Going beyond a resource's exploitability in architecture: a political, anthropological and philosophical challenge

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Introduction

Nicolas Fiévé and Xavier Guillot

- 1 The issue of natural resources and their exploitation is at the center of current debates on socioecological transition in the fields of architecture, space and design project. Whether it is material extraction and production to construct our homes, or energy for their operation, the challenge facing our societies today concerns our relationship to the Earth and to its limited natural resources. This relationship puts to question the logic behind the construction and transformation of our living environment, inherited from the industrial revolution, whereby humans acquire the Earth's natural capital for their own well-being. These ideas stemmed from technoscientific progress, which humans both designed and orchestrated. Today, in the age of the Anthropocene, this intellectual heritage and relationship to the Earth's resources must be called into question in order for new frameworks of thought to prevail.¹ Considered the foundation of a productivist and extractivist² economic system, there is large consensus that, from an ecological point of view, this heritage puts the survival of the human species at risk. The aim of this current issue is thus to identify new architectural project practices and frameworks of thought that are likely to overcome this major challenge.
- 2 The choice of 'resource' as the focus of this issue calls for clarification concerning its definition. The call for papers included an assumption stated as a dialectic, aiming to consider two approaches. The first refers to the material dimension of resource, which is most often mentioned when the concept is applied to architectural project disciplines. Whatever the scale or nature of a building, any act of transforming a living environment requires the use of material resources, and thus involves a modification of the physical conditions of the place. With regard to socioecological transition, this

dimension of resource refers to a set of reflections on project practices, which relate to the responsible use of natural resources in the design of human settlements; that is, using locally extracted materials and low energy expenditure construction techniques or equipment; implementing recycling and reuse processes; and designing buildings in harmony with nature, environments and landscapes. These issues harden a set of debates that especially emphasize the question of local resources in design projects, along with practices shaped by contextual implementation constraints and the reinterpretation of vernacular practices.

- 3 The second approach focuses on the symbolic and aesthetic dimension of 'resource'. It aims to assert the idea that the implementation of our built environment also depends on a close interrelationship with intangible resources. If modern societies have drawn on natural resources for their material function, works of archaeology, anthropology and history show that the aesthetic and symbolic dimensions of resource are also incorporated into the design and construction of human settlements. All human cultures place value on certain species, sites or elements. Beyond basic needs (raw materials and energy provisions, nutritional or therapeutic uses, etc.), we must consider resource as part of an altruistic approach, based on a relationship to the living world and the landscape which highlights the links between architecture and its environment and from which the diversity of living cultures originates – as demonstrated in recent works of anthropology³, human geography⁴ and environmental philosophy.⁵
- 4 The intention of formulating these two approaches with regard to the notion of resource was not to separate the reflection into two opposing fields, nor to categorize the articles of this issue according to two types. Conversely, it aimed to work towards aligning the two to enhance their heuristic potential, and thus to open up new horizons of thought surrounding resource. With that in mind, a comparative analysis of the theoretical work and design project experiences within the contributions allowed us to identify three fields of reflection, structuring this issue into three parts.⁶

Professional ethics and ideas of resource

- 5 The first part brings together a set of contributions pertaining to practices of designers that overlap in terms of professional ethics, with regard to ecological challenges and the place granted to resources in this field. Brought to light are aspects of political dimensions from which the act of building originates, along with the status of designer within a larger set of actors. In this regard, and as the restitution of these practices demonstrates, the resource challenge involves a form of professional commitment from the designers, which requires that they free themselves from conventional practices.
- 6 This commitment has multiple forms, varying depending on the architect and Architectural project contexts. A common stance is thus emerging around the importance of a project's geographical territory, interpreted itself as a resource for project planning. From this point of view, Mathias Rollot's analysis of Christophe Aubertin's practice reveals a form of "territorial and cultural pact" that this architect deploys between the building he designs and the territory in which it is located. ⁷For Aubertin,

each construction site must adapt to its territory. [...] The aim is not to develop technological solutions, but perhaps the opposite; that is, to simplify demands in

order to make space for local human and material resources once again. [...] On the one hand, architecture must be thought of in terms of *process*, so that its production generates new beneficial activity for the region, and on the other, in terms of result so that the use and image of project outcomes contribute to the betterment of the living environment.⁸

7 In addition to describing and listing Aubertin's architectural projects, Rollot also carries out a critical and reflective analysis of them to support his own theoretical work on bioregionalism. This allows him to draw comparisons between Aubertin's work and this line of thought, as well as to formulate a set of hypotheses, in particular on the relevance of including an architectural dimension that has so far been lacking. According to Mathias Rollot, Christophe Aubertin's approach can be integrated within this field of thinking, demonstrating a concrete illustration of it and embodying values from the two main categories of bioregionalist practice: resistance and renewal. Writer and poet Jim Dodge describes these categories (b. 1945): resistance focuses on the fight against "the continual destruction of savage systems" and "the ruthless homogeneity of national culture". Renewal is "the refined understanding of how natural systems work, the subtle perception of the peculiarity of places, the development of appropriate techniques, and the type of hard physical labor that makes you sleep well at night."⁹

8 In another geographical, historical and cultural context, the work of architect Giancarlo de Carlo (1919-2005) conveys the close relationship maintained with local authorities in the preparation of the design project, in which the notion of resource plays a determining role. In her careful study of the transformation of the city of Urbino, Roberta Morelli reveals that this work is exceptionally political and nourished by a remarkable professional ethic. In order to capture all the dimensions of Carlo's work, Roberta Morelli goes back in time and brings to light the continuity of an approach spanning over several centuries, based on a broader understanding of resource according to which¹⁰

it is becoming less about the availability of resources and more about identifying and connecting material and immaterial means that are capable of generating balanced coevolutionary processes between a human settlement and its natural environment.¹¹

9 Generating these coevolutionary processes appears to be a recurring feature in the interventions that transformed Urbino over the centuries, a crowning achievement of which is the work of Giancarlo de Carlo. As in the previous case, this architectural approach places the ethical and political dimensions of the act of building at the forefront. It emphasizes the emergence of a new ecological paradigm, according to which, Roberta Morelli notes, "our relationship to the Earth depends on the ability to grasp and enhance the relationship between the means and ends that influence the transformation of physical space."¹²

10 This ability to enhance the relationship between means and ends appears to be a common characteristic among architects from different cultural backgrounds, as demonstrated by Yann Nussaume and Antoine Kilian in their contribution.¹³ Whether in France, Japan or China, Völker Ehrlich, Édouard Vermès, Serge Joly, Paul-Emmanuel Loiret, Kuma Kengo, Gilles Perraudin or Wang Shu show the same ethical and professional commitment: "to develop a *bottom-up* architecture, in connection with those who go beyond the usual separation between design and implementation,"¹⁴ Wang Shu expresses. For this architect, the goal is to establish "endogenous roots" through the links he intends to forge with craftsmen. This recognition of professional

know-how and the reassessment of the divide between architect and craftsman are indeed a common characteristic for each of these architects. Further, what binds them even more is their common interest in 'MaT(i)erre (s)', a notion proposed by Yan Nussaume and Antoine Killian¹⁵ to designate the "role of material as a catalyst for design". For Serge Joly, Paul-Emmanuel Loiret and Wang Shu its soil; for Kuma Kengo and Gilles Perraudin its wood and stone; and for Völker Ehrlich and Édouard Vermès its straw. In each case, the use of these materials entails extraction and transformation processes that meet the requirements of socioecological transition. The fundamental question asked by these two authors is: Can the emergence of an 'environmental movement' be seen in this collective commitment to 'MaT (i) erre (s)'? This indeed finds its meaning in common criticisms of the current process of material extraction: in the "relocation of creative processes towards places and environments" which characterizes the overall work of these architects.

- 11 In line with this reflection on material as a catalyst for new forms of architectural design and practices, two contributions in the form of *field studies/ critical reviews* complete this first chapter, one focusing on soil and the other on straw.
- 12 Concerning soil and the steps taken by architect Paul-Emmanuel Loiret and his associate Serge Joly in 'the Cycle Terre factory', a precision is necessary in order to measure the nature of this challenge.¹⁶ In addition to the use of soil as a construction material, their objective is to put in place the conditions for the reuse of inert excavated soil from the construction of the Grand Paris Express public transport network; this in order to create "a raw soil sector through a cycle of land revaluation". As Paul-Emmanuel Loiret writes, it is about going beyond the economic model based on the logic of "extract, produce, consume, discard", to develop a virtuous construction cycle which grants soil the status of resource, instead of being associated with debris or waste. Carrying out this cycle requires multiple forms of collective engagement, as he demonstrates through the implementation of a material production site that recycles soil (which is currently under construction in Sevran). Only a systemic approach to the problem, combining technical expertise, project management and support from public authorities has really made it possible to develop an alternative path to the non-sustainable linear model of debris production. The notion of cycle associated with this project is rightly chosen, and could even be made plural because, as Paul-Emmanuel Loiret demonstrates, "the Cycle Terre factory engages a succession of virtuous cycles and a reduction of economic and ecological costs, even beyond the field of construction strictly speaking."
- 13 In their use of straw, Volker Ehrlich and Édouard Vermès are also driven by this awareness and this need to engage virtuous economic and ecological cycles at all scales of the construction of our living environment.¹⁷ Throughout the construction projects they carry out in France, these architects demonstrate the structural and insulating capacity of this material in different contexts: from housing to building renovation. As a renewable material for insulation, they prove the diversity of its potential in the face of current climate challenges. They explain,
straw is more than a winter coat, it is also a thermal buffer to prevent discomfort during heatwaves. The thermal shift of the new building's envelope, which is greater than twelve hours, is inaccessible with conventional insulators.¹⁸
- 14 These architects also praise the use of this material in stating: "still in place today, the RT 2012 thermal regulations ignore the issue of thermal discomfort during summer."

The originality of the approach led by Ehrlich and Vermès is also based on the unique status they grant to the work site. "As the place where the act of building is the very crucible of our living environments, the time and space of the work site are key elements on the path to this transition."¹⁹ This is the reason that construction sites are also places of learning for students and architects in training. Although a large success amongst the many candidates who seek out this form of training, the authors claim that it also highlights the relatively minor use of renewable materials in the teachings carried out in schools of architecture.

- 15 In Ducan Drifford's contribution,²⁰ we move away from the hope displayed in the abovementioned works, with the use of renewable materials in construction, to an almost dystopian scenario: the study of sand extraction processes in Morocco on the beaches of the Atlantic coast or from sea dredging. As this author demonstrates, unregulated sand extraction for use in the construction industry leads to a catastrophic ecological situation. Not only does it prove to be unsuitable for construction and lead to a host of problems in the concrete structure of buildings, but it also has irreversible consequences on the environment, on coastal landscapes and on biodiversity. This is the grim reality of local political issues whose failure is not only environmental, but also economic and social, as it engages the population through the precarious jobs generated by the sand mining industry.

Going beyond anthropocentric ideas of resource

- 16 The second part includes a set of articles that question the cultural and historical trajectory of the Western world; which is at the foundation of our relationship to the Earth's natural resources, as well as the productivist and extractivist system on which our societies have been built over several centuries. Here, the purpose is thus to explore other cultural heritages that have existed or still exist today, and in which a different relationship to resources, progress, technology and modernity has developed. ²¹The approaches in this chapter raise the question of status in regards to the Earth's resources, and of perceptions of them as living environments. This involves examining other forms of human existence and ways of inhabiting the world, and thus, to cite François Jullien, to "disorient our thinking" from the subject at hand. ²²In other words, it sheds light upon and analyzes other ways of designing, preserving and transforming our inhabited spaces, in order to act alongside the world instead of against it, and to consider its resources through a sustainable lens. It is thus an effort to approach a "composition of worlds", to use the beautiful words of Pierre Charbonnier and Philippe Descola.²³
- 17 In his work on ecology, Augustin Berque, a specialist in Japan and in oriental cultures, has worked much on the decentralization brought about by the Western outlook of the world. His contribution in this issue also touches on this subject,²⁴ presenting a set of concepts that allow us to structure the contributions in this section around key notions for thinking of resource based on distinctive features of the cultural contexts in question. Berque questions the notion of resource as being made 'out of the ground', which is not only a physical operation, but 'an *opération écouménale*'; that is, an "eco-technical-symbolic operation that is fundamentally onto/logical (both logical and ontological)." Hence the notion '*prise écuménale*' (oecumene grip), in which the resource constitutes one factor among many to qualify 'human ways of interpreting territory'.²⁵

- 18 The notion of *opération écouménale* seems particularly interesting in addressing the basic question concerning us here. It can indeed be assimilated as an initial reading tool to identify the nature of the 'eco-technical-symbolic operation' on which human inhabitation is based in each case presented, taking into account their differences in terms of onto/logical foundations.
- 19 Nora Itri's in-depth study of the vegetation in the streets of Mexico reveals the radical transformation that took place due to Spanish colonization and Westernization.²⁶ In just several years, the *opération écouménale* characterizing a society's way of life as it relates to the territory was completely upended, giving way to a new human settlement which has since been transformed into one of the world's largest megalopolises: Mexico City. Once the capital of the Aztecs and location of the Mexico-Tenochtitlan settlement, this former '*ville-milieu*', as this author describes it, "was structured around an interweaving network of canals and floating gardens, encircling a denser urbanized nucleus where the sacrificial center was located. A composite relationship thus emerged from the encounter between the Aztec people's spirituality and this unique natural space."
- 20 At first glance, this *ville-milieu* no longer exists today. However, in observing the large majestic trees of Mexico City's streets, Nora Itri shows the ways in which they occupy space and how people perceive them, testifying to a unique *opération écouménale* specific to this context, which is both tangible and intangible. The trees provide biological and climatic support for the inhabitants of the capital (absorbing harmful gases, transforming pollution into sugar, delivering water molecules and oxygen that make the street air more breathable). They also have a historical, cultural and spiritual meaning, in that they evoke the ancient *ville-milieu* of the Aztecs. As a living entity, the tree is more a resource through its ability to interact with the environment than through its exploitation and, through a vegetation lens, expresses the identity of an environment upset by human artificialization. For the author, Mexico City's tree of the street is a "*ressource d'interaction*" (interaction resource), which in itself sustainably alleviates the urban rigidity of a crowded megalopolis.
- This recognition for the life of the tree and other urban vegetation is in line with the direction taken by certain thinkers of urban nature, who encourage a better understanding of the living systems around us.²⁷
- 21 Accepting the idea that the tree lives in the city for its own good should help human beings overcome the utilitarianism that defines their relationship to the non-human.
- 22 In Brazil, the precarious resistance of indigenous communities, fighting to preserve their unique way of life as it relates to territory, expresses another form of *opération écouménale* in a context endangered by modern lifestyles, rooted in the anthropocentric and dualistic paradigm which legitimizes the unlimited exploitation of the planet. Investigating the example of the indigenous lands of the Guarani people,²⁸ Anaïs Guéguen Perrin describes another way of considering human inhabitation.
- For the Guarani, like for many indigenous peoples, *reality is holistic*. It is comprised of humans and non-humans, without superiority over one another, but with complementarity. [...] According to this thought, every material element is spiritual. No act goes without spirituality or awareness for the environmental and territorial impact of this act, at different scales, and of its social impact on humans and non-humans.
- 23 In the indigenous lands of Guarani communities, correlations between the body, architecture and territory reveal each element as an organ that fulfills a vital function,

in a multiscale conception, from the planet to the body, human and non-human. Guéguen Perrin shows that this perspective does not necessarily strive to consider the Earth as a thinking anthropomorphic entity, but rather to generate an understanding of the complementarity between species, expressing a relational ontology whereby the survival of the whole depends of the integrity of each organ. Thus, practices in the habitat and the use of resources maintain a local ecosystemic balance, along with the resulting habitability of the Earth system.

- 24 The abolition of the *opération écrouménéale* (resources, constraints, risks and pleasures concretely linking our existence to the Earth) and alienation through a form of capitalism that “de-earths” human beings, as conveyed by Augustin Berque, reach their full magnitude in the example of the ‘landless’ peasant movement in central western Paraná, Brazil and its fight for agrarian reform in favor of social and environmental justice. Mathilde Teixeira Col devotes *field research/ critical reflection* to this,²⁹ providing evidence on groups of peasants deprived of this essential material resource; that is, land. Forced to move across the country in search of land on which to live, their strong resilience comes from the support of stories drawn from the collective memory of the group, until the feeling of belonging to the territory is reborn with the construction of a place that becomes their own. Teixeira Col makes us understand that if “the earth represents more than the earth itself, it is because it is synonymous with roots, life and identity”. The earth is the source of life! Recalling that there is ‘*concrecence*’ (growing together) in the relationship between the animal and its environment, the naturalist Uexküll expresses the establishment of a ‘functional circle’, that Augustin Berque refers to for living things in general, and for humans in particular, because the environment depends on its species, and vice versa.
- 25 The group’s resilience upon taking root in a territory is connected to the “link that many Native American peoples make between the Earth and the human body,”³⁰ underlines Guéguen Perrin. He also brings to light “the idea of the Earth as a system, composed of complementary human and non-human elements in constant interaction.” In combination with the human body, earthly elements establish a correlation between the earth and the body. This is also found at the scale of the tree, which can be interpreted as the hair of the Earth or a body: the trunk is its bones, the branches are its veins, and the leaves are its flesh.³¹ The tree can thus represent an element of the Earth’s body in that it can be comprised of the different parts of the human body. Thus, “the correlations between body/ architecture/ territory reveal each element as an organ which fulfills a vital, multiscale function, from the planet to the body, both human and non-human”. This gives rise to a complementarity between species, in which emerges “a relational ontology, where the survival of the whole depends on the integrity of each organ.” “The use of resources and practices in the habitat maintain a balance in the local ecosystem and, consequently, the habitability of the Earth system.”
- 26 Far from Brazil’s landless, hundreds of islands in Japan’s Inland Sea have been suffering for decades from the consequences of the rural exodus, demographic aging and the accelerating decline of Japan’s population. Here, the land is almost empty, and the *concrecence* is exhausted in establishing a “functional circle” due to a lack of humans to interact with the environment.
- 27 Responding to a call for cultural promotion to fight against declining development on the islands of the Inland Sea, architect Manuel Tardits, of the Mikan Architectural

office in Tokyo, designed a modest pavilion with the participation of the inhabitants on the island of Ibuki. It comprises of a sole shelter, shaped in a ten-foot square. This layout is well known to the Japanese, as it is typical of pavilions where the tea ceremony is practiced. "Its use is rich because it is far from being a space solely dedicated to tea tasting, but more of a meeting place. The history of its spatiality and geometry contributes to its semantic richness,"³² recalls Manuel Tardits in a field experience/critical enquiry which traces back the preparation and implementation of his Sardine Pavilion. For this project, the island, its environment, its inhabitants and their history were both "the source and the resource".

- 28 The architect placed inhabitants and local resources at the center of the project's concerns, drawing on the natural landscape and history, recycling local materials partially from the island's industrial past, and consulting inhabitants to choose a site and to determine the purpose of the future pavilion. Manuel Tardits thus calls on local heritage, whether it is landscape (coastal rocks), industrial (fisheries and farmed fish) or architectural (local materials and carpentry of the island), while creating a link with tourists by offering them a historic model of well-recognized Japanese architecture (the ten-foot square pavilion). The field experience/ critical reflection clearly shows that there is no "causal necessity here, but [a] historical contingency. Geographical realities are not necessary, they depend on history."³³
- 29 This is why a material resource sometimes transforms into a cultural resource over time. Andrea Flores Urushima and Benoît Jacquet, two research architects based in Japan, develop this idea in a field experience/ critical reflection on the exploitation and use, in vernacular architecture, of wooden posts made of Japanese cryptomeria (cedar) cultivated in the mountains of the deep valleys in northern Kyoto.³⁴ Developed from a mother tree of more than six hundred years old, the Kitayama cedar tree is "mainly cultivated to be used as an ornamental post, one that adorns the decorative alcoves of Japanese rooms."³⁵ This post, which can still be found in many modern townhouses, is a distant echo of a "Japanese home with the ideal of a residence in the heart of nature [...]."³⁶ In local culture, the aesthetic qualities of the ornamental post (shape, grain, rings or color of the wood) are assessed in terms of the quality of the works of art and the floral decoration displayed in the alcove of the Japanese living room. Hence an ancestral know-how that is both rich and complex, from which came a local landscape "depicting the material culture of wood, the ways in which foresters cultivate and treat it, as well as its use in the construction world, by carpenters, joiners and cabinet makers."³⁷ Here, natural techniques are preferred over modern processes, such as polishing with river sand or natural drying in warehouses (rather than artificially in electric ovens), which allows the trunks to retain their essential oils and to maintain their most beautiful quality.
- 30 As Flores Urushima and Jacquet show us, the rarity of this ancestral form of forestry in contemporary Japan has led the Japanese Ministry of Culture to work towards classifying the logging of Japanese Kitayama cedars, as a "cultural landscape." This is because these cedar posts are also found in the structures of buildings classified as national heritage. In this conservation process (its implementation still in progress), the material resource is transformed into a resource that represents both culture and landscape. It is thus intangible, in that it maintains practices and know-how in terms of forestry exploitation, carpentry techniques (for the restoration of historic buildings) and built heritage, for which the Kitayama cedar is an ancestral resource.

- 31 Augustin Berque summarizes the essence of capitalism as follows: the internalization of profits and the externalization of costs, the consequence of which is the devastation of our earthly base and a "de-earthed" architecture which is no longer oecumene."³⁸ He takes the example of the "hotel and convention center" project, which was proposed by Le Corbusier in 1961 to replace Orsay Station at the heart of Paris.³⁹ Yet, two Japanese researchers, Hayakawa Sayuri and Taji Takahiro, look back on the early years of Charles-Édouard Jeanneret-Gris, when he criticized the standardization that bourgeois capitalism imposed on large European cities in *La Construction des Villes*.⁴⁰ The young architect described himself as a regionalist and was devoted to preserving local architecture, from which he drew inspiration to design cities. The work of Camillo Sitte and the example of Italian cities (which he visited in 1907), remained primary references for him. Also influenced by German regionalist architect Paul Schultze-Naumburg, who fiercely criticized the "regularization" of cities, Jeanneret noted the following comments in his journal:

To the same degree that the understanding of beauty disappears, so does the grace of cities [...], capital, the cause of all regularizations, is that every trace of feeling, of love for life and of local things disappeared within the councils that govern cities.

- 32 Jeanneret imagined the design of a "harmonious city", which would take into account the physical topography of place and be inspired by the landscapes and forms of the past, in which each house and each building would be linked by an 'intimate relationship'. It would be a source of beauty, emotion and affection for the inhabitants, who would be able to recognize themselves in a form of 'local patriotism'.
- 33 If Jeanneret's youthful text does evoke a form of regionalism that includes the material and immaterial resources of the landscape and local architecture in the design of cities, what about the links that unite this local patriotism to the architectural thought deployed by Le Corbusier several years later? For this issue surrounding the topic of resources and on acting *with* the world in architecture, this question could have been addressed by Hayakawa Sayuri and Taji Takahiro, although Jeanneret's remarks seem to already reveal the obsessive quest for a unique system that would be the key to shared happiness for all.

Extending the boundaries of thinking about resource

- 34 In the set of contributions comprising the third part, the notion of resource is grasped through unique situations specific to the current modern regime. It explores the heuristic potential of this notion to identify other frameworks of thought for architectural design and the transformation of our living environment, thus investigating other epistemological horizons. Here, the etymology of the word resource helps to give meaning to this research. The word resource is an old French word, *ressource*, and was the nominalized feminine past participle of the old verb *resourdre*, which means "to resuscitate, to lift up, to revitalize".⁴¹ From this point of view, resource is a notion which, following the abovementioned dialectic along with the examples given, expresses the idea of a vital process; that is, the links which unite societies to their living environments, along with their perpetual renewal.
- 35 Philosopher Philippe Simay sheds essential light on this question through his analysis of reuse in construction,⁴² reminding us of a fundamental historical fact: since the advent of industry and the mass production of new and standardized materials, reuse

appears to be a “secondary practice which is always considered in relation to the majority of construction practices that it intends to improve but upon which it is contingent.” Conversely, for Philippe Simay, we should think of reuse as a ‘primary resource’. By ‘resource’ he means “a simultaneous art of doing and its purpose, characteristic of reuse, and by ‘primary’ the precedence that it should receive.” In line with the observation of Emmanuel Loiret mentioned above, this author highlights that granting reuse the status of primary resource constitutes an act of resistance with regard to dominant construction cultures. According to him, this is both breaking out of the productivist paradigm and refusing to reduce the world to a stock of material. This implies adopting a ‘consequentialist’ type of reasoning, suggests Philippe Simay, which “does not aim to state universal principles of ecological construction, nor to define the virtues that the builder must have, but rather to question the impact of each construction act on existing resources.”⁴³ This is why, “Reuse cannot be reduced to the revaluation of resources nor the optimization of production processes. Its value is not only instrumental, but ethical and political”,⁴⁴ as we have stressed above. The author adds that, if reuse “overlaps with the productive uses of architecture, it is to better be dissociated from it in order to pave the way for the renewal of contemporary construction culture.”⁴⁵

- 36 Recovering the links that connect our societies to their living environments is also the subject of Clément Gaillard’s work, who introduces the issue of climate awareness as a resource in bioclimatic architectural design.⁴⁶ Thinking of the climate as a resource requires stepping away from the conventional understanding of resource as it relates to anthropocentric needs and the use of specific technical means for its extraction. For Clément Gaillard, this awareness also amounts to discovering “a *potential* between identified needs, on the one hand, and technical means which make available the exploitation or use of a source corresponding to those needs.”⁴⁷ Hence the great diversity and richness of the debate which drives bioclimatic design in architecture today, but also in urban planning. For example, there exists a ‘right to the sun’ (which is regulated in the United States), to which we could add a ‘right to the shade’, in response to the formation of increasingly common heat islands in our cities as a result of global warming. Faced with these developments, the climate raises questions of equity in terms of the comfort of our homes with regard to their design and location. However, the author warns that the climate is not an unequivocal resource, due to our perceptions of it and the applications we associate with it. Taking this resource into account thus means “to consider a construction’s environment as a set of potentials liable to provide certain favorable contributions through the choice of appropriate techniques, rather than a neutral environment or a source of automatically unfavorable energy expenditure.”⁴⁸

- 37 Clément Gaillard in some way agrees with Philippe Simay’s point on the ideas of economist René Passet (born in 1926):⁴⁹

If we want to keep the concept of resource, we must diversify its meaning (food, habitat, substrate, etc.) and extend its boundaries to include non-humans as actors in their own right, and not as a simple flow of materials and energy.⁵⁰

- 38 Paul Landauer’s investigation of storage space also follows this approach, as he extends the boundaries of the meaning of resource and examines other aspects of relationships between society and its environment in the design of its habitat.⁵¹ Through a skillful historical review of the evolution of storage practices and the place that societies have granted them in the construction of remarkable buildings — “the monumentality of

storage"—, this author points out distinctive features and pitfalls of our society's modern economic trajectory. This trajectory is based on the reign of increasingly extensive technical infrastructure, according to which "unbundling and logistics have left their mark on all spatial planning."⁵² In the past, storage practices were a founding element of our landscapes. They represented, as John Brinckerhoff Jackson (1909-1996) wrote, "continuity, the identity of the community, links with the past and the future,"⁵³ a continuity which is lacking today, underlines Landauer, adding:

The prerogative of stock flow, as advocated by industrial society, did not only prompt new architectural forms: it also shifted the force field in which architecture evolved. This is how the value of granaries, these houses of abundance which, in traditional societies, gave rise to collective pride, faith in the future, and desire - to the point of causing wars -, and was transferred to places of housing and production.⁵⁴

- 39 Our hypermodern society is also confronted with increasing forms of accidents, as it is impacted by our expanding activities and accelerating movements, which are in opposition to the biological rhythms of living environments. Grasping the idea of accident to broaden our understanding of resource is the academic approach followed by Jean Richer, drawing on the inaugural work of Paul Virilio (1932-2018) in this field.⁵⁵ For Richer, taking into account the risk of accidents as an intangible resource makes it possible to rethink a set of situations and processes that make up our living environments. Since it is "consubstantial of architecture and urban planning", the accident leads Virilio to project himself in time and to declare "that it is no longer possible to start from the beginning and go towards the end, we must start from the end and go towards the beginning."⁵⁶ It is thus a backwards way of thinking that becomes particularly fruitful in the face of our societies' challenges with regard to the Earth and its limited natural resources. As Jean Richer explains,

between construction ethics and the emergence of environmental philosophy, the use of natural resources questions the economy of architectural projects in the age of the Anthropocene. Taking an interest in accidents as an *anti-resource* means exploring the opposite of the virtuous use of available material resources. It also means illuminating the dual material and symbolic nature of natural resources through their forcible enrollment in a fight against risks and the fear of their occurrence.⁵⁷

- 40 In architectural design, the question of risk, and possibly that of accident, is at the heart of the increase in norms, which often appear as an obstacle to experimentation, particularly in the use of bio-based materials or techniques deemed obsolete. Faced with this, Hector Docarragal Montero and Olivier Jeudy studied the capacities offered by the implementation of the LCAP and ESSOC laws in France, aimed at derogatory measures promoting an ecological approach to architectural materials.⁵⁸ Based on current experiences, these authors show the difficulties that architects face in appropriating these derogatory measures. In reality, as explained by Sébastien Eymard, Architect at the Encore Happy agency, experimentation most often requires "an innovative contractual organization and the sharing of responsibility", making it possible to avoid resorting to these derogatory measures.⁵⁹ However, as the authors conclude,

the interest shown by the State in these alternative strategies and its commitment to favor derogatory measures reveal the extent of an architectural practice that tends to become generalized [...]. New normative and derogatory approaches would have to be invented while adjusting them to the ecological requirements of the architectural project.⁶⁰

Listening to the world...

- 41 In Hartmut Rosa's work on the effects of late modernity, the German sociologist and philosopher identified the concept of 'resonance'⁶¹ in particular, based on his critical study of the logics of acceleration which today govern society's relationship to the world.⁶² If acceleration is the central problem of our time, Rosa explains, resonance may be the solution. In formulating this concept, Rosa does not, however, promote a form of deceleration or withdrawal from the world — an important point to emphasize with regard to the subject that drives this issue — but rather another relationship to the world, based on a different way of *listening* to the world. "Resonance relationships are characterized by the fact that the subject and the world we encounter are transformed alongside them, and then into them,"⁶³ Rosa explains. It is a relationship that goes beyond the idea of mere appropriation, "a relationship made in the absence of relationship."⁶⁴ To maintain this state of resonance, he suggests the idea of 'unavailability', because "to make the world unavailable" is to fundamentally recognize the limits of the economic and cultural project of modernity. These limits are found within every contribution of this dossier, each in their own way.
- 42 To conclude the three lines of reflection for thinking about architecture through resource, the concept of resonance suggested by Hartmut Rosa constitutes a rich approach for continuing our investigation. For us, this concept would appear more specifically as a means of shedding additional light on the fundamental questions asked in each section, rather than a fourth field of reflection in itself. Indeed, to think about resource in architecture through the lens of resonance would be to think of our relationship to the world — and to its resources — within the operations of transformation that would lead us there, by questioning the logics of 'availability' of the world (and its resources) specific to modernity. As Rosa writes, it is "making the world unavailable" and no longer "visible, reachable, controllable and usable",⁶⁵ the four representative moments in the process of rendering the world available in modern society. To think about resonance is "to experience things in their phenomenal diversity" and to no longer understand them "in what we have made available on a conceptual, economic or technical level", he says, relying here on the ideas of Theodor Adorno (1903-1969) and Rainer Maria Rilke (1875-1926).⁶⁶
- 43 This quest for resonance in our relationship to the world is consistent, in many ways, with the reflections of the authors in this issue, thus constituting the type of link mentioned above. Thus, anthropologist Tim Ingold urges us to reconnect with the 'materials of life', "by rethinking architecture as a morphogenetic process where know-how, strengths and materials are combined, rather than as the mind's projection of inert material."⁶⁷ Because
- the opposition between nature and culture begins in the opposition between mind and matter; that is, in our inability to recognize the creative agency of the material world and to listen to "the active path" of nature.⁶⁸
- 44 We also think of the three central values which, according to Jim Dodge, drive bioregionalism:
- the importance given to natural systems as a reference for human settlements (human agency), the trust placed in anarchy as a governance structure based on the interdependence of communities that are both independent and united; and the rediscovery of connections between the natural world and the human mind.⁶⁹

- 45 Based on these values, architecture, as a 'collective ethic', is
 a powerful engine for hardening the *in common*, a landmark creative figure, and a method for creating identity and *living together*. If it could also allow us to see, feel, and make navigable the materials and resources of a territory, then it could also undoubtedly help to generate a better understanding of cohabited environments that today should be repaired.⁷⁰
- 46 As Hartmut Rosa explains,
 upon closer inspection, we see that the institutionalized relationship between modernity and the world is marked by a cleavage with regard to nature, which manifests in the notorious hiatus between *environmental awareness* and *environmental action*, and which could well prove disastrous for modern social education on the whole. [...] The cognitive and epistemic horizon of modernity is distinguished by the fact that it denies any characteristic of resonance to non-human entities and makes a strict distinction between *animated culture* and *silent nature*.⁷¹
- 47 This is why the relationship between resonance and listening to the world are avenues for the (re)cognition of the intrinsic value of living things, a necessary condition in order to make possible the return of the '*prise écuménale*' evoked by Augustin Berque, which concretely connects our existence on Earth. Aware of the stakes and concerned with a collective ethic, architects are now taking this other path where the local and the collective are never far apart: Paul-Emmanuel Loiret, Serge Joly, Gilles Perraudin, Christophe Aubertin, Wang Shu, Kuma Kengo, Manuel Tardits, Volker Ehrlich, Édouard Vermès are among these committed designers whose experimental approach seeks to better listen to our world.

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5. Catherine et Raphaël Larrère, *Penser et agir avec la nature. Une enquête philosophique*, Paris, La découverte/Poche, 2018.
6. It should be noted here that this issue on the topic of resource is comprised of two types of articles. There are substantive/academic articles, ranging from 40,000 to 50,000 characters, in addition to shorter articles of 25,000 to 30,000 characters called "field experience/ critical reflection", which aim to demonstrate first-hand project experience or ongoing field research.
7. Mathias Rollot, « L'architecture localement bio- et géo-sourcée de Christophe Aubertin : régionaliste, biorégionaliste ? », *infra*.
8. *Ibid.*
9. Jim Dodge, cited by Doug Aberley, « Interpreting bioregionalism. A story from many voices », dans Michael Vincent McGinnis (éd.), *Bioregionalism*, London, Routledge, 1999, pp. 24-25.
10. Roberta Morelli, « Urbino, ou l'histoire des relations de coévolution entre un établissement humain et son milieu naturel », *infra*.
11. *Ibid.*
12. *Ibid.*
13. Yann Nussaume et Antoine Kilian, « » MaT (i) erre(s) » : vers une architecture ? », *infra*.
14. *Ibid.*
15. With reference to n.12 of the *Philotope* titled *MaT [i] erre [s]*, which aimed to "describe the link established in architecture between mind and matter, as well as the relationship between nature and technique, referring to the insistent idea in Nietzschean questioning on knowing which world we want to inhabit." See Chris Younès and David Marcillon, « Édito », *Le Philotope. La revue du réseau scientifique thématique PHILAU*, n° 12, *MaT [i] erre [s]*, 2016, p. 4. [en ligne] <https://drive.google.com/file/d/0BxmbOzShM5ngX19GY0RSN2MwRFk/view>
16. Paul-Emmanuel Loiret, « Penser & construire avec une ressource de nos villes : le déblai de terre, un changement de paradigme dans l'acte de bâtir. Le cas de Cycle Terre, fabrique européenne expérimentale de matériaux issus du recyclage des terres de déblais du Grand Paris », expérience de terrain/retour critique, *infra*.
17. Volker Ehrlich et Édouard Vermès, « La paille, un matériau pour transmettre », expérience de terrain/retour critique, *infra*.
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24. Augustin Berque, « Οἶκος, terre et ¥€\$: le site architectural comme ressource », *infra*.
25. These human ways of interpreting the Earth come down to four main categories of *prises écuménales*, involving both our own existence (I, I', I'', I''' ...) and predicates (P, P

, P ", P " '...') by which, from the Earth (ἐκ γαίης; outside S), we make ek-sist what is reality for us (S / P): resources, constraints, risks, pleasures. For example, when interpreting the same snow, S, it can exist as a resource (S / P) for the hotelier of the ski resort, as a constraint (S / P ') for the cow breeder who will have to stable their livestock instead of letting them graze in the pasture, as a risk (S / P ") for the motorist, or as a pleasure (S / P " ') for the skier.

26. Nora Itry, « L'arbre des rues de Mexico : une ressource au-delà de son exploitabilité », *infra*.

27. For the landscape designer Gilles Clément, it seems fair to think "that the increase in knowledge around the mechanisms of life modifies our behavior towards it, leading to less development and more tolerance, until the ultimate act of gardening comes to be: doing nothing". Cited in Catherine Larrère et Raphaël Larrère, 2015, *op. cit.*, p. 98.

28. Anaïs Guéguen Perrin, « Représentation holistique du monde dans l'habitat des Guarani au Brésil », *infra*.

29. Mathilde Teixeira Col, « Récit en mouvement : la construction d'un territoire paysan à Rio Bonito do Iguaçu au Brésil », expérience de terrain/retour critique, *infra*.

30. *Ibid.*

31. Bruno Martins Morais, *Do corpo ao pó : crônicas da territorialidade kaioiwá e guarani nas adjências da morte*, São Paulo, Editora Elefante, 2017.

32. Manuel Tardits, « Le Pavillon de la sardine. Un cas de recyclage insulaire », expérience de terrain/retour critique, *infra*.

33. Augustin Berque, *op. cit.*

34. Andrea Flores Urushima et Benoît Jacquet, « L'arbre colonne de Kitayama : comment passer d'une ressource matérielle à un paysage culturel », expérience de terrain/retour critique, *infra*.

35. *Ibid.*

36. Augustin Berque, 2014, *op. cit.*, p. 117.

37. Andrea Flores Urushima et Benoît Jacquet, *op. cit.*

38. Augustin Berque, *infra*.

39. *Ibid.*

40. Hayakawa Sayuri et Taji Takahiro, « Jeanneret's Local Patriotism in *La Construction des villes* and *Erneuerungsbewegung* in Germany », *infra*.

41. *Resourdre* comes from the latin word *resurgere*: *re* and *surgere*, « raise », « emerge ».

42. Philippe Simay, « Le réemploi comme ressource première », *infra*.

43. *Ibid.*

44. *Ibid.*

45. *Ibid.*

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51. Paul Landauer, « Le sacre du stock », *infra*.

52. *Ibid.*

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64. *Ibid.*, p. 47.

65. *Ibid.*, p. 25.

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69. Cité par Mathias Rollot, *infra*.

70. *Ibid.*

71. Hartmut Rosa, 2018, *op. cit.*, p. 424.

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