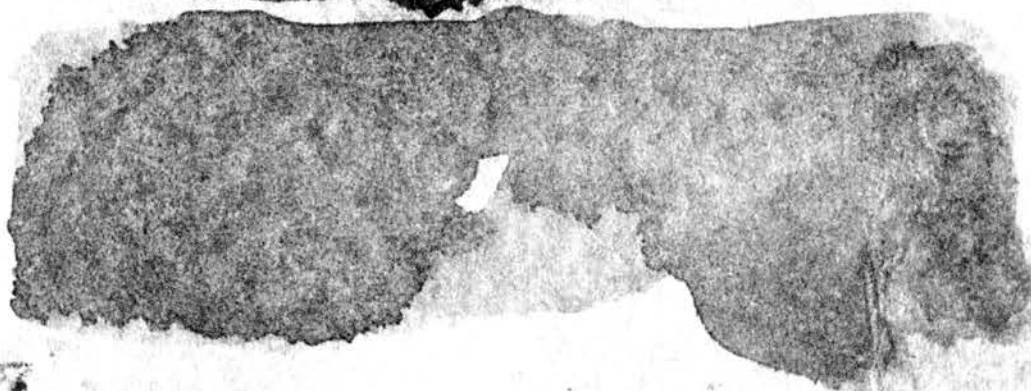
Shinohara, Kazuo. "A Program for the Fourth Space," *The Japan Architect* 353 (1986), 28–35.

Shinohara, Kazuo. "The Context of Pleasure," *The Japan Architect* 353 (1986), 22–24.

Watsuji, Tetsurō. *A Climate. A Philosophical Study* [風土——人間学的考察]. Translated by Geoffrey Bownas. Tōkyō: Iwanami Shoten [岩波書店], 1935.

100

2



4

The Resistant Capacity of Architecture

Petra Čeferin

- 3 See for instance: Space Caviar eds., *Non-Extractive Architecture: On Designing without Depletion* (Berlin: Sternberg Press, 2021), Gabu Heindl et al. eds., *Building Critique: Architecture and its Discontents* (Leipzig: Spector Books, 2020), Gevork Hartoonian ed., *Global Perspectives on Critical Architecture. Praxis Reloaded* (London and New York: Routledge, 2014); Nadir Lahiji ed., *Architecture Against the Post-Political. Essays in Reclaiming the Critical Project* (London and New York: Routledge, 2014), and others.
- 1 See the statement of the 2023 Venice Biennial curator Lesley Lokko: "Biennale architettura 2023: the laboratory of the future," La Biennale di Venezia, May 31, 2022.
- 2 "2022 Festival Theme: Act," LFA London Festival of Architecture.
- 4 Rem Koolhaas, "Junkspace," *October*, no. 100 (2002): 179.

We live and work in highly problematic times, a time of burning issues that include the environmental crisis, the deterioration of democracy, deepening social differences, housing crises, and mass migrations, to list but a few of the enormous challenges of the day. Critical awareness of this special time is reflected also in the field of architecture, which is expressed as a call to action – a call to pursue architecture as an active co-creator of society, a co-bearer of much needed social change today.

This tendency is highly visible at the forthcoming Venice Biennial.¹ Or, for instance, in the orientation of the London Festival of Architecture that took a decisive turn away from last year's theme “to care” towards a far more militant position – the call “to act”.² Indeed we also find such a direction – towards developing the full power of architecture in relation to social issues – increasingly present in design practice. Architectural theory too is returning to the question of architectural agency in relation to society.³ It seems that a kind of front is taking form: a front that aims at pursuing an active role for architecture in society, a front that no longer contents itself with repeating the standard claims – how deeply architecture is embedded in the mechanisms that run our world of globalised capitalism, how its capacity to affect change is so entirely blocked today and similar. Instead, it is interested in an active way, in the possibility of breaking through this condition of impotence – a condition in which we, as *Junkspace* would describe it, appear caught in “a web without a spider.”⁴

But for this front to be effective – and this is the central thesis of this article – the following is essential: in order to tap into the full potential of architecture the issues and challenges that architecture and thus we as architects confront today have to be thought in the way of architecture; they have to be thought *architecturally*. In other words, we have to think them *from the point of view of architecture*. We have to think them as problems and challenges that architecture confronts *as architecture*.

What does this actually mean?

This means that architecture doesn't understand and approach its task, some particular development of public space for instance, as a task imposed from outside, from some external agency – even if it is in fact an external agency that calls on architecture to solve an issue of public space. But rather that architecture understands and approaches this task as its *internal task*; that architecture approaches this task as an *architectural* task. And to approach it as an architectural task means that at the same time it is solving this task, it also *constructs itself as architecture* – as that specific body of theory and practice that connects science, technique, technology, and art.

That architecture develops an *architectural solution* for a given task means, firstly, that it constructs that particular object which it should or

- 5 For a detailed elaboration of the structural logic of architecture as practice of creative thinking – the way this practice is structured and the way it operates in the world: Petra Čeferin, *The Resistant Object of Architecture: A Lacanian Perspective* (London: Routledge, 2021).

- 6 Giancarlo De Carlo, "Architecture's Public," in *Architecture and Participation*, eds. Peter Blundell Jones, D. Petrescu and Jeremy Till (Abingdon: Spon Press, 2007), 3–22.

wants to make (such as a public space or a school, a house) as an object that is *specific to architecture*; that is to say, as an *architectural object*. And not simply as some kind of (decorated) utilitarian object. And secondly, it means that while it creates its object – the architectural object – it is also architecture itself that appears in the world as architecture. More precisely, it appears as a *creative thinking practice* – a practice that with each constructed object also constructs itself anew, invents itself anew. It re-invents itself.

And only when architecture works in such a way can architecture truly be productive for the society in which it operates.

Why?

Not only because its objects, the products that architecture constructs, respond to the various needs and requirements of different segments of (a given) society in its time and space, its temporal and spatial situation. And not only because architecture constructs public spaces, schools, kindergartens, or housing. But because, to emphasize the point once again, it constructs all these objects as *architectural objects*. And architectural objects are objects of a special kind. They are *subjectified* objects.

What does this mean?

This means that at the same time architecture constructs its objects, that is, when it constructs *subjectified* objects, it also co-constructs, co-creates a human being as their specific producer, spectator, user. It co-creates him or her as a *subjectified human being*.

And here, in my view, lies the socially transformative potential of architecture. And architecture can realise this potential if it activates its creative potential, its creative capacity. My position, therefore, holds that the act which is necessary today – and not only for us architects – is the act of insistence on architecture as a creative thinking practice.⁵ A call to action should be conceived and understood as a call to architecture that operates in each given situation, in the world, as a practice of creative thinking. This is what we shall develop here in this article.

Changing the Question

The act that should be realised today was already defined, in his own particular way, by Giancarlo De Carlo in his seminal lecture “Architecture’s Public”.⁶ He defined it as the necessity to reformulate the question that leads architects.

Architects focused on the question “how?,” De Carlo argued, while they neglected the really important question – which is the question “why?”. In order that architecture evolve into what it potentially is – and it is, to sum up De Carlo, a socially transformative practice, or as I would put it, a crea-

- 7 The problem of the architects of the Modern Movement was not, as De Carlo writes, that they would not think. But they were thinking only that which the capitalist system gave them to think. They were thinking instrumentally - to best fulfil the requirements imposed on them by the power structure. And they did that brilliantly - but therefore they also failed brilliantly. For with their design proposals they only supported the given system and thus the many social inequalities and injustices that entailed. De Carlo: "Concentrating on problems of "how", they played into the hands of the power structure. In neglecting the problems of "why", they lost track of the most important reasons for their cultural commitment." (De Carlo, 8) If they asked what is (what I call) the cause of their activity, the cause of architecture, they would come up with different answers. Which is what De Carlo did. He found that different answer in participation, the concept that he puts at the centre of his lecture/text and that he continued to develop in his later work. This was one of the causes that guided De Carlo in his practice - guided him as an architect who, as his work demonstrates, thought creatively.

- 8 Rado Riha, "Avtonomija arhitekture in odloč(e)na želja," in *Objekt v arhitekturi: Deleuze-Riha-Frampton-Hays*, ed. Petra Čeferin (Ljubljana: ZRC Publishing, 2021), 45.

tive thinking practice – we have to reformulate the question ‘how’, such that we first focus on the “why”.

We can only agree with De Carlo. More precisely, we can agree with him on one condition – on the condition that we understand the question “why” most literally. That we understand it as asking – strictly speaking – about that ultimate *cause* of the architect's action. We need to understand it as asking the question: What is it that drives and guides me as an architect? Or to put it somewhat differently: What is it – what is that “architectural cause” – to which I am committed as an architect? Put in more general terms: What is it that we as architects are striving for in our action; what does architectural action strive to achieve?

The turn from the one question to the other is the turn from architecture as a practice of *instrumental thinking* to architecture as a practice of *creative thinking*.

The practice of instrumental thinking limits itself to questions related to solving the problems and tasks that the given social reality has defined as the problems and tasks that need to be addressed or solved. And at the last instance they need to be solved, because their solutions serve to preserve the given reality – reality as it is. Instrumental thinking practice is and always remains determined by the framework of the given reality; it does not try to critically surpass or move beyond this reality. Rather the opposite: it is always subservient to it.⁷

Instead, the practice of creative thinking actively engages in determining the key questions and problems that should be addressed and solved in social reality, such that this reality could operate and evolve as a sphere of free, emancipated, and egalitarian individuals. Within the framework of the given reality this practice operates such that it draws on that which it itself is capable of presenting and pursuing within the framework of an affirmative argument, as that cause of thinking and action that is worth defending and fighting for.

It is this cause, and not reality as it is, that gives this practice its support and its orientation, the cause that the practice of creative thinking itself constructs in the world. Creative thinking is therefore always a separation from the framework of the given reality. This is how philosopher Rado Riha defines it; he writes that it is “the act of bouncing away, distancing itself from the given reality, the act of interrupting with the given order, the given reality,” and thus it is the act of resistance: “The resistance to what is and what insists because it just is the way it is.”⁸ Architecture resists because it is driven by the cause. It realises this cause in the form of its objects, the architectural objects. And insofar as it succeeds in this construction, it is

with these objects that architecture infringes on, breaks the framework in which the given reality is framed.

(Re)Constructing the Cause in the World

Let us look at this more closely. Let us first observe the construction of architectural objects. How does an architect work when she sets out to solve a task? How does this process begin?

At the beginning, an architect encounters various conditions and factors relevant to the given task. These include a rich corpus of architectural knowledge, past and present, the history of architecture and current trends, as well as the requirements of the concrete program, site, legislation, and technology. Of course, these conditions also include the factors that constitute the wider context of the given task, such as the current environmental conditions, contemporary consumer culture, etc. This set of various conditions constitutes the “material” with which an architect works when she engages in a specific task. What makes this task truly demanding, however, is that there is no recipe, no rule or guide that could tell an architect how to use this “material”, how to put it together, such that as a result architecture would be made – that is to say, an object that is not merely a utilitarian object but is at the same time also an architectural object.

The given conditions therefore do not constitute all of the possible conditions. Another condition must be added to them, a strictly *architectural condition* – the condition that concerns architecture itself. This is the condition that the architect is able to use the given set of conditions in an appropriate way, such that she constructs architecture out of it. Architecture as an activity that appears in the world in the form of its products, its constructed objects – architectural objects.

The addition of this condition, which is the spontaneous beginning of every architectural task, is usually called an intervention in the given conditions. The intervention – this is the architect's act with which she opens up an empty place in the set of given conditions, a place for herself. It is in this place that the architect situates herself with her concrete decision as to how to reconstruct the given conditions and connect them such that this will lead to the appropriate architectural solution of the given task. It is here, in this place, that architecture begins.

Why do I say that this place is empty? Again: because there is no rule and no recipe that could tell the architect how to achieve an architectural solution of her concrete task. The right way of constructing architecture out of the given conditions must each time be found anew, from case to case. It must be invented.

- 9 For the conceptualization of the creative act as I follow it here see Rado Riha, "Dozdevek in dejanje," *Filozofski vestnik* XXX, no. 1 (2009): 7–20.
- 10 Zvi Hecker and Andres Lepik, *Sketches* (Ostfildern: Hatje Cantz, 2012), 139.
- 11 For a detailed elaboration of the architectural object as an object with an inner difference see Čeferin, *The Resistant Object*, 104–120, et al.
- 12 Riha describes this object particularly well. He writes that it is "the solution of a task which always leaves behind something unresolved, always contains a moment of "failing". Failing not in the sense that the solution would fail. Rather, this is a kind of structural failing, insofar as together with the solution a non-solution is also created. In other words, a successful solution also reveals other and different, unforeseen dimensions of the resolved problem. Or it opens an entirely new problem." *Cf.* Riha, "Avtonomija arhitekture in odloč(e)na želja," 55.

The creative practice of architecture is therefore, in a way, *creatio ex nihilo*. Not, naturally, because it would ignore the given conditions, isolate itself from its environmental context. But because it is grounded in the *act* – the act of intervening in the conditions, opening up an empty place within them.⁹

It is precisely from this empty place that an architect proceeds with her constructional act. The architect's act therefore has no other support but the act itself. More precisely, its support is that cause that guides the architect in her construction, in the process of solving a given task – the cause which forces her to think, that is, to construct. Whereby she does not know and cannot know in advance what exactly this cause is. This particular way of acting is well described by architect Zvi Hecker, when he says that an artist – and I would say that the same holds true for an architect – “is never fully aware of what he does, but nevertheless has to do it very precisely.”¹⁰

The only way to find out, to assume this cause that guides an architect, is to materialise it in the world, render it materially present. In short: construct it, build it in the form of a material object that she constructs. And if she succeeds, then the constructed object is an object, redoubled in itself. It is redoubled into the constructed utilitarian object and (in each case specific) the cause of architecture, which this constructed object renders visible. That is to say, it is redoubled into the utilitarian object and that specific form of architecturalness that an architect strives to realise in her constructed object. If she succeeds in this process, then the utilitarian object, apart from being the utilitarian object, also becomes the architectural object.

And the architectural object is an object of a special kind. For it not only works as the *product* of architectural practice, but at the same time it also works as its *cause*. This cause is manifested in the way that the constructed object is always *also something else* than what it is. It is an expression of the time and space, the conditions in which it was made. It carries different meanings. And yet, it can never be reduced to its set of conditions and it can never be entirely exhausted by the meanings with which we invest it. To put it more conceptually: it is an object that is always different from itself. In short: it is an object with an inner difference.¹¹ It is because of this inner difference – because of its so to speak eternal “something else” – that this object triggers our thought, the thought of us as architects, the bearers of architectural action. It forces us to think, that is, to construct.¹²

The difference, the inner difference, which characterises the architectural object is the manifestation of the fact that this object was constructed from an empty place, so to speak, *ex nihilo*. For we can say for this difference that it is almost nothing. Objectively speaking it is nothing. We cannot see the difference as such – we only see a well-constructed object. And yet it isn't

- 13 In Badiou's terms, an architectural object could also be defined as a trans-situational and untimely object. In his view, the construction or creation of such objects, which are the products of creative thinking or cognitive enterprises, requires courage. He writes: "Without a doubt, this is the principle of courage that underlies any cognitive enterprise: to be of one's time, through an unprecedented manner of not being of one's time. In Nietzsche's terms, to have the courage to be untimely. Every true poem is an "untimely observation." Cf. Alain Badiou, *The Century*, transl. Alberto Toscano (Cambridge: Polity Press, 2007), 21.

- 14 For the conceptualisation of the process of subjectivation as the inseparability of thinking and action see Rado Riha, *Kant in drugi kopernikanski obrat v filozofiji* (Ljubljana: ZRC Publishing, 2012), 379–399, *et al.*

simply null, because for the architectural object it is crucial, constitutive. It is owing to this internal difference that the architectural object resists being reduced to the set of conditions out of which it was constructed, or entirely captured in the vast network of various meanings. It cannot be situated within the framework of the given reality, but in its material presence – as I said earlier – it breaks this framework itself. And as such it can persist and endure in different times, in different spatio-temporal situations, sometimes for centuries.¹³

Co-Creating Architectural People

The architect is one who succeeds in creating such objects, objects with an inner difference. But here we must be more precise: *only when an architect creates an object with an inner difference does she really become an architect*. When we are in the realm of creative action, an architect isn't simply one who, as a "grand creator" sovereignly creates her objects. It would be more appropriate to say that exactly the opposite is true: *it is the object that creates the architect*. Object in a specific sense – the object as the *cause of architecture*, a specific architectural idea that the architect tries to realise in the construction of her objects. The cause of architecture works both as a firm starting point and as that which drives and guides the architect in her constructions. But as such a driving force and starting point it exists only in the ability of the architect to construct it in her products, again and again. And if she succeeds in this process, she attains what she is looking for. She encounters that cause, the ultimate cause of her action. It is in this encounter that she only really constitutes herself – constitutes herself as an architect. Or, to use the more explicit formulation by Riha, she constitutes herself as an *architectural worker*, as one who serves architecture, or serves that cause which she recognised as that which is crucial for architecture.

This way of acting can be called the process of subjectivation. This is the process in which those who enter architecture – from the architect to the many possible users and spectators of architecture – are in the process of becoming subjects.

The figure of subject first appears in the Enlightenment, and marks the emergence of independent thinking, of someone who thinks independently. For the process of subjectivation, to which architecture invites us (and not only architecture, but all creative thinking practices) something else is characteristic. This is a double independence; that is, the inseparability of independent *thinking* and independent *action*.¹⁴ Subjectivation or the becoming of a subject therefore means to be in the process of becoming an agent of

- 15 The subject is not a condition, it is a process. One does not become a subject (once and for all) but *is becoming* a subject; when she thinks creatively, she enters into the composition of the subject and endures in this composition as long as s/he persists with the process of creative thinking. Badiou puts this succinctly: "Subject is subjectification." See Alain Badiou, *Saint Paul: The Foundation of Universalism*, trans. Ray Brassier (Stanford, CA: Stanford University Press, 2003), 171.
- 16 Of course, for architecture to work in this way (potentially) for all, it must also be available to all. This requires two things. Firstly, that all kinds of structures are designed as architecture, not only some exclusive structures; that architecture is not the exception, but the rule. And secondly, that architecture and the social significance of its practice is presented and explained to the general public. That architecture – in the form of exhibitions, publications, lectures, etc. – in all its structural, intellectual, sensual, and emotional complexity appears in the public space.

independent thinking AND action.¹⁵ More precisely, an agent who shares her independence with the cause that guides her.

The cause of architecture is the central point of the creative practice of architecture. It is that which on the one hand the architect alone constructs in the world, and which on the other hand constructs her as an architect. It gives her support and orientation such that she can be in the world in that particular way that is characteristic for creative action – in the way of distancing herself from the situation, of bouncing away from it. An architect who is driven by the cause therefore not only produces objects of a special kind, but also acts in a special way. She is *in the given world* in the way that *within that world and its logic she acts regardless of that logic*. She pursues her own logic, the logic of the cause of architecture – the logic of creativity. She is in the world in the way that she is torn-out of the world.

By creating the possibility of tearing oneself out of the mechanisms of the given world, architecture, just like all creative practices, opens this possibility up not only to architects, but to all. Not only to those who themselves construct architecture, not only to the producers, but also the spectators and users of architecture. The creative thinking practice of architecture does not differentiate between the experts and the rest, the people. It requires the same from all: to activate their sensual and intellectual capacities. And these are generic human capacities, capacities that everyone has.¹⁶

This is how architecture works when it approaches its tasks – such as the development of public space – as *architectural* tasks, and when it also succeeds to solve them as such. Then it constructs structures and spaces that, in a way, construct us. They constitute what we could call a place for human life. A place for a human being who found there something that has worked as an “eye opener”, and a “hearing sharpener”, and a “trigger for thought”. They constitute places for a human being who looks because she *wants* to see; who listens because she *wants* to hear; who thinks because she *wants* to think and understand. In short, architecture creates places for a human being who is capable of looking, feeling, listening, and thinking independently – a place for a human being who activates her or his own sensual and intellectual capacities. As a result, she or he is in the world in a special way – in the way of an agent of independent thinking and action. And it is the activation of this capacity to think and act independently, the capacity intrinsic to every human being, that is the first and necessary condition for every true social change.

Bibliography

"2022 Festival Theme: Act," LFA London Festival of Architecture. <https://www.londonfestivalofarchitecture.org/>

"Biennale architettura 2023: the laboratory of the future," La Biennale di Venezia, May 31, 2022. <https://www.labiennale.org/en/news/biennale-architettura-2023-laboratory-future>

Badiou, Alain. *Saint Paul: The Foundation of Universalism*. Trans. Ray Brassier. Stanford, CA: Stanford University Press, 2003.

Badiou, Alain. *The Century*. Trans. Alberto Toscano. Cambridge: Polity Press, 2007.

Čeferin, Petra. *The Resistant Object of Architecture: A Lacanian Perspective*. London: Routledge, 2021.

De Carlo, Giancarlo. "Architecture's Public." In *Architecture and Participation*, edited by Peter Blundell Jones, Doina Petrescu and Jeremy Till, 3-22. Abingdon: Spon Press, 2007.

Hartoonian, Gevork (ed.). *Global Perspectives on Critical Architecture. Praxis Reloaded*. London and New York: Routledge, 2014.

Hecker, Zvi. "New Idea." In *Sketches*, edited by Andres Lepik, 139. Ostfildern: Hatje Cantz, 2012.

Heindl, Gabu, Michael Klein, Christina Linortner and Osterreichische Gesellschaft fur Architektur (eds.). *Building Critique: Architecture and its Discontents*. Leipzig: Spector Books, 2020.

Lahiji, Nadir (ed.). *Architecture Against the Post-Political. Essays in Reclaiming the Critical Project*. London and New York: Routledge, 2014.

Riha, Rado. "Avtonomija arhitekture in odloč(e)na želja." In *Objekt v arhitekturi: Deleuze-Riha-Frampton-Hays*, edited by Petra Čeferin, 43-57. Ljubljana: ZRC Publishing, 2021.

Riha, Rado. "Dozdevek in dejanje." *Filozofski vestnik* XXX, no. 1 (2009): 7-20.

Riha, Rado. *Kant in drugi kopernikanski obrat v filozofiji*. Ljubljana: ZRC Publishing, 2012.

Space Caviar (eds.). *Non-Extractive Architecture: On Designing without Depletion*. Berlin: Sternberg Press, 2021.

al'impunto, o'li spuma



Against All Homologation
Prefatory Artworks by
Claudio Patanè

Claudio Patanè

The works I present are part of a series of recent graphic reflections on the terracqueous landscape of the Mediterranean. In particular, reference is made to that geographical area of myth, visions and legends: the Mar Ionio, Mar Tirreno and Stretto coasts between Sicily and Calabria. An illustrated narrative that lies between mirage and vision, caprice and the oniric, invention in architecture and the construction of devices of the gaze for the narration of the terracquean landscape. Re-using codes, expressiveness and styles present in the vertical architecture of coastal watchtowers of the past; In the translation into a graphic sign of the equidistant fluidity of the seascape, which is almost always unstable, changeable, never static; In the taxonomic cataloguing of geometries for the construction, observation, contemplation of the horizon of the sea; In the uncertain and contradictory paradox that exists between natural and artificial phenomena, reality and fantasy, design and invention.

All the drawings I have made are part of a journey of RESISTANCE that I operate from a standstill in my everyday life. Very small works, kept inside my carnet de voyage.

Claudio Patanè

Biographies

Aldo Aymonino was Born in Rome in 1953 and graduated in Rome in 1980. Since 2000 prof Aymonino has been full-professor at the Venice School of Architecture (IUAV); since 1986 has been teaching Architectural Design in Pescara and Venice universities; since 1991 has been visiting Professor at the University of Toronto and Cornell University, USA; worked in Germany within the IBA project; has given lectures on his work and research in Italian and foreign universities (Milan, Rome, Naples, Vienna, Ljubljana, Toronto, Lyon, Zurich, Cottbus, Koblenz, Delft, Patras, Lisbon, Hannover, Sao Paulo, Santiago Chile, Shenzhen, Hong Kong etc.); won the first prize in the exhibition "Italian Architects of the New Generation" in 1989; invited to exhibit his work at the Venice Biennale in the Italian Pavillon in 1991, 2002 and with IUAV in 2006, and in the Milan Triennale in 1995 and at London's R.I.B.A. in 1996. He wrote a book on Louis Kahn in 1991 and on Unvolumetric Architecture in 2006. Since 1992 he has been Visiting Professor at the School of Architecture at the University of Waterloo-Ontario, the University of Toronto school of architecture, the School of Architecture at Cornell, Rome Programme, the Illinois Institute of Technology, the Universidade Moderna in Lisbon and TU Delft. From 2018 to 2021 he was the Director of "Architecture and Arts" Department of the IUAV University of Venice and is currently holds the UNESCO Chair for Heritage and Urban Regeneration. He currently lives and practices in Rome, Italy.

Renato Bocchi Born in Trento, 1949. Professor of *Architectural and Urban Design* and *Architectural Theories* at the IUAV University of Venice, Dept of Architecture and Arts, until 2019, he is currently a member of the doctorate *Architecture. Theories and Project* at Sapienza University of Rome and of the doctorate *Architecture, City and Design* at IUAV, Venice. Between 2013 and 2016 he was national coordinator of the *Re-cycle Italy* research. Among his recent publications: *Progettare lo spazio e il movimento* (Gangemi, Rome 2010), *La materia del vuoto* (Universalia, Pordenone 2015), *Spazio, arte, architettura* (Carocci, Rome 2022).

José Calvo-López teaches Architectural History and other subjects in Universidad Politécnica de Cartagena, where he has been Dean of the

School of Architecture and Director of the Masters' degree in Architectural Heritage and the Doctoral Program in Architecture. He is working presently on research projects about the geometry of ashlar construction in the Roman and Early Mediaeval periods. He has published research papers on stereotomy and spatial representation on such peer-reviewed journals as *Archivo Español de Arte*, *Revista EGA*, *Nexus Network Journal*, *Construction History*, *Informes de la Construcción* or *International Journal of Architectural Heritage*. He has been recently a Visiting Professor at *Universitat IUAV*. He is a member of the Editorial Boards of *Construction History* and *Nexus Network Journal* and the Steering Committee of the Nexus Conferences. He is the author of *Stereotomy. Stone Construction in Europe 1200-1900*, published by Springer Nature.

Giorgia Cesaro. Architect graduated at the Mendrisio Academy of Architecture – University of Italian Switzerland – in 2013. She worked in Portugal at Aires Mateus Arquitectos, and as a freelance in Italy, China, and Peru. Since 2015 she is Teaching Assistant at Francesco Cacciari's "Design and Theory of Architectural Composition" courses at the University IUAV of Venice, and since 2018 Guest Lecturer at Agostino De Rosa's "Theory and History of Representational Methods" courses at the Venice International University. Since 2020 she is a PhD architect, qualification achieved at the IUAV Doctoral School with a thesis entitled *Machine à Émouvoir. Kazuo Shinohara and the Devices of the Unexpected*.

Elizabeth Cronin is a PhD candidate and instructor at the University of Florida (UF) School of Architecture. Her research focuses on making, textiles, and feminist practices in architectural design and pedagogy. She received a Bachelor of Design, a Master of Architecture, and a Master of Science in Architectural Studies in Pedagogy from UF and was the founding executive editor of their Graduate School of Architecture publication: "Vorkurs" (University of Florida, 2017-present). Elizabeth has also taught at the University of Miami, worked on several design/build projects, and practiced architecture in Miami, Tampa, and Jacksonville. She is a winner of the *Diana Bitz Book Award* and the *ARCC King Student Medal for Excellence in Architectural and Environmental Research*.

Agostino De Rosa (Bari, Italy 1963) is an Architect and Full Professor at University Iuav of Venezia (Italy) and at *Venice International University*. He co-ordinates the PhD program on *Surveying and Representing Architecture and the Environment* at the IUAV postgraduate school. He has written books and essays on the theme of representation, the history of images and land art. His books include, among the many published: *Cecità del vedere. Per una storia anti-proiettiva delle immagini (forthcoming)*; *Jean François Nicéron. Prospettiva, catottrica e magia artificiale. Rome: Aracne Editrice 2013*; *James Turrell. Geometrie di luce. Roden Crater project, Milan: Electa 2007*). He has curated exhibitions in Italy and all around the world with his team, *Imago rerum* based at Iuav University.

Charlie Hailey is an architect, writer, and professor. A Guggenheim Fellow and Fulbright Scholar, he is the author of six books, including *The Porch: Meditations on the Edge of Nature, Camps: A Guide to 21st Century Space*, and *Slab City: Dispatches from the Last Free Place*. Hailey teaches design/build, studio, and theory at the University of Florida, where he was recently named Teacher/Scholar of the Year.

Tullia Iori is an engineering historian and full professor at the University of Rome Tor Vergata, where she is the coordinator of the PhD program in Civil Engineering. For many years, she has been involved in the research SIXXI — History of Structural Engineering in Italy (ERC Advanced Grant). She has published books and essays on the history of reinforced concrete in Italy, on Pier Luigi Nervi and Sergio Musmeci (also co-curating exhibitions at the MAXXI Museum in Rome), on contemporary engineering in the new millennium, and, more generally, on the history of engineering in Italy with the SIXXI volume series. She has a passion for dissemination: she collaborates with Wikiradio, "La Grande Storia," Rai5 and RaiCultura and in the making of documentaries (BBC, Discovery Science).

Claudio Patanè is an architect, has collaborated as a teacher and practised research in the field of Drawing and Surveying Architecture at the Universities of Padova, Reggio Calabria, Siracusa and Venice. He worked as a professional architect in Lisbon from 2009 to 2012. He was an instructor of "urban panoramic drawing" for the Urban Sketchers.Org Symposiums and Workshops in Lisbon and the Dominican Republic. Since 2017 he has been a teacher of Drawing Tec. and Prog. at ABADIR Academy of Design and Visual Arts in

Catania. He is a founding member of the informal group of semi(atelier architects. He worked on a European research project involving the Department of Architecture and Territory (dArTe) of the Mediterranean University of Reggio Calabria, the Escuela Tecnica Superior de Arquitectura of the University of Valladolid and the company NAOS Consulting s.r.l. of Salerno. He is currently collaborating as a bursary-holder at the Special Teaching Structure of Syracuse in Architecture and Cultural Heritage of the University of Catania for a research project on the city of Savoca (ME). He is a teacher PLUS for DOMĚSTIKA.

Fabio Quici is a Ph.D. architect and associate professor in the Department of History, Representation and Restoration of Architecture in the Sapienza Università di Roma where he teaches *Visual Culture and Representation of Architecture* and *Visual Communication Design*. He has previously taught Aesthetics and Heuristics, Architectural Drawing, Architectural Surveying, Theory and Representation of Visual and Multimedia Communication. He was guest lecturer at universities in Oxford (UK), Guatemala City, Bogotá, Cartagena (ES). He is the author of books and essays on the use of images and on the history of architectural representation. His researches and essays are also about the interpretation of the informal cities and the visual aspects of architectural and urban design. He is author of *Il disegno cifrato: ermeneusi storica del disegno di architettura* (Roma: Officina edizioni, 1996); *Traccetti di invenzione: euristica e disegno di architettura* (Torino: Utet, 2004), *Città: proiezioni e paradossi* (Roma: Form.act, 2007) and he was member of the leading promoters of the cycle of international study seminars *Idee per la rappresentazione* from which a series of volumes originated (*Idee per la rappresentazione*, 2007; *Ibridazioni*, 2008; *Artefatti*, 2009; *Trascrizioni*, 2011; *Atopie*, 2012; *Impronte*, 2013; *Visualità*, 2014, all published by Form.act).

Enrique Rabasa-Díaz is an architect and a Full Professor in the School of Architecture of Universidad Politécnica de Madrid. He belongs to the Architectural Graphic Design Department, and teaches in the BA courses and in the Master of Preservation of the UPM. He has been Director of the doctorate program on Architectural Heritage and the Architecture Area of the International Doctoral School of the UPM. He develops his research in History of Descriptive Geometry and Construction, especially Stereotomy and stonecutting. He manages a stonecutting workshop in the School. He has published research papers on stereotomy and spatial representation on such

peer-reviewed journals as *Revista EGA*, *Nexus Network Journal*, *Construction History*, *Informes de la Construcción* and a number of books on stone-cutting and stereotomy, in particular *Forma y construcción en piedra* and a critical edition of the manuscript of Joseph Gelabert. He is a member of the Scientific Committees of *Revista EGA* and the International Congresses on Construction History.

Vida Rucli graduated in 2020 from the University of Ljubljana Faculty of Architecture. Since 2017, she is member of *Robida*, a collective that works at the intersection of written and spoken word and spatial practices developed in the village of Topolò (Italy). Currently her research focuses on how feminist theories and practices can approach abandoned landscapes

Petra Čeferin is an architect practicing architectural theory and philosophy of architecture. She is also Associate Professor at the Faculty of Architecture, University of Ljubljana, where she teaches architectural theory and history. Her publications include *Constructing a Legend: The International Exhibitions of Finnish Architecture 1957–1967* (SKS Publishing, 2003), *Transforming Reality with Architecture: Finnish Case* (Fondazione Bruno Zevi, 2008), *Architectural Epicentres: Inventing Architecture, Intervening in Reality* (AML, 2008/co-editor with C. Požar), *Project Architecture: Creative Practice in the Time of Global Capitalism* (AML, 2010/co-editor with J. Bickert and C. Požar), and *The Resistant Object of Architecture. A Lacanian perspective* (Routledge, 2021). She is also the co-founder and editor of the book series *Theoretical Practice of Architecture*.

Abstracts

Porch Notes

Charlie Hailey

Keywords: porch, place, John Dewey, aesthetics

Porches embrace paradox. More than a simple blend of opposites like open and closed and public and private, porches make room for conversation on the cusp of nature and accommodate multivalent experiences along the frontiers of built form. Which is to say a porch is dialogic in nature. It holds oppositions without dialectical mediation. To understand such places of negotiation as well as radical reflection, this essay builds on John Dewey's idea of the active role resistance plays in experience, specifically the lived experiences on porches and similarly liminal spaces. Aesthetic experience needs resistance, just like a porch needs sun, rain, wind, strangers, neighbors, and fiberglass mesh. It is a place that hosts what Dewey called "undergoing," with its idea of receiving, and doing, which offers a delicate balance. This essay arranges dialogic pairings into a lexicon as a nascent vocabulary of the porch. These pairings hinge on stories that oscillate between the didactic and the diaristic. If the former guides practice within a discipline, then the latter registers private ruminations sometimes made public. A porch frames as it also folds space and time, it holds secrets and opens out onto streets, it documents and daydreams. So often porches are celebrated for their combination of inside and outside, which suggests an all too easy resolution of architecture and nature and of the domestic interior with what is "out there." Amid climate crises, post-pandemic life, and social change, no such resolution exists, and the difficult work of undergoing and doing must continue and persist.

Stretched Out Spatializing the Pregnant Body

Elizabeth Cronin

Keywords: feminist practice, stretch, loose-fit, bodies

From corsets to girdles to spanx, women's undergarments have a long history of structuring overgarments, creating a formal condition where an interior shell is mirrored by an exterior skin (or surface). Here, the female body is exhibited as a rigid, static form. Now, with the rise of athleisure wear, undergarments and overgarments have merged. Such stretchy clothing provides no resistance against the body. Its tight-fit streamlines an idealized form that is broadcast to the world. Like the belly band topping a pair of maternity jeans, the stretch of athleisure wear allows for movement, for growth, where the body is not shaped by clothing, clothing is structured by the body. This would seem a welcome relief to the harsh strictures of rigid undergarments, but as Jia Tolentino points out in her chapter "Always Be Optimizing": "as undergarments play a lesser role in structuring the idealized female body, women may shape their bodies (through exercise, surgery, etc.) to forms dictated by an

idealized garment.”¹ Stretchy garments may be flexible in material, but their tight-fit adherence to the body further establish women as objects, their rigid forms unable to resist.

As an alternative, this research asks: how might stretch act as a form of resistance? defy stasis? alter containment? act as a loose-fit practice of architecture? transcend body as object to explore body as infinite space? The drawings and corresponding essay respond by engaging placenta, uterus, and cervix—the interior depths of the pregnant body—to rethink biological acts of stretching, swelling, and dilating as generative material for open-ended speculations about architectural space. Thus, this work simultaneously engages feminist theory while developing a practice of architecture. It constructs a loose-fit joint between drawings and writing, at times anchored in one another, at others floating apart. For, as the pregnant body is shaped from the inside-out, her external form a resultant of internal movement and stretch, so too must feminist architectural practice stretch open the discipline to resist from within.

¹ Jia Tolentino, “Always Be Optimizing,” in *Trick Mirror: Reflections on Self Delusion* (New York: Random House, 2019), 82–84.

Space, Body, Architecture Towards a Difficult Balance

Renato Bocchi

Keywords: Geometry, Space, Body, Contrapposto, Chiasmus

The essay intends to investigate about the difficult conjugation between the more "classical" space-body, characterized by Euclidean-Cartesian geometry and proportional metrics, and the "phenomenological" space-body, however present in the classical heritage, characterized from movement, tensions, from the alternation of gravity and fluctuation.

This conjugation of ancient Apollonian and Dionysian ideals seems to propose a form of resistance, through the dialectic of opposites, even in contemporary artistic and architectural experiences.

In fact, the proposed interpretative key intends to operate a comparative juxtaposition between artistic experiences - such as the "Contrapposto studies" by Bruce Nauman nowadays on display at Punta della Dogana in Venice or the interpretation of classical statuary through a choreographic and bodily expression performance by the stage director Virgilio Sieni, exhibited some years ago at the Prada Foundation in Milan - and the space research in architecture traceable in the museum halls themselves hosting those exhibitions, designed by Tadao Ando and Rem Koolhaas, or in seminal architectural works such as Steven Holl's Kiasma Museum in Helsinki.

Aesthetics of Resistance

Fabio Quici

Keywords: aesthetic, resistance, gravity, opposition, self-determination

The representations of the tensions induced by forms of resistance can transform solicitations, constraints, oppositions and limitations into occasions of emancipation and opening towards new

forms of awareness. Can real aesthetics of resistance be identified? Photography, dance, art and architecture provide examples in this sense and suggest, with different forms but sometimes with similar purposes, different ways to interpret some manifestations of physical and social resistance. Resistance to gravity, considered as a natural condition at the origin of the development of architectural forms, represents a challenge also taken up by other artistic expressions that have always interacted with architecture. The mise-en-scene of the stresses induced by gravitational force can then create spaces for creativity and amplify the perception of the tensions that we unconsciously experience in everyday life. In this sense we speak of "fatal attractions". Resistance can also be interpreted as a form of political and social opposition. The opposition of the individual or the community can counteract both the inexorable dynamics of urban transformation and the violence of political repression. This type of resistance manifests itself in the form of actions and forms of communication in which the resulting images become social acts. These are images that circulate in different media, images that speak to us from the walls of our streets, images that struggle to become architectural bodies but also 'disobedient objects.' In some forms of resistance one can also recognize in the opposition the desire for self-determination of the individual and of the peoples. As expressions of the 'positive freedom of man', self-determination manifests itself through actions and artifacts that speak of the aspirations of peoples and their willingness to participate in the transformation of the places they inhabit. Between the plots of the informal city and the constantly adapting housing structures even in the consolidated city, both the artist and the architect can recognize forms of self-determination in which improvisation becomes an aesthetic category and a compositional strategy. In satisfying a condition of necessity, the individual always finds the opportunity to affirm his individuality as well, giving shape and image to his inhabiting. Only an accomplice look can recognize in the forms of resistance, often 'weak,' all the strength they contain in their most intimate substance.

Arcangelo Sassolino and the Italian School of Engineering

Tullia Iori

Keywords: Arcangelo Sassolino, engineer, futurism, materials, coercion

Arcangelo Sassolino, now one of his generation's most important Italian artists, works as an engineer but as no engineer ever could.

Sassolino was born in 1967 in Vicenza, Italy, where he lives and works. In the late 1980s he enrolled in a degree program in engineering at the University of Padua; however, life took him elsewhere: first to the United States, as a toy designer, after his 1989 patent "Compounded polyhedron for ability games" piqued the curiosity of a New York-based Japanese company. It was here that Sassolino discovered his inclination for art and trained at the School of Visual Arts and then returned to Italy and moved to Pietrasanta, near Massa, where he began sculpting marble, and finally back home, where he started a full-fledged workshop within which he generated his artistic engineering works.

Sassolino's sculptures and installations explore the behavior of materials and their natural physical properties, applying forces and coactions that stress materials (concrete, wood,

steel, rubber, glass, marble) to the limits of their strength. In this way, the artist examines the very meaning of life and its transience.

Sassolino's works are carefully designed, resulting in sophisticated constructions with high structural engineering content. Seemingly risky but utterly devoid of danger, calculated with a wide margin of safety, they are nevertheless capable of arousing increasingly strong emotions: concern, doubt, fear, emotion, and empathy; also complicit is the skillfully sound involved in the installation. Tension, anticipation, and the feeling of risk—along with the peculiar beauty of the works—play a key role in the viewer's experience.

Sassolino calls himself a futurist and feels deeply connected to that artistic avant-garde. One of the most obvious similarities with the protagonists of the Italian School of Structural Engineering can be found in this poetics: all our engineers, in fact, in their humanistic approach to structures, identifiable and unique in the world, have matured from that artistic experience of the beginning of the century in two ways: according to a naturalist approach, like Pier Luigi Nervi or Sergio Musmeci, or a positivist approach, like Riccardo Morandi and Silvano Zorzi. Probably these two only seemingly contradictory souls are now part of our DNA: because Sassolino, with his talent as an artist-engineer, cultivates both: first the naturalist one, with his beautiful Cements, shaped to resist by form, shiny, silky, made with a technique that strongly resembles the one adopted by Nervi for his ferroconcrete; and then the positivist one, with the more recent use in his installations of coactions, pre-stressing, balancing, thrusts and counterthrusts, which so closely resemble Morandi's ways of designing his bridges.

Sassolino, at this time, synthesizes, better than any engineer, the identity of Italian structural engineering, its magic, strength, and character. He was awarded an honorary degree in Construction Engineering-Architecture by the University of Rome Tor Vergata, where the lessons of the masters of Italian engineering would have found their place.

Warped Versus Regular Surfaces

A Form of Resistance to Canonical Shapes, from Reims Cathedral to Le Corbusier

José Calvo-López, Enrique Rabasa-Díaz

Keywords: Warped surfaces; descriptive geometry; École Polytechnique; Antoni Gaudí; Le Corbusier

We usually take for granted that descriptive geometry deals with surfaces in a neutral, scientific, aseptic way. However, the construction of the notion of surface as presented by descriptive geometry is the result of a long historical process that took place along the frontier between artisanal practices and learned science. First, there is not much about the general notion of surface in classical geometry, in particular in Euclid, although problems about the volume enclosed by particular surfaces, such as spheres, cones and cylinders are dealt with by Archimedes and other scientists in Antiquity. This led to the formation of a branch of practical geometry, known as Cosmimetry, in the Late Middle Ages. However, this science deals only with a relatively small number of surfaces, including at most some semiregular polyhedra, known as Archimedean. At the same time, a key development arose in the geometrical vocabulary of medieval architecture. While Romanesque architecture uses, generally speaking, simple regular surfaces such as cylinders, cones, half- or quarter-spheres, the surfaces of Gothic vaulting, leaning on transverse and diagonal arches, are warped surfaces; that is, their generatrices are neither parallel nor convergent.

A more general concept of surface arose in the Renaissance, but the distinction between developable and warped surface appeared first in the practical manuscripts and manuals of stonemasons, who understood empirically that the surfaces whose generatrices are neither parallel nor concurrent cannot be controlled by means of templates. However, other masons endeavoured to use templates even in warped surfaces, although they are fully aware of their warped or *gauche* nature. That is, they opposed resistance to the canonical conception of regular surface. This debate permeated stonemasonry literature of the 16th and 17th centuries. In the first stages of the Enlightenment, Amedée-François Frézier showed a strong preference for “regular” surfaces in his stereotomy treatise. However, the concept of “regular” surface encloses both developable ruled surfaces – such as the cone and the cylinder – and double-curvature surfaces, such as the sphere, while excluding warped ruled surfaces. Later on, other scientists dealt with this matter, in particular Leonhard Euler and Gaspard Monge. While the former was interested in the geodesic applications of this issue, the latter was more concerned with its use in stonemasonry technique, a subject he taught at the Military Engineering school at Mézières. In fact, he went as far as imposing the condition that the bed joints of ellipsoidal vaults, which he proposed as the roof of the National Assembly of the French Revolution, should be developable surfaces. This is useful, since these joints can be controlled by means of flexible templates, but it is not necessary on any accounts. Thus, we may surmise that Monge was enforcing here the same concept of orthodoxy than Frézier and excluding all forms of resistance to “regular” surfaces.

However, the interest in the geometry of ruled surfaces led Monge’s disciples, in particular Jean-Nicholas Hachette, to put forward a theorem about the continuity of warped surface portions, giving a disproportionate importance in descriptive geometry manuals to the *Arrière-Voussure de Marseille*, a door or window covering materialised with these surfaces. All this led to a remarkable interest in ruled surfaces in the *École Polytechnique*, an institution founded by Monge that exerted enormous influence in many technical schools in Continental Europe. Traces of this interest can be detected in the work of Antoni Gaudí, Eduardo Torroja, Le Corbusier and, of course, Félix Candela. The use of ruled surfaces such as hyperbolic paraboloids in the former’s work is well known; not so well known is the fact that the detail that Le Corbusier admired most in the whole Sagrada Família building was the roof of a small provisional school building covered with warped surfaces. Le Corbusier’s interest in the Polytechnic heritage, which runs parallel to his disdain for the Beaux-Arts tradition, can be seen as a chain in this long process.

The Resilience of Small Numbers From Self-Construction to Symbol

Aldo Aymonino

Keywords: Solitude, Adriatic Room, Water Gates, Venice, Lagoon, Thresholds

At the end of summer 2022 we will cross the threshold of eight billion human beings on earth. The staggering increase in inhabitants, joined with increasing consumption and travel, decreasing mortality and dominant urbanization, implies a vision of the space in which we act ruled by the unlimited numbers of mass society. However, for the past 20 years or so, a opposite trend has been gaining ground, especially in the most crowded places on the planet. Starting with examples from minor, vernacular history, the essay

attempts to investigate the human need for solitude, the gaze, and the thought of the sacred and the permanent through projects that are modest in scale but no less necessary.

Forests of Resistance¹

Memorial Strategies in Forested Landscapes of Socialist Yugoslavia

Vida Rucli

Keywords: forested landscape, memorial strategies, Yugoslavia

The article explores the memorial strategies and monument production of Socialist Yugoslavia in relation to *forested landscape*, a specific type of landscape where events related to WW2 needed to be marked. Forests, in the creative minds of Yugoslav artists and architects who proposed monuments to recall specific WW2 events, became sources of extremely poetic solutions, where the forests themselves, with their vertical geometries, fragmented lights and irregular grounds, played a central role in the monument's design.

The article first analyzes the relation between WW2 monuments of Socialist Yugoslavia and different natural landscapes where the war was fought and where site-specific monuments were built, exploring concepts as the *sitedness* of monuments and the authenticity of memorial sites. Secondly the text presents in depth four different examples of monuments built in *forested landscapes*: from more classical ones, with a central body and a wider landscape organization, to living monuments (*živi spomenici*) where natural elements have the central role, to participatory green monuments.

Outlining theoretical debates from the 1950s to the 1980s published in art and architecture magazines and exploring built production from the same years, the article aims to give an overview of the extremely complex and composite *landscape of theories and practices* which testifies to the modernity and radicality of Yugoslav memorial practices.

¹ In Slovene: *Gozdovi odpora*. The title is a reference to the beautiful film by Marta Popivoda and Ana Vujanović *Krajine odpora* (*Landscapes of Resistance*) from 2021, which narrates the story of the partisan Sonja Vujanović. I had the pleasure to collaborate with the two directors in 2019, on the theatre piece *Krajine svobode* (*Landscapes of Freedom*) at the Slovensko mladinsko gledališče theatre in Ljubljana.

House in Tatেশina

Kazuo Shinohara's Transformational Space

Giorgia Cesaro

Keywords: Shinohara, Tatেশina, kiai, randomness, space

House in Tatেশina (1985-2006), Kazuo Shinohara's latest bequest and (unrealized) project, is a small space (46 msq) developed over a very long time (21 years). Its long-studied composition is of a

disarming simplicity. Yet, this simplicity encloses and secretes an interlocking play of one room within another, of a space within another, of a point of view that encompasses other points of view. As clear and linear as the system is, in fact, inside it lines of movement complicate the compositional aspects, as to remember that the architect's main concern was to investigate the degree of complexity, chaos or randomness compatible with the apparent simplicity of the form. Indeed, House in Tateshina speaks of a world without hierarchies, where different spaces come together, each with their own inclinations, each playing their role while participating in the unity of the whole.

Through the analysis of the preparatory sketches and the final drawing of House in Tateshina, the Japanese aesthetic principle of *kiai* [気合], composed of *ai* [合] ('one-tenth of the way from the base to the summit of a mountain', or 'mutual understanding', 'union', 'coming together') and *ki* [気] ('life energy', 'life force', or 'energy flow') emerges. *Kiai* is therefore 'ensemble of the breath', 'harmony', 'attention', and 'sensation'. In an artistic sense, *kiai* involves the ability to harmonize the artistic gesture with the changing, random, irregular and unpredictable rhythm of the existing (mono-no-aware).

Through the comparison with eminent cases of Japanese artistic forms actualized by means of the *kiai* aesthetic principle, the proposed essay aims to demonstrate how the composition of House in Tateshina, with its agitation of the form, had as its purpose the elevation of our consciousness, the awakening in us of latent emotions or sensations, keeping our attention and vigilance awake, even in the obsessive repetition of daily gestures, to compose and reassemble our innermost space, that of the house, the space of order and disorder, of creation and re-creation: the space of transformation.

For Kazuo Shinohara, indeed, more than a 'making of space', as Louis Kahn wrote,¹ the architectural quest was a problem of 'transformation of space' [空間創造, *kūkan sōzō*],² which he had defined as a 'thing' [何, *nani*] "colorless, transparent and impersonal", where the impersonal quality is to be understood in the Deleuzian sense of the term, that is 'virtually multiple', 'holder of possibilities'; a concept very close to the Buddhist idea of *sūnyatā* [शून्यता], 'emptiness', whose Japanese translation is *kokū* [虚空], 'where everything can be anything without obstacles.'

¹ "Architecture is the thoughtful making of spaces. The continual renewal of architecture comes from changing concepts of space": Kahn, Louis. "Architecture Is the Thoughtful Making of Spaces." *Perspecta* 4 (1957): 2-3.
<http://www.jstor.org/stable/1566850>.

² The literal translation of the Japanese word *sōzō* [創造] is 'to tend to', 'to proceed towards' [造, *zō*] the 'origin', the 'beginning' [創, *sō*]. However, the 'principle' should not be understood as a 'first cause': in the Far East the idea of a creation of something other than oneself is completely absent, whether it is the shaping of a shapeless material already given (as Plato's demiurge does) or whether it is a *creatio ex nihilo* on God's part (as in the Judeo-Christian tradition). In China and in Japan creation is seen as a process, a spontaneous and free becoming by virtue of itself. To suite this idea of a continuous process without origin and without end, it was preferred to translate *sōzō* [創造] into 'transformation'

rather than into 'creation.' For an in-depth analysis see: François Jullien, *Procès ou création: une introduction à la pensée des lettrés chinois*, (Paris: Éditions du Seuil, 1989).

The Resistant Capacity of Architecture

Petra Čeferin

Keywords: Architectural capacity, Cause of architecture, Architectural act, Subjectivation, Creative thinking

We live and work in highly problematic times, a time of burning issues such as the environmental crisis, the weakening of democracy, housing injustices, and mass migrations, to list just a few of the ongoing developments of our time. A critical awareness of this time is reflected in the field of architecture; it shows itself as a call to action – to pursue architecture as an active co-creator of society, a co-bearer of much needed social change today.

But for such attempts to be effective – and this is the central thesis of this article – the following is essential: to tap into the full potential of architecture the issues and challenges that architecture and thus we as architects confront today have to be thought *in the way of architecture*; they have to be thought *architecturally*. More precisely, we have to think them as problems and challenges that architecture confronts as a *creative thinking practice*.

When architecture is practiced as a creative thinking practice, it responds to a given task such that it constructs that particular object that it seeks to make as an object *specific to architecture* – as an *architectural object*. And this is an object of a special kind because it is a *subjectified* object. In other words: at the same time architecture constructs its objects--subjectified objects--it also co-constructs, co-creates a human being as their specific producer, spectator, user. It co-creates him or her as a *subjectified human being*. And here, in my view, lies the *resistant capacity of architecture*. Architecture can realise this capacity if it activates its *creative capacity*. My position, therefore, holds that the act which is necessary today – and not only for us architects – is the act of insistence on architecture as a creative thinking practice. This is what I will develop in my article.

Izdala	<p>Publisher Univerza v Ljubljani, Fakulteta za arhitekturo / University of Ljubljana, Faculty of Architecture</p> <p>Zoisova cesta 12, SI-1000 Ljubljana</p>
Gostujoči urednik	<p>Guest Editor Agostino De Rosa, University luav of Venezia (Italy) & Venice International University</p>
Urednik	<p>Editor Paul O Robinson, University of Ljubljana, FA</p>
Uredniški odbor	<p>Editorial Board izr. prof. dr. Uršula Berlot Pompe, University of Ljubljana, ALUO izr. prof. dr. Jaka Bonča, University of Ljubljana, FA Judith Birdsong, Writer and Lecturer, School of architecture, UT Austin izr. prof. dr. Matej Blenkuš, University of Ljubljana, FA doc. dr. Mariana Correia, Escola Superior Gallaecia, PT prof. dr. Peter Fister, University of Ljubljana, FA prof. PhD Imma Forino, Politecnico di Milano prof. mag. Peter Gabrijelčič, University of Ljubljana, FA prof. dr. Vojko Kilar, University of Ljubljana, FA prof. Robert MacLeod, USF School of Architecture and Community Design prof. Agostino De Rosa, Università luav di Venezia doc. dr. Matevž Juvančič, University of Ljubljana, FA doc. dr. Beatriz Tomšič Čerkez, University of Ljubljana, PeF zn. sod. dr. Špela Verovšek, University of Ljubljana, FA doc. dr. Domen Zupančič, University of Ljubljana, FA prof. dr. Tadeja Zupančič, University of Ljubljana, FA</p>
Tehnični urednik	<p>Technical Editor zn. sod. dr. Špela Verovšek, University of Ljubljana, FA</p>
Prevodi v slovenščino	<p>Slovene Translations Boris Troha</p>
Oblikovanje	<p>Design Marko Damiš & Martin Košir</p>
Prelom	<p>Layout Marko Damiš</p>
Črkovna vrsta	<p>Fonts Minion Pro, Acumin Pro</p>
Cena	<p>Price 18,30 EUR</p>



Architecture Research
/ Arhitektura, raziskave

2022

ar.fa.uni-lj.si



Univerza v Ljubljani
Fakulteta za arhitekturo

ISSN 1581-6974 www
ISSN 1580-5573 print

