

Architecture – Technology – Relations

Aesthetics, Ethics, and the Metaphysics of Entering Alliances

Historically speaking, the transition from the *Fin de Siècle* into the Machine Age meant that in the early twentieth century the industrial revolution attained a final and decisive quality which interweaved the socio-cultural life on all levels. From this point of view, the entering of the machine into the architectural discourse seemed to be an inevitable event. The modern machine progressed into a potentially all-embracing consequence as well as into an ideal, acting to sweep away traditional notions of art, craft, design, dwelling, transportation, communication, business-making, etc. On the one hand, the machine became ubiquitous and continued to be so in the contemporary ubiquity of incorporated and interconnected digital technologies. But, on the other hand, this fact also poses the question how alliances between architecture and technology are essentially constituted. The relationship between architecture and technology is indeed nuanced within the approaches, experiences, and evolving concepts regarding the technical complex in architecture. The variety in the character of the relation does not just stem from the successive development and employment of new technical equipment but from the appeal and impact of technologies depending for example on spheres of propinquity between architect and technology. How do affections toward technology in architecture evolve and where do they lead to? What alliances occur between architecture and technology as well as between ‘archi-technology’ and environments and users?

To answer these questions a number of aspects needs to be involved. This text will cover some of these aspects on the basis of notions informed by contemporary object-oriented philosophy (OOP), as it is advocated by philosopher Graham Harman, and by including viewpoints of neighboring mindsets like Bruno Latour’s actor-network theory (ANT). Basically, these conceptual approaches hold the theoretical capacity to deal with relational systems or networks. At the same time, OOP does not miss the distinct entities which are immersed in sets of relations or evolve from such sets. These beings of all types (human, nonhuman, natural, artificial) are there-

by equally placed on the same footing and equally open for meditation and contemplation. Characteristically, OOP argues for a foundation of reality made up by an intercrossing twofold duality. The ‘customary’ duality refers to the dual structure of things. This means that the apparent or tangible presence of things is considered only as one part of reality. The other part is constituted by their hidden execution of being – by the withdrawal of the entity in its concealed efficacy. The power or effect of a thing is something different to its immediate appearance. It is the subterranean reality of the entity *itself*, a deeper hidden core that cannot be openly encountered. The significance of this claim is to grant entities at all events the status of being real, effective objects in their own right. They are inexhaustible by the relations in which they partake. This means further that relations between objects do not happen head–on, but on the account of interfaces.

The realm of technics does not appear as shapeless matter but in the form of concrete technical equipment. Particular technologies are applied to or immersed in architectural–structural systems from which they act on built and biophysical environments and on the array of entities constituting and inhabiting these environments. The phenomenological–ontological root of OOP makes it designate to frame a discussion regarding the mutual encounter of entities, their coming into relations, and their intimate effect on each other. However, as real objects are able of entering relations or interfere with each other, this length of text does not consider the deeper ‘technicality’ of relation–making to its full extent. While the intellectual approach will be laid out furthermore throughout the sections of this inquiry, there is also a historical component accompanying the text. The form of the relation between architecture and technology is not invariable. The encounter of technology in architecture is a series of vibrant events by which the perceptual and conceptual attitudes towards the technical complex in architecture changed over time.

The metaphysical principle of allure and the aesthetic of the Machine

The emphatic turn of members of the architectural avant–garde to the machine in architectural discourse and practice in the beginning of the twentieth century was born by fascination for the machine itself as well as by a new sensibility for industrial production processes and manufactured goods. Regarding the modernization process of architecture, the *Machine* is not only synonymous with potent machinery, but it can also be understood as metaphor for the growing stock of technical equipment and for industrially produced materials and objects. The initial relation between architectural design and the Machine in the early twentieth century was significantly aesthetical. It played therefore out in the realm over which architects tend to claim to possess sovereignty. Catalysts of this relation were the perception of engineered shapes as harmoniously emerging from

calculation and the dealing with natural laws,¹ and the perceptual and conceptual encounter of form in a close association with its function. Forms and qualities of the Machine were distinguishably praised due to their suppositionally relation to the utterly purposefulness of the Machine itself. In 1929, the Danish architect Knud Löneberg–Holm attempted to publish an article in the *Architectural Record* entitled “Architecture in the Industrial Age”. In this article he stated that “only purely utilitarian structures show unity of purpose, function, and form.” And further: “We enjoy form as a demonstration of function, and have extended and deepened our conception of beauty. We are sensitive to new qualities.”² While the progressive architects of that time lost the taste for the formal excess of historicist architecture—its expressions now forming a queue with so many other surface phenomena—the different qualities of machine–objects caught their eye, turning into aesthetic experience and a new sense of beauty.

1 Le Corbusier 1985:2

2 Lönesberg–Holm 2007:53

As for the metaphysical approach of Graham Harman, an aesthetic experience is the move toward a distant unitary object through some of its distinct and tangible qualities and to get a taste of its powers which consequently excite us. Harman’s intrinsic theoretical contribution is unified under the notion of *allure*. Allure is not the principle of an autonomous aesthetics, but one attempt to explain the process of aesthetic experience through a metaphysical principle. Allure “*is the paradigm shift of the senses.*”³ This shift concerns the difference between normal perception and allure. “[W] hereas normal experience deals solely with surface qualities, allure apparently brings objects directly into play by invoking them as dark agents at work beneath those qualities. [...] [I]n normal perception, these objects are bound up so directly with their carnal surfaces that we sense no distinction between the two realms.”⁴ Harman defined allure in opposition to normal perception “as a mechanism by which objects are split apart from their traits even as these traits remain inseparable from their objects.”⁵ The term ‘splitting’ might mislead because it implies separation or destruction. But it signifies that the sensual traits or notes of an object become important in their own right in uncovering the object for us in its more distant level of reality as agent at work. We do not remain emotionless in the face of things, but sometimes find (*indirectly*—as Harman and also Latour argue) access to their powers. There are various forms of allure such as: beauty, style, humor, disappointment, fetishism, etc., and I would surely include the realm of bodily activities like, for example, the experience of excitement in the use of a well working tool.

3 Harman 2005: 154

4 Harman 2005: 150

5 Harman 2005: 173

The meaning of the concept of allure refers to the condition that is crucial to Harman’s OOP: Objects *themselves* exceed any relation with other objects and are never fully exhausted by such relations. Since objects do not encounter each other directly, the interaction between objects is based on causation that is *vicarious* in its character. What happens in allure or vicarious relation is communication between “the levels of the world.”⁶ Harman argues that “allure is not a special feature of human psychology [...],

6 Harman 2005: 245

7 Harman 2005: 220

but a feature of myself.” It is therefore a firsthand experience of relations, something that Harman is willing to grant to all other entities as well, but it is equal with causation in general.⁷ What occurs in allure is for Harman conceptually comparable to Latour’s notion of *action at a distance* that refers to the problem of *communication* between objects. Since all objects are “mutually external” and “have a certain distance from one another” entities do not have direct access to each other. “But action also means nearness, since to act on something means to affect, touch, or interfere with it some way.”⁸ Latour answers to the problem of how actors communicate through the notion of *translation*. “[Things] need interfaces in order to touch, and to build an interface requires labour.”⁹ Allure breaches through the line of tactile qualities, traits, or notes and brings objects into play “that were formerly muffled, acknowledges them as forces to reckon with.” Thereby, these present (or also absent) traits become meaningful itself because they are “drawn toward the deep real object to which they seem to belong.” “Perception, intelligence, and language all serve as ways of translating objects into a sphere where objects come to be at issue for us.”¹⁰

8 Harman 2009: 34

9 Harman 2009: 35

10 Harman 2005: 245

I find this excursion vital as this inquiry is not interested in a simple presumption that relationships exist, but in how they evolve. Distinct things do not interact with each other as amalgamated lump. And the system of architecture is not automatically a technical complex, but interactions occur somehow. In this sense, the thoughts of Harman and Latour are taken into consideration. As for the case of beauty, Harman argues that a thing “is gifted with qualities of such overwhelming force that we [...] seem to see the beautiful entity lying beneath [...]”¹¹ “[B]eauty entails the splitting of objects from their qualities, with the beautiful agent seeming to be a remote power in control of its features.”¹² In reference to the Machine we can differentiate the notion of its beauty even furthermore through its *simplicity*. For Frank Lloyd Wright, the Machine was a “marvelous simplifier; the emancipator of the creative mind, and in time the regenerator of the creative conscience.”¹³ In simplicity an object is stripped of all unnecessary traits as if to call us into the realm of what the object inherently and fundamentally does. The powerful agent just exposes such bare qualitative features that seem to be necessary to establish concreteness, firmness, or purposefulness. In the early twentieth century, an aura of purity surrounded the machine and industrial produced goods. The correlation between purpose and essential form was perceived as powerful enough to exceed additional trumpery and artistic overload. Simplicity or representative authenticity owes to the requirements of the Machine while its formal coherence owes to logical constraints and the vigorous interaction of its elements. This too defined the beauty of the Machine which appealed to the architectural avant-garde of that time.

11 Harman 2005: 142

12 Harman 2005: 212

13 Wright 2007: 11

The manifesto *L'architettura futurista*, which was published in its first draft with the catalogue to the 1914 exhibition of the *Nuove Tendenze*

group and which was signed under the name of the Italian architect Antonio Sant' Elia, praised "the new beauty of cement and iron." The talk about "the superb grace of the steel beam" or "the delicacy of reinforced concrete"¹⁴ reflects a different aesthetic experience in the encounter of industrially produced architectural elements. Their bare proportional dimensions and material qualities are drawn to their distant force that is, for example, 'bearing of loads'. The modern house (which becomes synonymous with the Futurist house) must resemble mechanical simplicity, freed from decoration, application, and painting. And furthermore, the Futurist house needs to be like a "gigantic machine"¹⁵ and it has to reveal its technical characters.

14 Sant' Elia 2007: 19

15 Sant' Elia 2007: 19

The manifesto of the Futurist architecture is often granted an extraordinary place in the history of architecture due to: its radical formulation in favor for the reassessment of architectural concepts and against architectural traditions; its determination to an architectural ideal based on the Machine; and its rhetorical and conceptual absorption of technological, industrial, and scientific aspects, which finally became common positions for the progressive architectural development after the First World War. What we can argue for is that the Futurists were a translational force (though surely not the first and only one) linking the Machine and notions of the Machine to architectural discourse and practice. Having linked the Machine to the architectural realm, the Machine itself linked a range of perceptions and conceptual actions to architecture. If beauty represents one bond, it is sufficient at this point to stress two more. The first of these two bonds is the mediation of mechanical characters towards architecture through style or 'technical eclecticism', and the other bond possesses ethical dimensions. Besides their coupling with the Machine, these links do not lack relations with each other in return, but, for the sake of clarity, it is more convenient to keep them separated for this time and to focus on some of their distinct features.

Style

The first causation besides beauty (or more precisely: simplicity) concerns *style* or the creation of symbols. With the turn to new architectural agendas in the early twentieth century, the problem occurred with how to mediate the new and radical rationalist–technical characteristics of architecture on one side and its utopian nature on the other side; how to establish a relation between architecture and the people of a society when all traditional signs and ornaments are dismissed as inadequate; and when the appeal of architecture is so different that it might fail to communicate. Consequently, in order to mediate the substantially radical new conditions, the avant–garde architects of the 1920s drew on known elements coming from outside of the architectural realm.¹⁶ At the same time, these elements had to contribute to the aesthetic of the Machine. The result was a recourse to

16 Kähler 1981: 173

motives of the big passenger liners as Gert Kähler elaborated in his book *Architektur als Symbolverfall*. These ships were the prime of modern transportation at that time and represented technical sophistication on one hand and movement as “mechanical analogy”¹⁷ on the other hand. The avant-garde architects translated elements of the steamer into elements of architecture in order to establish means of communication through stylistic restatement.

17 Kähler 1981: 52

The simple round form of a porthole of a ship is designed to withstand the impact forces of the water and torsional forces transferred through the hull of the ship. It therefore contributes to the ‘shipness’. Becoming an architectural element, the porthole does not necessarily contribute to the ‘architecture-ness’ even though we enjoy tight-shutting but transparent openings in buildings. As symbolic element, it splits free from the architectural agent to become somewhat an object in its own right—contributing to the stylistic unity of the building. In the philosophical tradition, to which also Harman refers, style is not perceived as something momentarily pieced together by qualities,¹⁸ but an actual “animating impulse”¹⁹ or force that seizes the “multitude of distinct [...] qualities”²⁰ of a thing. Therefore, styles are recognizable even after moderate modulations in the properties of a thing. Styles are graspable²¹ and can provoke responses of people. But as with all the variants of allure, it is, firstly, not assured that such interaction occurs or, secondly, that such interaction is particularly efficacious or adequate. Interaction is not something that occurs between all entities and at all times, and “some cases of allure may be more potent than others.”²² This also gives food for thought to the effect that modern architecture was more than once accused to fail to communicate with the common man.

18 Harman 2005: 58

19 Harman 2005: 56

20 Harman 2005: 57

21 Harman 2005: 56

22 Harman 2005: 179

There are other examples of conspicuous stylistic displacement of elements of machinery towards architecture. It reoccurred for example in the 1980s and 1990s on a sideline of architectural progress. Architects like Neil Denari or Wes Jones began to reintroduce the machine or the apparatus to architecture as a source of inspiration, but under the premise of experience rather than of a technological utilitarian thinking that believes in precision, the optimum of use and standardization. This intention conceptually traced back to the basic dealings with the machine; to an early relation with technology born in experiment and invention. To invent was an activity that altered human experience and which did not exclude the creation of odd apparatuses and technical curiosities. Opposite these apparatuses, which were “*experimental* in nature,” “a calculating, optimizing, economizing intention has taken over” by which these “original technologies” are only perceivable as inefficient or failures instead as “wonderful successes [of] human endeavors.”²³ “If these inventive experimental machines are used as source of inspiration in the creation of contemporary architecture, so as to reground it in experience, it may thereby be possible to use the machine while at the same time rejecting the economic determinism and technological optimization that has reduced architecture to [...] a woeful state

23 McCarter 1987: 11

of dependency. The machine [...] can be assessed using values other than those associated with technological thinking.”²⁴ Consequently, the machine had to present itself as ‘useless’ in the definition of technological thinking, but needed to remain open to experiment and experience. The result was the displacement of elements of machinery towards architecture through another stylistic alienation. These elements were not commandeered to contribute to a brutal effectiveness, a work in terms of an absolute utilitarian ‘in–order–to ...,’ but the elements were arranged to resemble or give an impression of machine–style, an impression that lies beyond the ‘pure utilitarian work’ of the machine or architecture itself (fig. 1).

Ethics

The other causation linking architecture and the Machine concerns the realm of *ethics*. Architectural history perceives the avant–garde of the 1920s as a movement that participated at the task to create a society—a society that has overcome class antagonisms and that lives in a harmonic state of equity which evolved from the rationality of the machine. At least, architecture should create the basis for such a community; it should develop forms for expressing such goals.²⁵ Thereby, technical–social ideas in the characteristics of Henry Ford and the insights of Frederick Taylor regarding effects of rationalization were not only adopted, but elevated in ethical and moral terms.²⁶ As architectural historian Kurt Junghanns once explained, a large part of the intelligentsia and a good deal of elitist thinking expected a solution to all problems of capitalistic society and the harmonizing of all interests through ‘technocracy’; through rationalistic thinking, organizing, and directing assisted by technology. The belief of architects in gaining social solutions to the immediate problem of housing through rationalization and industrialization—and therefore through technical means—traced back to similar hopes. The ‘machine’ was perceived as societal power—almost detached from human volition—which accomplishes the overcoming of social and political phenomena. Due to these imaginations, the tendency for clear geometry of ‘Neues Bauen’ was also perceived as a consequence of the machine.²⁷ Actually, the true way in which socio–political issues were tackled, and which was used in order to argue for a new moral eligibility of architecture, was *type*, as Kähler further noted. The steering toward industry and rationalization led to a possible standardization and reproduction of types and to the development of an aesthetic that captured the hope of freeing life by the means of the machine.²⁸ The categories included, for example, building types for the minimum subsistence level, worker’s settlements and clubs, collective housing, etc.

However, it was exactly this devotion to “stabilised types” that caused Reyner Banham to claim that the acquaintance of theorists and designers of the First Machine Age with technology was not very close. “In opting for stabilised types or norms, architects opted for the pauses when the normal

24 McCarter 1987: 11

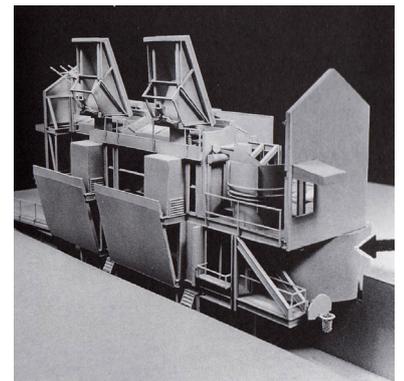


Fig. 1 “Architecture is expressive excess seen against a context of use. [...] The human concerns implicated in the architectural equation are most truthfully and expressively figured by the structure of mechanality.”

25 Kähler 1981:99

26 Kähler 1981:111

27 Junghanns 1964: 195

28 Kähler 1981: 76

29 Banham 2002:329

processes of technology were interrupted, those processes of change and renovation that, as far as we can see, can only be halted by abandoning technology as we know it today, and bringing both research and mass-production to a stop.”²⁹ A whole technical complex, rendered under the notion of the Machine, modified the perception and the conception of architecture. But this does not mean that architecture does not (willingly or unwillingly) withholds its part in a potentially ever advancing constitution of ‘archi-techno-entities’. Banham recognized in his own words that technological events were accelerating. He used this inside to warn that if the architect is not committed to partake in those events or to keep up, even under the condition of “discarding his whole cultural load, including the professional garments by which he is recognised as an architect,” he may have to notice that “technological culture has decided to go without him” with fatal consequences for architecture itself.³⁰

30 Banham 2002:330

Here, in reaction to Banham, three quickly formulated points will lead to the last part of this text.

1. Banham’s statement stresses in part a self-referential architectural discussion constituted by the opposition of the subjectivist design layer and the objectivistic technical or scientific layer — and their respective emphasis, which is, at this point, of no concern to us.
2. Architecture as designed object is always inherently and sincerely technical and therefore principally open to technological advances and change.
3. It is not only point two that prompts us to consider architecture in the light of technical developments, but its “machinic role”³¹ in the change of modalities of our practices and patterns of action. “Technology is everywhere,”³² but the question concerning technology “is really a question of translation;”³³ of linking one thing with another by the work of mediation whereby actors adjust themselves to local conditions.

31 Kwinter 2001: 12

32 Latour 2002: 248

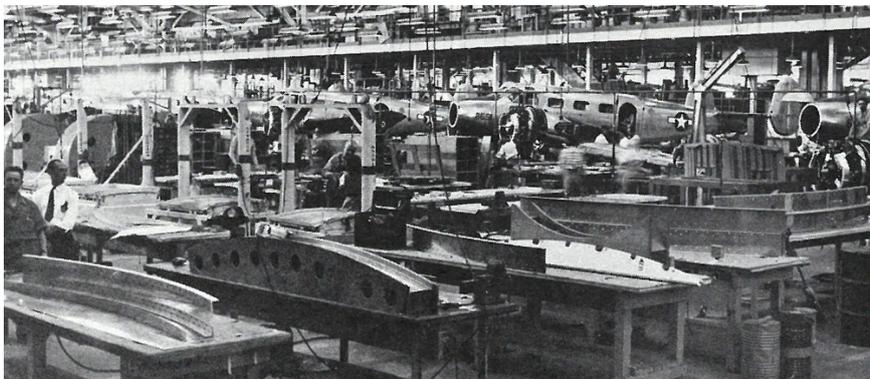
33 Harman 2005: 247

34 Fuller 2010: 63

Technology opens up over and again all kinds of new ventures in architecture. This sentence is paraphrasing Buckminster Fuller’s account of the technical capabilities of tin in the industry³⁴ or, as he called it, in the “industrial equation.” The industrial equation indicates for Fuller a comprehensive industrial *network* that represents an “integration of all the knowledge of all human beings, as gained from the plurality of experiences, and as relayingly communicated by one man to another.” It employs all resources “wherever they may be” and finds “the various excellences of unique behaviors of respective elemental resources.”³⁵ For Martin Heidegger, this would have been thinking *par excellence* under the banner of the *Ge-stell* that renders everything into bare technological resources. But for Fuller, *equation* was an integrative force that can ensure *balance* for example over the use of resources through advantages gained from performance. In 1927, Fuller decided for him to probe how much an individual might be able to achieve when entering the contexture of industrial equa-

35 Fuller 2010: 61

tion while keeping in mind the human wellbeing, which was, for Fuller, possible via the control of favorable environmental conditions. Fuller prioritized therefore the problem of shelter and building design, which he perceived as “to be the last primary area of man’s activity yet to come importantly under the effect of the industrial equation.”³⁶ Fuller regarded the aircraft industry as the “total industrial equation” with “superior degrees of capability”³⁷ and therefore equally suitable for the production of technologically advanced and lightweight housing. At the end of the Second World War, Fullers ideas culminated in the prototypes of the *Wichita House* (fig. 2), which were fabricated at *Beech Aircraft*, and that at the same time terminated nearly twenty years of conceptual work for the *Dymaxion House* dwelling machine for good.



Fuller linked the technological stock of the aircraft industry—like bended aluminum—sheets, formed metal ribs or plexiglass—to the fabrication of housing. There is something inherently moral in Fuller’s work in association with the industrial equation (and it concerns not just the situation that he was about to become engaged in the shift of technical abilities from war to post-war production). In Fuller’s sense, the employment of technology was aimed towards the establishing of resource-efficient environmental control for the benefit of humankind, which begins on the basis of the ‘simple’ house that becomes displaced into the industrial equation. How can we approach the notion of moral in this context? Latour argued that “technologies and moralities happen to be indissolubly mingled.”³⁸ To say ‘a thing fulfills a function’ does not do justice to the variety of possibilities that may occur by the inclusion of a thing in a heterogeneous network. The function of the aircraft industry is suddenly not just to produce airplanes, but it becomes also possible to produce houses and maybe other equipment as well (fig. 3). What actors, devices, and objects exactly do, “what they suggest, no one knows,” but they offer a range of possibilities and obstacles. That is why Latour perceives them as *mediators* and not as *intermediaries* simply fulfilling a function.³⁹ *Detour* is the mode of technologies because there is no straight-forward functionalism, but technologies displace, translate, modify, or inflect intentions, and they associate human and nonhuman actors. “The technological detour [...] mingles beings into heterogeneous existence.” And Latour is willing to grant morality the “same ontological

36 Fuller 2010: 57

37 Fuller 2010: 83

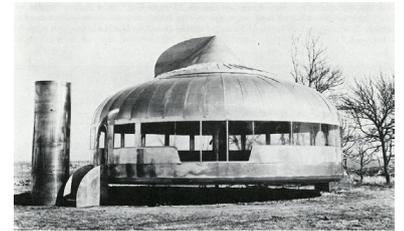


Fig. 2 “Finally assembly of Dwelling Machine completed [...]”

Fig. 3 “View on main assembly floor of Beech Aircraft, showing the production line of Beech planes (far side), parallel to the production line of Dymaxion Dwelling Machine parts (left foreground). (1945)”

38 Latour 2002: 248

39 Latour 2002: 252

40 Latour 2002: 254

41 Latour 2002: 255

42 Latour 2002: 258

dignity given to technology.” “Morality [...] is a heterogeneous institution constituted from a multiplicity of events, which depends, at the same time, on all modes of existence—and in part [...] on the arrangement of technical apparatuses [...].”⁴⁰ “[M]orality explores the same assemblages of beings whose fate has become mingled by the detour of technology [...].”⁴¹ When Latour grants morality ontological dignity in the same way as technology, and does not just relate them, then for the reason because both do work of mediation: “technology by dislocating the relations between entities in such a way that they open towards a series of new linkages [...]; morality, by constantly interrogating aggregates [which requires] the ceaseless circuit of concern, the penetrating return of scruple, the anxious reopening of the tombs in which automatism have been heaped, the redeployment of means into partial aims and aims into partial ends.”⁴²

Actors or events can mingle substances into heterogeneous networks that seemed before nonrelated at all. Such an event was, for example, the 2009 *Smart Material House* competition for the *International Building Exhibition IBA Hamburg*. On this occasion, microorganisms—algae—were assigned to be translated into a biotechnological actor in connection with architecture. This was done in form of the project *The Smart Treefrog* of the Austrian architecture group *SPLITTERWERK*. At the time the project was initiated, algae were not somewhere in the background, but already on display and taken as a full blown entity in realms like cosmetics, food industries, and energy production. The metabolic performance of algae was simultaneously identified for example by its ability to fix CO₂ or to grow into biomass usable for energy production. The folding of algae into architectural elements, so that it can play out its performances, however required new scientific effort and work that interconnected at the same time a whole range of actors. The challenge of the untested accompanied the project as Mark Blaschitz from *SPLITTERWERK* indicated in an interview for this inquiry. It was also the excitement of the new that prompted *SPLITTERWERK* in the discussion with the engineers of *Arup* (who were asked already in the beginning to join the project, to introduce ideas for an appealing technology, and who finally ensured the interest for a project incorporating algae–biotechnology) to organize algae into a photobioreactor façade. Consequently, the constitution of this new actor—the bioreactor façade—effectively committed institutional actors, their actions and tactics as well as substances and materials.



Fig. 4 New PBR in the form of flat panels.

An aspect of technological detour—the resolving of a technical problem—was the situation that: already existing intentions of integrating photobioreactors (PBR) into building envelopes were based on meandering tubular glass reactors, which proved to be too bulky and too costly to integrate and to maintain. The consequence was the joining of other institutions in the project network to design a new PBR in the form of flat panels and to trial it for its efficacy (fig. 4). In the end, *The Smart Treefrog* (the heterogeneous formation of architecture–entity and bioreactor–entity) associated more

than a dozen institutions. Furthermore, the winning of the competition indicated the project as powerful enough to bind the organizers of the *IBA Hamburg* and their actions in order to bind again investors and so forth. But the competition win also set a caesura. It set in motion a whole new series of untold detours of associating the architecture–entity with the bioreactor–entity, which led to the finally implemented project *BIQ–Das Algenhaus* that became the actual built contribution to the *IBA* exhibition (fig. 5). Even taking shortcuts in this report, we can follow the displacement of photobioreactor technologies (which displaced again the alga into a biotechnical hybrid) into the architectural realm. We can follow a prototypical realization of sustainable energy production in built environments and of short carbon cycles by which CO₂ is absorbed in urban areas—which are also responsible for its excessive production.⁴³

Through this example we can relate once more to the concept that morality is a heterogeneous affair that includes human and nonhuman actors while the role of the latter “cannot be entirely reduced to the [human] intentions behind their design and use.”⁴⁴ The inclusion of the biotechnology into the *Clever Treefrog* respective *BIQ* project was not basically a consequence of very serious moral decisions but rather of a sense for the responsibility of design and the fascination and delight in the new that is indeed likewise able to break the cycle of established automatism. Yet, there is an ethic dimension in the work of the technology itself; in its way of providing energy and its handling of carbon dioxides, it again performs a mediation of our relation to the biophysical environment. The initial sequence of identifying alga as a full–blown actor – proceeding from an entity in the background to an “organized being”⁴⁵ – was not conducted by the *Clever Treefrog/BIQ* project team itself, but was already done by a scientific–economic complex. Yet, the work of this complex—bringing the alga on display from where it might become an issue for others—gave the team already access to the alga and an idea of the possibilities regarding a biotechnical mingling. In the encounter of science with the alga the alga–object is stripped of its traits to acknowledge it as the object that works underneath—a work that also inheres moral dimensions. As Harman was cited before, perception and intelligence are ways of translating objects into a sphere where they become a matter of concern for us. This includes perception and intelligence augmented by scientific methods, which possibly mediate our shift of concerns. Metaphysically speaking, we can regard moral as a form of allure or causation. The invitation to the deeper reality of the object—the establishing of a link between actors —can appear as ethical in character and can effectively mutate actions.

Closing remarks

This text was interested in the question of how relations between architecture and technology evolve; how practices of architectural production



Fig. 5 Completed *BIQ–Das Algenhaus–The Smart Treefrog*.

43 Wurm 2013: 62

44 Verbeek 2009:91

45 Latour 1999: 122

associate the realm of architecture with the wide network of the technical complex. To generate answers to this question, the inquiry took concepts and insights into account which relate to contemporary object-oriented philosophy. Three essential modes of causal interaction were thereby brought to our attention: beauty, style, and morality. Here, these notions were perceived as being no longer under the stranglehold of critique, judgment, and convictions, but as unified under a metaphysical principle concerning the constitution of heterogeneous networks and objects. The formation of relations is a constantly occurring business, and under this conditions architecture needs to be seen as a heterogeneous entity as well. We have stated that architecture is inherently technical, independent of any degree of technicality, but, on the one hand, because its implementation binds skills and material resources and, on the other hand, in the effect that architecture has on everyday practices. But besides its intrinsically ontological status as shelter technology, architecture mingles with more remote technical complexes. The problem thereby always concerns communicative processes and the establishing of links. On the one hand, the inquiry followed the argument that relations occur through various forms of causation while it emphasized three of these causations. On the other hand, in the affair of relation-making the mediating role of actors, which effectively co-displace architecture and technology into heterogeneous systems, was elaborated.

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Recommended Citation

Grünkranz, Daniel: Architecture-Technology-Relations. Aesthetics, Ethics, and the Metaphysics of Entering Alliances. In: Wolkenkuckucksheim, Internationale Zeitschrift zur Theorie der Architektur. Vol. 19, Issue 33, 2014, [pages], cloud-cuckoo.net/fileadmin/issues_en/issue_33/article_gruenkranz.pdf [inquiry date].