actor-network theory
- *architectural design process*
- *photographic gun*

«Give Me a Gun and I Will Make All Buildings Move»: An ANT's View of Architecture

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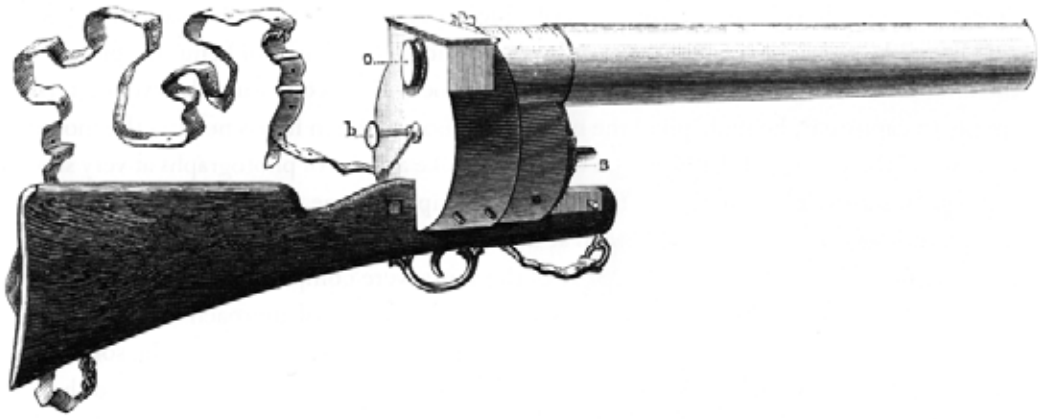
Our building problem is just the opposite of Etienne Jules Marey's famous inquiry into the physiology of movement. Through the invention of his "photographic gun" (Fig. 1) he wanted to arrest the flight of a gull so as to be able to see in a fixed format every single successive freeze-frame of a continuous flow of flight (Figs. 2, 3), the mechanism of which had eluded all observers until his invention. What we need is the reverse: the problem with buildings is that they look desperately static. It seems almost impossible to grasp them as movement, as flight, as a series of transformations. Everybody knows – and especially architects, of course – that a building is not a static object but a moving *project*, and that even once it is has been built, it ages, it is transformed by its users, modified by all of what happens inside and outside, and that it will pass or be renovated, adulterated and transformed beyond recognition. We know this, but the problem is that we have no equivalent of Marey's photographic gun: when we picture a building, it is always as a fixed, stolid structure that is there in four colors in the glossy magazines that customers flip through in architects' waiting rooms. If Marey was so frustrated

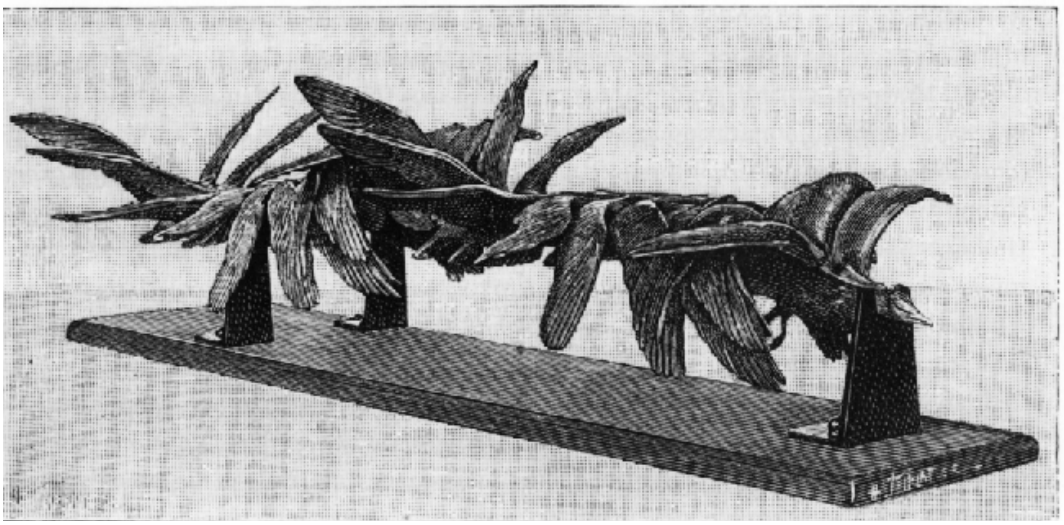


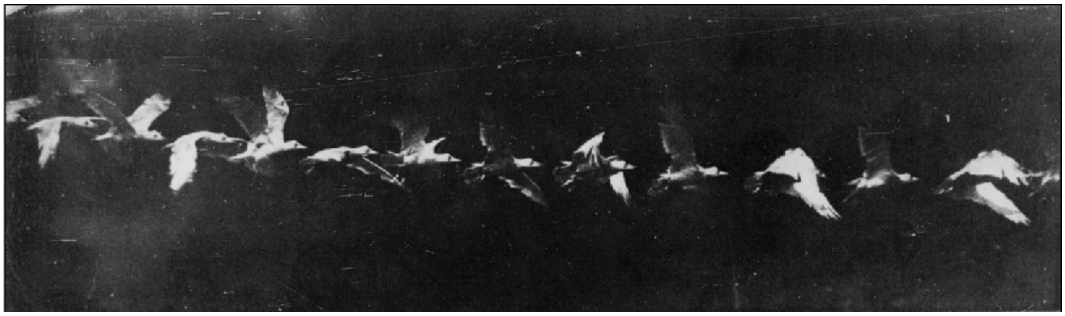
1 - Marey's photographic gun. Taken from E. J. Marey's *Movement* (1895), figure 75.

not to be able to picture in a successive series of freeze-frames the flight of a gull, how irritating it is for us not to be able to picture, as one continuous movement, the project flow that makes up a building. Marey had the visual input of his eyes and was able to establish the physiology of flight only after he invented an artificial device (the photographic gun); we too need an artificial device (a theory in this case) in order to be able to transform the static view of a building into one among many successive freeze-frames that could at last document the continuous flow that a building always is.

It is probably the beauty and powerful attraction of perspective drawing that is responsible for this strange idea that a building is a static structure. No one, of course, lives in Euclidian space; it would be impossible, and adding the "fourth dimension", as people say – that is, time – does not make this system of coordinates a better cradle for "housing," so to speak, our own complex movements. But when you draw a building in the perspective space invented in the Renaissance (and made more mobile but not radically different by computer assisted design), you begin to believe that when dealing with static objects, Euclidian space is a realist description. The static view of buildings is a professional hazard of drawing them too well.

This should not be the case, since the 3-D CAD rendering of a project is so utterly unrealistic: where do you place the angry clients and their sometimes conflicting demands? Where do you insert the legal and city planning constraints? Where do you locate the budgeting and the different budget options? Where do you put the logistics of the many successive trades? Where do you situate the subtle evaluation of skilled versus unskilled practitioners? Where do you archive the many successive models that you had to modify so as to absorb the continuous demands of so many conflicting stakeholders – users, communities of neighbors, preservationists, clients, representatives of the government and city





2 - E. J. Marey, *Le Vol des Oiseaux*, 1890

3 - E. J. Marey, *Analysis of the Flight of a Seagull*, 1887

authorities? Where do you incorporate the changing program specifics? You need only to think for one minute, before confessing that Euclidian space is the space in which buildings are *drawn* on paper but not the environment in which buildings are *built* – and even less the world in which they are *lived*. We are back to Marey's problem in reverse: everyone agrees that a dead gull cannot say very much about how it flies, and yet, before time lapse photography, the dead gull was the only gull whose flight could be studied; everyone agrees that the drawing (or the photography) of a building as an object does not say anything about the "flight" of a building as a project, and yet we always fall back on Euclidian space as the only way to "capture" what a building is – only to complain that too many dimensions are missing… To consider a building only as a static object would be like gazing endlessly at a gull, high in the sky, without being able ever to capture how it moves.

It is well known that we live in a very different world than that of Euclidian space: phenomenologists (and psychologists of the Gibsonian school) have never tired of showing that there is an immense distance in the way an embodied mind experiences its surroundings from the "objective" shape that "material" objects are said to possess. They have tried to add to the "Galilean" bodies rolling through Euclidian space, "human" bodies

ambling through a "lived" environment (Vesely, 2004; Holl, Juhani and Perez-Gomez, 2006). All this is very well, except it does nothing more than to reproduce at the level of architecture the usual split between subjective and objective dimensions that has always paralyzed architectural theory – not to mention the well known split it has introduced between the architectural and engineering professions (and not to mention the catastrophic consequences it has had on philosophy proper). What is so strange in this argument is that it takes for granted that engineering drawings on a piece of paper and, later, projective geometry offer a good description of the so-called "material" world. This is the hidden presupposition in the whole of phenomenology: we have to add human subjective intentional dimensions to a "material" world that is well described by geometric shapes and mathematical calculations.

The paradoxical aspect of this division of labor envisioned by those who want to add the "lived" dimensions of human perspective to the "objective" necessities of material existence is that, in order to avoid reducing humans to things, they first had to *reduce things to drawings*. It is not only the architects, his or her clients, de Certeau's pedestrians, Benjamin's *flaneurs* that do not live in Euclidian space: it is also the buildings themselves! If there is an injustice in "materializing" human embodied experience, there is an even greater injustice in reducing matter to what can be *drawn*. Matter is not "in" Euclidian space for the excellent reason that Euclidian space is our own way of accessing objects (of knowing and manipulating them) and making them move without transformation (that is, maintaining a certain number of characteristics); it is definitely *not* the way material entities (wood, steel, space, time, paint, marble, etc.) have to transform themselves to remain extant. Descartes's *res extensa* is not a metaphysical property of the world itself, but a highly specific, historically dated and technically limited way of drawing shapes on blank paper and adding shadows to them in a highly conventionalized way. To press the (admittedly philosophical) point further, it could be said that Euclidian space is a rather subjective, human centered or at least knowledge centered way of grasping entities, which does no justice to the ways humans *and things* get by in the world. If phenomenology may be praised for resisting the temptation to reduce humans to objects, it should be firmly condemned for not resisting the much stronger and much more damning temptation to reduce materiality to objectivity.

But what is even more extraordinary is that this famous Euclidian space in which Galilean objects are supposed to roll like balls is not even a good descriptor of the act of drawing a building. The best proof of this is the necessity for an architect even at the very early moments of a project to produce multiple models – sometimes physical models – and a great many different types of drawings in order to begin to grasp what he or she has in mind and how many different stakeholders can simultaneously be taken into account. Drawing and modeling do not constitute an immediate means of translation of the internal energies and fantasies of the architect's mind's

eye, or a process of transferring ideas from a designer's mind into a physical form (Porter, 1979), from a powerful "subjective" imagination into various "material" expressions (Busch, 1991). Rather, the hundreds of models and drawings produced in design form an artistically created primal matter that stimulates the haptic imagination (Bredekamp, 2004), astonishes its creators instead of subserviently obeying them, and helps architects fix unfamiliar ideas, gain new knowledge about the building-to-come, and formulate new alternatives and "options," new unforeseen scenarios of realization. To follow the evolution of drawings in an architectural studio is like witnessing the successive exertions of a juggler who keeps adding more and more balls to his skilful acrobatic show. Every new technique of drawing and modeling serves to absorb a new difficulty and add it to the accumulation of elements necessary to entertain the possibility of building anything. It would be simply inappropriate to limit to *three dimensions* an activity that, by definition, means piling on more and more dimensions every time, so as eventually to "obtain" a plausible building, a building that stands. Every time a new constraint is to be taken into account – a zoning limit, a new fabric, a change in the financing scheme, a citizen's protest, a limit in the resistance of this or that material, a new popular fashion, a new client's concern, a new idea flowing into the studio – it is necessary to devise a new way to draw so as to capture this constraint and make it compatible with all the others.

So, during its flight, a building is never at rest and never in the shape of this Euclidian space that was supposed to be its "real material essence," to which one could then add its "symbolic," "human," "subjective" or "iconic" dimension. Very often models and drawings and the building stand side by side, and are amended and improved simultaneously. Under the pressure of construction, and in front of the eyes of astonished workers and engineers, architects constantly move back and forth between the building-in-construction and its numerous models and drawings, comparing, correcting and updating them. Architectural drawings, transformed into engineering blueprints and from there into the many pieces of paper used by the workers on site (glued to the walls, folded into attaché cases, smeared with coffee and paint) are still undergoing a bewildering number of transformations, none of them respecting the limits of what is described in only "three" dimensions… When a worker signs a drawing to prove that he or she has understood the workflow, is this in length, in height or in depth? When quasi-legal standards are added to the tolerance margins, which Euclidian dimension is this? The flow of transformations does not stop there, since once the building has been built, another problem of description arises: the building is now opaque to the eyes of those who are supposed to serve and maintain it. Here again you need completely new types of diagrams, new flow charts, new series of boards and labels, so as to archive and remember which part is where and how to access it in case of accident or the need for repair. So, at no time in the long succession of transformations through the

cascade of many writing devices that accompany it during its flight, has a building ever been in Euclidian space. And yet we keep thinking of it as if its essence was that of a white cube translated without transformation through the *res extensa.*

What could possibly be the advantages of abandoning the static view of buildings in order to capture them (through a theoretical equivalent of Marey's photographic gun) as a flow of transformations? One advantage would of course be that the divide between the "subjective" and "objective" dimensions could be abandoned.

The other would be that justice could at last be paid to the many material dimensions of things (without limiting them in advance to the epistemological straight jacket of 3-D spatial manipulations): matter is much too multidimensional, much too active, complex, surprising, counter-intuitive to be simply what is represented in the ghost-like rendering of CAD screen shots (Yaneva, 2008). Architectural design embraces a complex conglomerate of many surprising agencies that are rarely taken into account by architectural theory. As William James said, we material entities live in a "pluriverse," not in a universe. Such accounts of design would reveal to what extent architects are attached to non-humans such as physical models, foam and cutters (Yaneva, 2005), renderings and computers (Houdart, 2006). They can hardy conceive a building without being assisted and amplified by the motor potential of many thinking, drawing or foam cutting, hands. And that is what makes them so materially interesting. Thus, the smallest inquiry into architectural anthropology, the tiniest experiment with materials and shapes shows to what extent an architect has to be equipped with diverse tools – aids of imagination and instruments of thinking tied to the body – in order to carry out the simplest procedure of visualizing a new building.

Another advantage would be that at last, humans' many various demands could be fit into the *same optical space* as the building they are so interested in. It is paradoxical to say that a building is always a "thing" that is, etymologically, a contested gathering of many conflicting demands and yet, having said that, to be utterly unable to *draw* those conflicting claims in the same space as *what* they are conflicting about. Everyone knows that a building is a contested territory and that it cannot be reduced to what is and what it means, as architectural theory has traditionally done (Bonta, 1979 ; Jencks, Baird, 1969 ; Venturi, Scott-Brown, 2004). Only by enlisting the movements of a building and accounting carefully for its "tribulations" would one be able to state its existence: it would be equal to the building's extensive list of controversies and performances over time, i.e. it would be equal to what it does, to the way it resists attempts at transformation, allows certain visitors' actions and impedes others, bugs observers, challenges city authorities, and mobilizes different communities of actors. And yet we either see the uncontested static object standing "out there," ready to be reinterpreted, or we hear about the conflicting human purposes, but are never able to picture

the two together! Almost four centuries after perspective drawings and more than two centuries after the invention of projective geometry (by Gaspard Monge, a compatriot of Marey from the little Burgundian city of Beaune!), there is still no convincing way to draw the controversial space that a building almost always is. It is hard to believe that the powerful visualizing tools we now possess are still unable to do more than Leonardo, Dürer or Piero (Latour, 2008). We should finally be able to picture a building as a *navigation* through a controversial datascape: as an animated series of projects, successful and failing, as a changing and criss-crossing trajectory of unstable definitions and expertises, of recalcitrant materials and building technologies, of flip-flopping users' concerns and communities' appraisals. That is, we should finally be able to picture a building as a moving modulator regulating different intensities of engagement, redirecting users' attention, mixing and putting people together, *concentrating* flows of actors and *distributing* them so as *to compose* a productive force in time-space. Rather than peacefully occupying a distinct analogical space, a building-on-the-move leaves behind the spaces labeled and conceptualized as enclosed, to navigate easily in open circuits. That is why as a gull-in-a-flight in a complex and multiverse argumentative space, a building appears to be composed of apertures and closures enabling, impeding and even changing the speed of the free-floating actors, data and resources, links and opinions, which are all in orbit, in a network, and never *within* static enclosures (see the project MACOSPOL, www.macospol.eu and www.designinaction.com).
But one of the other advantages of taking a gull-in-flight view of buildings would be that context could be done away with. «Context stinks» as Koolhaas so famously said. But it stinks only because it stays in place too long and ends up rotting. Context would not stink so much if we could see that it too moves along and flows just as buildings do. What is a context in flight? It is made of the many dimensions that impinge at every stage on the development of a project: "context" is this little word that sums up all the various elements that have been bombarding the project from the beginning: fashions spread by critiques in architectural magazines, clichés that are burned into the minds of some clients, customs entrenched into zoning laws, types that have been taught in art and design schools by professors, visual habits that make neighbors rise against new visual habits in formation, etc. And of course, every new project modifies all the elements that try to contextualize it, and provokes contextual mutations, just like a Takamatsu machine (Guattari, 1994). In this sense, a building project resembles much more a complex ecology than it does a static object in Euclidian space. As many architects and architectural theorists have shown, biology offers much better metaphors for speaking about buildings (Picon, Ponte, 2003).
As long as we have not found a way to do for buildings the reverse of what Marey managed to do for the flights of birds and the gaits of horses, architectural theory will be a rather parasitical endeavor that adds historical, philosophical, stylistic and semiotic "dimensions" to a conception

of buildings that has not moved an inch (King, 1980; Leach, 1997; Borden, Rendell, 2000). That is, instead of analyzing the impact of Surrealism on the thinking and design philosophy of Rem Koolhaas, we should rather attempt to grasp the erratic behavior of the foam matter in the model-making venture in his office; instead of referring to the symbolism implicit in the architecture of the Richards lab in Pennsylvania as a scientific building, we should follow the painstaking ways its users reacted to and misused the building after the fact of its construction, and thus engaged in thorny negotiations with its architect Louis Kahn, with glass and daylight; instead of explaining the assembly building in Chandigarh with economic constraints or with the trivial conceptual repertoire of Le Corbusier's modernist style and his unique non-European experience in master planning, we should better witness the multifarious manifestations of recalcitrance of this building, resisting breezes, intense sunlight and the microclimate of the Himalayas... Only by generating *earthly* accounts of buildings and design processes, tracing pluralities of concrete entities in the specific spaces and times of their co-existence, instead of referring to abstract theoretical frameworks outside architecture, will architectural theory become a relevant field for architects, for end users, for promoters and for builders. That is, a new task for architectural theory is coming to the fore: to find the equivalent of Marey's photographic gun and tackle the admittedly daunting task of inventing a visual vocabulary that will finally do justice to the "thingly" nature of buildings, by contrast to their tired old "objective" nature.

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