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PRACTICES

“Nature that Takes Back its Spaces”: When Architecture Teaches How to Trace Roots. A Conversation with Carlo Ratti.

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ABSTRACT

Today, the definition of the Anthropocene is still very complex. Indeed, it is not easy to illustrate a concept with many aspects. It is attractive, however, to understand how to interpret the human impact on the environment, and the concrete design of architecture can do so much to this end. In this contribution, I would offer an authentic and sensitive conversation with one of the most concrete architects on the international scene. I like to define Carlo Ratti as a “concrete” architect. Ratti’s anthropocentric aspect is not only related to his design projects. His concept of the architectural project strongly represents the future part of the environmental system. How, more and more, the approach to the sensitivity and phenomenology of the present is the central aspect to be understood as a starting point to read future elements. In this regard, an architect creates a warning for the future generations who will inhabit the earth.

KEYWORDS

Experience, Material imagination, Natural Elements, Phenomenology, Architecture.

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“Nature that takes back its spaces”

The quote “Nature that takes back its spaces”¹ may come closest to the idea I would like to propose of the current relationship between the Anthropocene and Architecture. In the context of the Aesthetics of the Anthropocene, many scenarios open before our eyes:

The Anthropocene implies a rethinking of the dichotomous and dualistic approach at the heart of modern science, which is a fundamental theme in the phenomenological reflections of Edmund Husserl, Maurice Merleau-Ponty, Michel Foucault, and Gaston Bachelard and also in the more recent reflections of Hans-Jörg Rheinberger. From this perspective, the Anthropocene motivates a reinterpretation of the relationship between theory and practice, extending and grounding an idea that seeks to become an ecology of practices.²

Lidia Gasperoni’s recent encyclopedic description captures what I mean by “architecture that teaches how to trace roots.” The concept of ecological practices fits perfectly with the combination of architecture and the Anthropocene. Indeed, architecture, in this confusing age, should teach and set a good example. Architecture implies the correct use of materials, the least possible environmental impact, and above all, educating for a present in which we witness the desire to return to an ethos that involves the co-existence of all living species.

In this regard, we cite an essay by Marcello Barison, *L’Antropocene architettonico. Sulla formazione di mondo*³ [*The Architectural Anthropocene. On the formation of the world...*], in which Barison makes a historical, conceptual, and epistemological overview not only on the term Anthropocene but also of the countless uses and dimensions to which this concept lends itself.

Architecture connects perfectly with the concept of concrete formation of the world, in which all distributions of living species harmonize, creating a synergy of natural elements (e.g., stones, plants) and living beings (animals, humans). The “ecological” relationship represents the concrete level of formation and constitution of the world (understood not only as planet earth but as a dense network of interconnections):

I have shown that architecture is conceivable as that unifying practice that makes it possible for all the different ‘kinds of being’ to become world-formers. [...] Through an innovative extension of the concept of world formation, the philosophy of architecture considers the transformations affecting the planet beyond the distinction between nature and culture. It proves to be a privileged theoretical framework for

1 I am referring to the sentence that the editors of this issue, Andrea Borsari and Pierpaolo Ascari, use in the call for papers: <https://cpcl.unibo.it/announcement/view/485>.

2 Lidia Gasperoni. “Anthropocene”, in *International Lexicon of Aesthetics*. (Milano-Udine: Mimesis, Spring Edition, 2022).

3 Marcello Barison, “L’Antropocene architettonico. Sulla formazione di mondo”, in *Aesthetica Preprint*, n°114 (May-June 2020): 79-97.

interpreting the Anthropocene.⁴

The discourse on the Anthropocene has developed from an aesthetic point of view, both in the field of architecture and the field of design. Unlike architecture, design has become an easier way to quickly access solutions that could improve the convivence of human beings on planet Earth. Design has had different modifiers to represent the impact of the Anthropocene compared to architecture. In 2020, FORMA FANTASMA through CAMBIO an exhibition organized firstly at the Serpentine Gallery in London and then in 2021 at Centro Pecci in Prato, illustrated through the concept of the natural material wood how an element that nature gives us could become a commodity of exchange and destruction. Two years earlier, in 2019, at the Triennale di Milano, Paola Antonelli, with Anna Tannir, Laura Maeran, and Erica Petrillo organized a group show for the XXII International Exhibition entitled: *Broken Nature: Design Takes on Human Survival*. At the center of a complex discussion is the will to “survive” by finding expedients through material creation.

The idea of the Anthropocene signifies a return to the roots, a return to the natural elements reminding us how to honor nature without defacing them. In this regard, we can refer to the current response of architecture to the cave_bureau group that, like a mantra, follows the desire to explore how the reality of nature and the reality of the city can be harmonized. The city is depicted as a natural quarry in which nature and its surroundings strongly influence what happens inside:

The city like the caves is dynamic and complex, both having changed over time, albeit with varying geological timelines. The proposed geological age we live in, The Anthropocene now brings this anthropological and geological relationship to the fore, requiring more holistic modes of inquiry surrounding the city and nature itself. Our work is an exploration into this relationship, where we look for sensitive ways to read, define and produce architecture on the continent.⁵

The work of cave_bureau *The Anthropocene Museum: Exhibit 3.0 Obsidian Rain* presented at the 2021 Biennale di Architettura di Venezia represents the regenerated and rediscovered relationship with the natural element. In the age of the Anthropocene, it is crucial to remember the primordial shelters, in this regard the obsidian is the material of the cave and represents the roots and the materiality of the image of the house of men. The next step of this paper will be focused on the primordial refuges and how they are related phenomenologically to the relationship between nature and humans.

4 Ibid., 92.

5 “cave_bureau”, accessed August 05, 2022, www.cave.co.ke.

The phenomenological bond

The cue that seems very interesting and relevant is the approach of many artists, designers and architects to the natural elements that represent the link between man and nature today. In this regard, Lidia Gasperoni's reference to the phenomenological approach of Merleau-Ponty and Gaston Bachelard seems an excellent connection to the introduction of our conversation with Carlo Ratti.

Ecological practice, in my opinion, lies in acknowledging our connection with the surrounding nature through materials and objects that "phenomenologically" reflect our relationship with the world. I would like to recall how, in this regard, Bachelard introduces the material aspect of imagination and how images of the world represent a continuous link with material reality.⁶ For Gaston Bachelard, the four natural elements—fire, water, air, and earth—are vehicles of our relationship with the world. Indeed, dealing with the matter for him, is an infinite knowledge.

The imagining powers of our mind develop around two very different axes. Some get their impetus from novelty; they take pleasure in the picturesque, the varied, and the unexpected. The imagination that they spark always describes a springtime. In nature these powers, far from us but already alive, bring forth flowers. Others plumb the depth of being. They seek to find there both the primitive and the eternal. They prevail over season and history. In nature, within us and without, they produce seeds—seeds whose form is embedded in a substance, whose form is internal. By speaking philosophically from the outset, we can distinguish two sorts of imagination: one that gives life to the formal cause and one that gives life to the material cause—or, more succinctly, a formal imagination and a material imagination. Thus abbreviated, these concepts seem to me indispensable for a complete philosophical study of poetic creation. Causes arising from the feelings and the heart must become formal causes if a work is to possess verbal variety, the ever-changing life of light. Yet besides the images of form, so often evoked by psychologists of the imagination, there are—as I will show—images of matter, images that stem directly from matter. The eye assigns them names, but only the hand truly knows them. A dynamic joy touches, moulds, and refines them. When forms, mere perishable forms and vain images—perpetual change of surfaces—are put aside, these images of matter are dreamt substantially and intimately. They have weight; they constitute a heart.⁷

Material imagination in Bachelardian phenomenology helps us approach the question of the ecology of "practice," in which, in the Gramscian sense

6 Aurosa Alison, "L'artidesign: il dialogo fruttuoso", in *Aisthesis*, n° 13 – 1 (2020): 47-55.

7 Gaston Bachelard, *Water and Dreams. An Essay on the Imagination of Matter*, trans. Edith R. Farrell, (Dallas: The Dallas Institute of Humanities and Culture, 1983), 1.

of praxis it interconnects with that of experience:

[...] for the philosophy of praxis, the being cannot be separated from thinking, the man from nature, activity from matter, the subject from the object. If you make this detachment, you fall in one of the many forms of religion or in meaningless abstraction.⁸

“Activity cannot escape its materiality,” writes Gramsci, so we should re-educate the anthropocentric approach to a new way of using and experiencing matter. In this regard, I would introduce a very inspiring essay by Yanping Gao: *The symbolic force of rocks in the Chinese Imagination*.⁹ In this essay, Gao illustrates the aesthetic culture developing in China from rock worship. The stone not only represents an object that contains symbolic layering, but Gao underlines how the symbology of rock is related to the Bachelardian relationship highlighted by the material imagination.

The French philosopher Gaston Bachelard, who devoted much of his attention to the poetics of matter in his essay *Earth and Reveries of Will: An Essay on the Imagination of Matter*, concludes, ‘It defies penetration, resists scratching, and stands up to wear.’¹⁰

This solidity, this firmness of rock expands deeply in its material and symbolic purity:

When dealing with imaginings triggered by forms of matter, Bachelard insightfully argues that our imagination could be divided into two distinct types (i.e., the formal imagination and material imagination). In Bachelard’s framework for understanding the imagination, the formal imagination relates to superficial images, which “play on the surface of an element without giving the imagination time to work upon its matter.”¹¹ Conversely, the material imagination ‘deserts depth, volume and the inner recesses of substance.’¹²

Material imagination is the faculty that can go deep into the aesthetic reality of natural elements. According to Gao, Bachelard introduces this aspect into the phenomenological relationship between the imaginal and real world. Another recent reference regarding the relationship between humans and nature in the Anthropocene Era and the issue of Bachelardian material imagination is by Kuan-Min Huang in the essay: *Dwelling Together*

8 Antonio Gramsci, *Quaderni del carcere*, (Torino: Einaudi, 1975), 1224.

9 Yanping Gao, *The Symbolic Force of Rocks in the Chinese Imagination*, in Keith Moser and Ananta Ch. Shukla (eds.), *Imagination and art: Explorations in Contemporary Theory*, (London/ Boston: BRILL, 2020), 708-721.

10 Yanping Gao, “The Symbolic Force of Rocks in the Chinese Imagination”, 714, in this passage Gao refers to: Gaston Bachelard, *Earth and Reveries of Will: An Essay on the Imagination of Matter*, trans. Edith R. Farrell, (Dallas: The Dallas Institute of Humanities and Culture, 2002), 143.

11 Gaston Bachelard, *Water and Dreams. An Essay on the Imagination of Matter*, 10-11.

12 Yanping Gao, “The Symbolic Force of Rocks in the Chinese Imagination”, 715, in this passage Gao refers to: Gaston Bachelard, *Earth and Reveries of Will: An Essay on the Imagination of Matter*, trans. Edith R. Farrell, (Dallas: The Dallas Institute of Humanities and Culture, 2002), 2.

on Earth: An Ecological Consideration from Bachelard's *Cosmo-Analysis*.¹³ In this essay, Huang uses Bachelard's teaching of material intimacy as a model of sharing and conviction in the world. "Dwelling Together" is the answer to the question of the Anthropocene, and the best way to do this is to find internalization patterns capable of bringing the reality around us along with us.

The age of Anthropocene seems to be a realistic description. But in our eyes, it brings another apocalyptic vision: the ruin of planet on the hands of human species. In order to confront with the present and imminent ecological crisis, we should take a step toward a possible solution. The direction to meet the ecological turn in philosophical community is to renew certain concepts in a cosmopolitan situation [...] The first dimension concerns a new concept of subjectivity, not only revealing the intersubjective and interhuman relationship, but also a profound ontological connection intertwining with Nature. The second dimension indicates the condition of dwelling in the sustainable living status, by taking into consideration the sense of environment as house (eco-oikos). The third dimension is cosmological, not seeing the world (cosmos) as representation, but as meaningful network of temporality and spatiality. We human beings live together with other species on earth. But the human species is not a superior host in this planet. A fundamental hospitality offered by the planet is to be recognized. An ecological dwelling requires the innovation of a self-understanding. For these dimensions, Bachelard can give us some hints.¹⁴

In this regard, Bachelard outlines a vademecum on how to dwell with and in the reality, as well as nature. The elements of the Bachelardian philosophy, which suggest this style of dwelling together are: 1) The philosophical dialectical system (big/small; hard/soft; bad/good; feminine/masculine; light/dark; rational/irrational); 2) The intimate connection to matter; 3) The welcoming space of the poetics of space.

We can see also the further development of similar topics, but in the line of space, such as miniature or intimate immensity, in Bachelard's *Poetics of Space*. The separation of *res extensa* and *res cogitans* is renounced by the intimate connection of mind and matter. The value of the material intimacy is shown in this proposition concerning the power of the subject: 'In short, all interior richness extends the inner space in which it is condensed, making it boundless.'¹⁵ In such definition, there is no reason to exclude the necessary role of the material

13 Kuan-Min Huang, "Dwelling Together on Earth: An Ecological Consideration from Bachelard's *Cosmo-Analysis*", in *Bachelard Studies – Études Bachelardiennes – Studi Bachelardiani*, n°1 (2020): 33-46.

14 Ibid., 34.

15 Gaston Bachelard, *Earth and Reveries of Repose: An Essay on Images of Interiority*, trans. Edith R. Farrell (Dallas: The Dallas Institute of Humanities and Culture, 2011), 39.

and natural world for the constitution of subjectivity.¹⁶

The approach to the concept of multi cosmos is to be found in our inner resources, and in this case phenomenological images suggested by Bachelard such as that of intimate immensity¹⁷ or inside-outside¹⁸ can help us understand even better what Huang suggests: “The world is not something outside there. It manifests the mode of intimacy.”¹⁹

The return to a phenomenological approach to nature that the Anthropocene emphasizes, is fundamental to making a material connection with reality. Especially in Bachelard’s philosophy of space, the almost animistic premise of the relationship with primordial spaces such as the native house or the nests and shells²⁰ as a place of welcome arouse in us the possibility of finding refuge in the world.²¹

A conversation with Carlo Ratti

When I chose to ask Carlo Ratti about his vision concerning the phenomenological relationship with nature, I was prompted by his involvement as a designer and especially as an artist on how to improve future aspects of our sensitive relationship with nature. It should be incumbent upon an architect to give concrete evidence of how we might live better with our planet. In one of his recent interviews,²² Ratti responds about his future vision of space. I write “space” because it is good to emphasize that he does not differentiate between urbanism or interior architecture; in fact, it remains fundamental to talk about “space”, preferably “shared space,” remaining in the concept of living together, man and nature.

How do you envision the future? Could you give us three ideas that will guide the next few years?

I do not expect futuristic scenarios of flying cars and alienating technologies prophesied by pessimists. I think we can return to a greater balance between cities and nature. As we were saying, the Anthropocene crisis that we are experiencing forces us to rethink the

16 Kuan-Min Huang, “Dwelling Together on Earth: An Ecological Consideration from Bachelard’s Cosmo-Analysis”, 36.

17 Gaston Bachelard, *Poetics of Space*, trans. Maria Jolas, (Boston: Beacon Press, 1994), Chap. 8, “The intimate immensity”, 183-211.

18 Ibid., Chap. 9 “*The Dialectics of Outside and Inside*”, 211-232.

19 Kuan-Min Huang, “Dwelling Together on Earth: An Ecological Consideration from Bachelard’s Cosmo-Analysis”, 41.

20 See Gaston Bachelard, *Poetics of Space*, Chap.1 *The House. From Cellar to Garret. The Significance of the Hut*; Chap. 4 *Nests*; Chap.5 *Shells*.

21 See Aurosa Alison, *Epistémologie et esthétique de l’espace chez Gaston Bachelard*, (Paris: Mimesis France, 2019), 2nd *L’espace poétique* and 3rd part *L’espace dialectique*.

22 Carlo Ratti. “Futuro antico. Intervista a Carlo Ratti.” Interview by Marco Bassan. Artribune, March 23, 2022. Accessed August 09, 2022. <https://www.artribune.com/progettazione/architettura/2022/03/futuro-antico-intervista-carlo-ratti/>.

urban phenomenon, putting sustainability and the circular economy at the centre of our work. But then I turn on my computer and see that Russia has invaded Ukraine-and I think maybe we should have started over with humans.²³

Our focus is the balance between man and nature, which Ratti considers it the purpose of his work to re-educate people about, we focus on reality’s phenomenological and sensitive aspects. The element of the future that Ratti highlights through the concept of the “Senseable City”²⁴ can be a concrete answer to our many questions.

I came up with only three questions: 1) The importance of sensitive experience with space; 2) In which way we should re-educate to return the human-nature relationship to its origins; 3) The future scenarios and how these will evolve from a new propensity for a practical ecology.

What perceptual experiences and theories/ideas influence your work in articulating sensory space?

Carlo Ratti: for example, I wish I could answer by referring to Gestalt or the theory of pure visibility, which has been very successful in twentieth-century architecture (I am thinking, for example, of Kevin Lynch and his classic *The Image of the City*). But unfortunately, this is not the case. Sensible space for us goes beyond visible space - it is lived space, a contemporary crossroads between the natural and the artificial worlds.

In this sense, we refer to Samuel Butler. He, “Darwin of the machines”, already, in his 1863 paper, proposed an evolutionary analogy between technology and biology, replacing organisms with artefacts and allowing the classification of the synthetic world into genera and species. This concept has been invoked with variations in both theory and practice. If we accept this evolutionary framework, a fundamental question emerges: how can the designer accelerate change in the artificial world? Continuing the biological analogy, the designer might have the primary role of producing anomalies (in the form of new ideas), becoming what in biology is called a mutagen, an agent that causes mutations.

In the Twentieth Century, the idea of an artificial world can respond dynamically, just by learning from the natural world, and is closely linked to the vision of cybernetics. This term was introduced by the American mathematician Norbert Wiener in 1948: the key concept (which even today is the basis of a Smart City or Senseable City) of the feedback loop, i.e., the ability of any system, living or not, to regulate or modify its conditions in response to external stimuli.

The scenario of a world crossed by multidirectional flows was also

23 Ibid.

24 “Senseable City lab”, MIT, <https://senseable.mit.edu>.

imagined by Richard Buckminster Fuller, an American architect and inventor. His Geoscope, designed for the 1967 Montreal World's Fair, consisted of a gigantic geodesic globe inside which present and past data about our planet would be displayed: from geological movements to ocean currents. The second layer of the architecture, the intangible one, represented big data, which remained unrealized, and the technological limits of the time.

A moment of overcoming these limitations came in the 1980s, when the growth of the Internet infrastructure for data exchange led to extraordinary changes, allowing the realization of many dreams of previous decades. In this context, one of the basic concepts for understanding the Senseable City and the Internet of Things was born: the idea of ubiquitous computing, or distributed computing.

Documenting the evolution of digital interfaces and anticipating the era of personal computers, computer scientist Mark Weiser (1991), working at the Xerox Park Research Center, foreshadowed the advent of a new era: "the era of quiet technology, where technology recedes into the background of our lives". This scenario would take the form of the coexistence of a myriad of connected physical objects.

From the first decade of the 2000s, this dream would begin to materialize: 'smart phones' have in a short time not only changed the way hundreds of millions of people communicate but have also established themselves as distributed sensors and actuators capable of transforming our lives. The way we navigate a city today, book a scooter or a car in car sharing, order a book or a crepe at home would not be the same without the smartphones we carry in our pockets. The cyborg sang about by Donna Haraway—a mix of natural and artificial—is now becoming a reality in unexpected ways, in the pockets of our pants.

What strategies do you use to communicate with the public through your projects?

Carlo Ratti: Digital networks have permeated our lives, giving rise to platforms that allow urban planners, architects, and designers to share their ideas online and engage in unprecedented debate with multiple stakeholders.

There are many channels: Online posts; Videos uploaded on YouTube; Images shared on social media; Articles published online or in traditional newspapers and magazines.

It is essential to translate the narrative of architecture—often cryptic and solipsistic—making it accessible to a broader audience. This mechanism allows us not only to democratize our profession but also to establish unprecedented mechanisms of co-creation. We can observe completely new architectural dynamics based on participation. By liberating,

accelerating, and connecting designers with large numbers of potential clients, digital platforms can create a unique design methodology for our century. Shared projects are debated online and become a means of generating consensus or dissent. As with crowdfunding platforms, an agreement, speculative or experimental project can become a reality.

We must imagine a new kind of customer—first and foremost—a collective customer. Continuing to work for traditional clients, the same ones that have led us to today’s Anthropocene crisis, is no longer sufficient. Of course, we architects can choose to remain anchored to the potentates of yesterday, but in that case, we must be aware that we would only be contributing to the construction of their mausoleums. Paraphrasing the famous Buckminster Fuller, it is up to us to decide whether to be “the architects of the future or its victims.”

As designers, we can continue to do client-centred work as we do today. However, we must not allow the “tyranny of the client” to prevent us from tackling today’s significant challenges. If ideas are good, they will eventually come to fruition in the interconnected world we live in.

Amidst the volume and noise of digital platforms, the key ingredient for new ideas to take hold is feedback. Communication and media—explaining and inspiring—can spark a virtuous cycle of support and collaboration. In an age when entire projects can come from well-made 1-minute videos, the ability to share can replace relationships with wealthy clients.

Other opportunities to receive feedback are design events, such as architecture biennials or design weeks. These have allowed new ideas to be put together without constraints from clients. Although it may seem inevitable, if we stop and think about it, it is regrettable that because of Covid-19, many of these events have been postponed or replaced by online meetings. The pandemic is a staggering new challenge: if nothing else, it would require cancellation and the re-launch of events to help overcome it. By experimenting with our design weeks, we can turn to solutions to revive public events that have already begun to gain traction in other environments.

To date, how are cities ready to embrace the digitally sensitive? How do we bring people closer to the new aesthetic phenomenology of inhabiting?

Carlo Ratti: I do not think we are talking about the new aesthetic phenomenology of living. The themes posed by Gaston Bachelard in his “Poetics of Space” remain burningly relevant today. However, the Senseable City allows us to find new answers. The themes are manifold: mobility to energy saving in buildings, optimization of workspaces, waste disposal, municipal services, and civic participation processes.

A key theme is that of responsiveness. If, as it is often said, architecture

is a sort of third skin—after the biological one and the clothes we wear—it has been a hard covering for a long time, we could say almost a corset. At MIT's Senseable City Lab and CRA - Carlo Ratti Associati, we like to work thanks to digital technologies in space. The built environment can better adapt to our habits, giving rise to a dynamic architecture modeled on the life within it, not vice versa. Architecture, in short, is capable of providing new answers to those timeless questions posed by the phenomenology of space.

Conclusions

I wanted to present this conversation at length through topics that can be within everyone's reach. The return to one's origins corresponds to the desire to dwell on our relationship with material reality, such as in the philosophy and phenomenology of Gaston Bachelard. The four natural elements, according to Bachelard, correspond not only to the symbolic and animistic relationship to the soul of objects but also to the images that address us of a wise coexistence with nature.

Nature corresponds to us, belongs to us, and represents us. In this regard, a lesson that architecture can give, as in the case of Carlo Ratti, is of immense richness. It is a shining example of how we can succeed in understanding the digital future and associate it with the care and preservation of what has generated us.

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