



Site works of the media centre of La Plaine Images in Tourcoing (France), 2008. Designed by Pierre Bernard and Didier Debarge, the project occupies former industrial buildings.

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Pierre Bernard is a practising architect based in Amiens. With over 20 years of experience in the field, he has built public amenities, overseen urban projects, and collaborated with artists. Since 2006, he has taught at the École Polytechnique de Mons (Belgium)

Abandoned by the social sciences and largely ignored in critical treatises, the building site has the potential to nourish speculative thought on architecture. This text addresses students and young architects who are often at a loss to reconcile theory in the academy with practice in the field and who seek the tools and methods for understanding how to engage in the total act of building.

## Reflections on the Construction Site

Pierre Bernard

Of the various aspects of the architect's profession, the construction site is the one least discussed, including in architecture schools. And yet, this aspect is a constant. All acquired knowledge, including technical knowledge, stops at the construction site, in the sense that a body of knowledge, or even the direct experience of working on a project cannot really prepare an architect for the construction site.

This is due to the fact that it is difficult to convey the reality of the relations between the actors of the construction site, not to mention those forged between the architect and the latter. The analysis presented below is based on 20 years' practise. I first began to formulate these ideas while at the Lille School of Architecture with Paul Bossard and the Grenoble School of Architecture with Sergio Ferro.

The purpose of this analysis is not to make up for a shortcoming in curricula or to produce a theory, rather to set a practical framework. A practical framework because we are workers of the mind (we think conceptually) in direct contact with action; it is therefore necessary to activate a critical function. The architect learns to make projects, and what is a project if not a projection into future ways of living and building? The construction site is what gathers together the conditions of creation by participating, in the broad sense, in the history of production techniques and methods.

Let me first specify what I mean by construction site. Indeed, the meaning that I wish to convey is only partially expressed by the English term, as is

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also true of the German *Baustelle*, whereas the French *chantier* covers three interrelated dimensions: activity, time and place. Together, they form a block. Furthermore, this block is opaque. Whoever approaches a construction site can feel this: the spectacle it presents is indecipherable, its movements and actions obey no apparent logic. To penetrate this opacity one must therefore take in the three dimensions at once, to provide some keys that can define a posture. This is the practical perspective mentioned above.

### Activity/Separation

Right away, and almost abruptly, the activity of the site is marked by the separation, one could even say by the division or the fragmentation of tasks. A construction site is a multitude of limited tasks, reduced to operations whose medium- and long-term purpose are not fully known to the operator, that is to say the worker. The worker understands the immediate and expected effectiveness of his contribution, but usually does not know how it will be finished off by other operators, how his work will connect to other operations, and even less what contribution his work will make to the completed construction.

This is the critical point about construction site activity. Often, a worker is on the site sporadically: teams are formed and broken up on the spot to deal with whatever task is most urgent. Barely 15 per cent of workers see the final building. Furthermore, not all workers have access to the same information or have to meet the same standards of technical efficiency. Nor do they give the same "finish" to their work.

The separation that characterises site activity is not inherent to the act of construction. It is historic and has a reason. Its origin lies in the Renaissance and is contemporary with the emergence of the modern architect, who both inaugurates and embodies a new distribution of power and an efficient form of separation between knowing and doing. Of course, I am not suggesting that this separation did not exist before then, rather it is the new efficiency it gains at this time that is remarkable. Let us simply recall the influence and power of corporations in the Medieval social body and the construction sites of cathedrals where know-how did not dissociate knowing and doing.

What is important to keep in mind here is that this trend initiated our modern era and has since continued to diversify the separation between knowing and doing — between professions and within them. This dissociation has become increasingly embedded in practice as techniques have progressed and the law of capital has steadily gained in influence. Putting it simply, this evolution is linear up to the second Industrial Revolution in the early twentieth century, when a certain form of industrial capitalism peaked. Then there occurred what may be considered a hiatus: building activity was never industrialised. And this was despite being quite favourably predisposed

Refurbishment by Pierre Bernard of the Collège Paumier in Montdidier (France), 2002.



to being so: deskilling was advanced and increased sharply again with the generalisation of industrial work; know-how was breaking down and mechanisation was beginning with the introduction of hoisting technology. Nonetheless, there was something in the activity of the construction site that resisted and did not comply with the industrial model.

We can identify at least three factors to explain this resistance:

First, the relationship with the ground that any building has. The ground is the primary material in construction. Construction means erecting a structure on a base, whatever its form. The diversity of types of continuity and discontinuity that buildings establish with the ground is a crucial factor, so much so that it even determines modes of dwelling and building: the ground is always different. It is a variable that we assimilate in the design and construction of a building. While this variable can be integrated on the scale of the product, the same isn't true at the scale of production (not of *a* building, but of *the* building). This means that the building as a production contains a systematically random variable, that is to say a variable that cannot be modelled, and more precisely that cannot be rationalised, and yet it is constitutive of every building. The ground of each building cannot be rationalised in terms of production.

Second: there is no distinction between the place of production and the product. The building is the place, the condition in the broad sense, and sometimes even the means of production, while at the same time the product. This means that, unlike industry, it is not the product that circulates through the production process and from there into the consumer supply chain, but the other way around. It is the (fragmented) process that circulates materially in the product. And when we consider the efforts that industry makes to define the process, we can understand the importance of this factor.

Third: there is no objectification of the production process. In a factory, there is always a production line or a physical system that predetermines the sequence of tasks. This physical predetermination at the same time limits the scope of the task and assigns it a place within a coherent and rationalised continuum that is predicated on the deskilling, interchangeability and mobility of the producer in the most Taylorised versions. However, on the construction site, there is no objective system organising the work before it begins. This is of course relates to the two previous points (the relationship with the ground and the lack of distinction between the place of production and the product), although these two factors might perhaps not have been sufficient in themselves to radically reject the idea (which is still doing the rounds) that construction is becoming industrialised.

Let us close this chapter with two remarks.

The introduction of more and more finished and semi-finished products in construction is paradoxically further accelerating specialisation. This is leading to the deskilling of the workforce, with less shaping taking place on site and skilled workers being replaced by installers. But this still fails to further the rationalisation of building activity.

Symbolically, the crane is a machine that dominates site activity: it is in a position of supervision, able to sweep over the entire site unimpeded by the obstacles on the ground, it extracts (abstracts) the soil, etc.. Very often construction companies start by inserting the crane and work out the site organisation from there.

But this mechanical device does not rationalise and does not objectify the site. Conversely, it is always the crane operator's subjective analysis, which requires skill and know-how, that regulates the traffic of cinder blocks, beams, concrete, etc. through the air. Moreover, the activity of the crane cannot be programmed other than in terms of the relationship amongst the workers on site, which ranges from amicable negotiation to power struggles.



Left: Refurbishment by Pierre Bernard of the Collège Pymmentier in Montdidier (France), 2002.

Right: Site works of the media centre of La Plaine Images in Toucoing (France), 2008.

## Activity/Manufacture

Everything mentioned so far also likens the site to another form of production, that of the manufacturing plant; the manufacturing plant as a form of production in the capitalist mode of production.

As paradoxical as it may seem to us today, as we believe ourselves to be moving beyond the industrial age, construction site work follows a manufacturing model, whereas this model in theory predates the industrial model in the history of labour. Construction site work in fact always requires the worker's physical effort, dexterity, sometimes skill and often strength. Between one and a half to two times the weight of a building is carried on a worker's back, even though hoists are the most mechanised aspect of the site.

The worker's whole body is physically involved, not just his hands. Moreover, this body is in a deskilled "attitude". This is no longer the physical attitude where hand, matter and mind are joined through the third party of the tool (as intercessor, mediator, and organic extension) that the skilled craftsman practically worshipped.

One need only look at the standardisation of toolboxes on a construction site to gauge how difficult it is to spot signs of trades, that is to say broad and homogenous technical fields that are differentiated, and to gauge how work rituals, and consequently physical rituals, are being eroded or, more precisely, repressed through deskilling. A skilled worker who still masters knowledge related to doing doesn't *use* a toolbox but *practises* his craft with his toolbox. And it is by practising with it that he becomes a carpenter or another type of craftsman, not by using it. The toolbox is a reasoned collection of tools selected to perform a coherent and specific action related to a family of materials, and which helps to constitute the worker as a qualified worker, meaning that he has a place in the social body.

I remember seeing carpenters with their toolboxes organise a place where they grouped together and sat down to eat: they created a genuine symbolic territory, ephemeral but clearly marked, of a group within the larger construction site group.

The diminished value of the toolbox is just one example, however, it reminds us that a very complex chain linking technical object, tool, gesture, an encompassing each individual body as well as the collective body.

To round off this analysis of the construction site as a manufacturing site, we must briefly refer to that other notion specific to manufacturing operations: the collective worker.

What is the collective worker? It is the combination of the many detail workers who are brought together under the supervision of a master.<sup>1</sup> While this notion of *master* is not directly transferrable to a construction site, the collective worker remains the operational principle of construction site activity.

1. See Karl Marx, *Capital* (1867), London, 1886, vol. I, chapter 14, section 2.

This principle is related to subjective factors: the organisational core is formed by workers gathered together, to the exclusion of any objective process.

This concise overview of construction site activity underscores the compartmentalised, unskilled nature of the labour over which the worker has no control; the latter is at risk of disindividuation and has no access to machinery to get organised. It remains to be seen how the collective worker manages to be productive in a context that seems to be entirely adverse to it. One could imagine some kind of agreement or self-management principle that would allocate a place and a role to each worker. However, this would imply a minimum understanding of means and ends, which is not the case.

### Activity/Project

The architect's and the project's role is to emit a totalising image of this fragmented social body: this image (the project) is the reason for being together and the architect subjectively coordinates the scattered energies of all its participants. The project takes the place of an objectification of the production process, but does not replace it; it is an image. It endows the manufacturing operation of the construction site with a particular character that differentiates it from the classical model: it is heteronomous, that is to say, governed by a determination that is foreign to it.

Let us note that there is always some degree of latent discrepancy between the totalising image that the project emits and the reality that each worker knows: the status of the worker on the construction site is not the same as in his profession, or even in his company.

But at the same time that the project unites, it separates, because it perpetuates the separation of work and a fragmented production process.

First, the project is done off site and design stops strictly before construction begins. This is clearly laid down by numerous engineering laws that all reiterate this point. The separation of knowing and doing is therefore clearly reinforced with each project. I will return to the shortcomings of this system of strict separation in engineering laws.

Then comes the level of information that is available to the worker: information comes from the top down, growing poorer and shrinking on the way. The message loses its general meaning and deteriorates progressively until it reaches the lowest level of production. The possibility of having an overall understanding of the project is inversely proportional to the physical involvement of the person actually doing the building work. The project is not done for the producer but for a "white collar" hierarchy or for bosses who will pass on information in the form of simple orders.

Moreover, a project is written as much as it is designed, yielding a text of roughly four to five hundred pages. And yet, the project cannot be recounted as a story, but must be described by setting targets for each work package. One

might think that this description's breakdown corresponds to that of the work, but in fact there is no correlation: putting it simply, the analytical logic used to differentiate tasks is techno-economic and not operational. For instance, there is no link between the chronology of the tasks on the site and the sequencing of items in the technical specifications. And a given job can be broken down into several chapters that are separated from each other. In any case, these documents are only ever used on a construction site to recall what has to be delivered, not to understand a work.

In relation to the construction site, the project's function is therefore to come to grips with this separation so that the social body acquires the minimum cohesion to operate, all the while ratifying the system of separation or even exclusion (of knowing and doing, of knowing in doing, etc.).

I have described a relationship between knowing and doing in which I highlighted the compartmentalisation of doing. But in this relationship, knowing is also subject to increasingly pronounced fragmentation. The architect is no longer the sole repository of science: he is teamed with engineers who are monitored by inspectors and safety coordinators. The clients also sometimes add their own technical experts. On the construction site, the same situation applies: the whole family of specialists is again convened with the highly significant arrival of the project coordinator, known in France as the "OPC".<sup>2</sup> This position was created recently to provide the architect assistance with the construction phase of the project. The OPC's role is to schedule, pilot and coordinate work on the construction site. Of course he can only exercise this role within the parameters set by the architect's project, on the basis of which he extracts and interprets the organisational principles of the work to be done. So in a certain way the OPC's intervention makes this function of the project official. But we must bear in mind that this organisational function of production is never explicit in the project, which means that the OPC decodes the underlying organisation and reads between the lines of the project to find what within it regulates production.

By the same token, the architect is freed from this responsibility and the authority that goes with it in the production process by the very fact that it is channelled through another person. However, most OPC interventions turn out to be failures, especially when they apply ersatz and rational models of labour organisation that are incompatible with the workforce.

The client then has two options: go through a general contractor that also covers the OPC function and thereby reduces the mosaic of producers to a single contact, or ask the architect to take over this role, by subcontracting of course. This kind of reconfiguration of participants' respective statuses, which is erratic to say the least, is symptomatic of the contradictions between the pursuit of efficiency in production and production realities. But for the architect who seeks to maintain his position as a producer and to work

2. An acronym for *Ordonnancement, pilotage et coordination* (scheduling, piloting and coordination). [Translator's note]

towards a transformation, this contradiction is a godsend. Why? Reframing a contradiction always has the effect of making it stand out for as long as it is not totally assimilated. There then arises the possibility of seizing hold of this contradiction in order to rationalise it or to make it resonate throughout the whole structure of relationships between the producers of the project, including the design itself, which is one of that structure's bases.

Let us remember that the trend towards specialisation among holders of (cultural, technical, normative, organisational) knowledge is once again synthesised by the architect who loses in science, but gains symbolically. This position is now challenged because unlike the construction site, each of these kinds of knowledge claims to be able to subsume the others. However, in this often inimical cohabitation, the synthesis the architect performs (with the project) still plays the role of founding an identity, even at the cost of new contradictions that beg to be rendered productive.

### Temporality/Building

Let us compare the temporalities that can be attributed to the building sector and those that are supposedly of interest in architectural production.

In the building sector, the site time lies between two "markers": the site as a permanent state of construction and abstract time. The long temporality of the building sector is that of a permanent presence (there is no construction without a construction site), over which progress has limited effect, or at least a much slower effect than in other sectors; even agriculture, for example, has transformed more radically.

The short temporality of the construction site, the temporality to which it tends without completely attaining it, is that of abstract time. This is a



The steel frame of the Collège Parmentier, refurbished by Pierre Bernard, was designed by Jean Prouvé in the mid-1960s.

time emptied of its relationship to work, through which all work can be interrupted at any moment without further consideration than that of the time reached and not of the process accomplished. It is the time that allows the interchangeability of the worker at will in the production. But this forcing of work to conform is unsuited to the site: the time it takes to start a job in the building sector is very long and the material being worked on often does not take well to interruption. Pouring concrete cannot be interrupted without destroying the work, the joints on a cinder block wall can't be smoothed or brushed once the mortar has set, etc. The list could go on.

The point to remember here is that this scheduling pressure external to the logic of the work has two consequences: a lowering of the activity's intensity and a drop in the "social" intensity of work because, to make up for the disorganisation of this shortened day, the work is sometimes squeezed into four days instead of five. This puts consumerism and leisure time almost on a par with professional activity and thus corrodes the social fabric created by work.

Between these two markers lie the overlapping times of various forms of activity: pre-technical (blocking, shoring), artisanal, manufacturing (the dominant activity as noted earlier), industrial or "post-industrial" activities that exist simultaneously to varying degrees in more or less important segments. Around the core established by manual work, there are temporalities specific to disparate forms of activity: here, persistent archaisms and hyper-rationalised space-times exist side by side.

The time of the construction site is therefore never precisely identifiable. And most importantly, the construction site is never totally of its time, it is anachronistic in its structure.

While the time of craftsmanship is the mythical time of know-how and long experience, it has no chance of making a comeback. The loss of experience and deskilling hasn't come about from a generalised fault in workers, but from the capitalist society in which we work and that we perpetuate through the mechanisms of the project. Might we therefore ask what form the experience accumulated in the course of an ordinary site lasting 15 to 20 months could take?

### Temporality/Design

The issue considered above is linked to the meaning that site time can have in architectural production. Of course, we need to adopt a prospective view now because it is clear that the time of the construction site does not exist in architectural discourse. Significantly, there is no trace of it in the history of architecture, or at best it is mentioned marginally.

Let us specify: the time of the site is not the time of the closest possible realisation of an idea. We reject such assumptions, which always cause frustration (without desire) with the imperfection of reality in comparison to

the idea. Especially since this frustration has an origin so easy to identify: the contractor who is not up to scratch, the deskilling of the workforce, etc..

Design is aimed towards the act of building, the goal is to build — more intensely still than producing such and such a programme (a theatre, a house etc.). But the most important thing is that there is no temporal linearity between design and construction. Building thus becomes the condition of design. The site is the moment of a unique experience that nourishes design. The project is the “frozen” form of designing and does not fully contain it.

The architect's effort will therefore also focus on the need to go beyond the project to continue to develop constructive thinking, within the relations of production, in the interpretation of the thing that is created, and in the exhaustion of the condition that the project constitutes.

### Recovery

There is a kind of interruption in the continuum of architectural production, or more precisely in the transition from the realm of the ideal to the physical and cultural reality of architecture. This division is even ratified by the engineering laws that organise the architect's work by phases: first there are the preliminary drawings, then comes the draft project, followed by construction and finally the handover procedure. Architectural practice therefore does not allow for a shared time between design and manufacture. Moreover, in legal terms, the project management contract is defined as “successive”, meaning that no phase can start until the previous one is completed and validated. So when the contract supervision phase begins, it means that the detailed design phase has been completed.

The division is a fact: it recalls other symbolic or actual separations in on-site activities. Indeed, this gap between design and construction is understandable when one sees it in relation to or almost as mirroring the division of tasks, the fragmentation of action, but also the fragmentation of the social body that produce the building.

It could be seen in relation to what Max Weber described in the early twentieth century as “disenchantment”, that is to say, the process by which capitalism has imposed itself in production and consumption, and in the relationship between knowledge and action. This disenchantment also affects work on the construction site, as in the deskilling and even the disindividuation discussed above. Yet the site, by presenting this specificity of a chronic anachronism, an irreducible inadaptability to any totalising rationalisation and a resistance to any fixed form of production opens up an uncertain field for enchantment, if not for re-enchantment.

So, let us recap:

Architecture is not a physical and cultural reality that begins when the workers leave, that is to say, when the construction site is no more;

The construction site is a unique place and time and by nature it feeds design: building is a necessary condition for designing;

The construction site, its time, its place and its activity open up an important area of investigation and questioning of the position of the architect in the social sphere: his (political, social, and aesthetic) position as a designer is not only shaped by what he produces, but also by how it is produced.

On a construction site, it is always a great surprise to see a work happen and there is a very special joy associated with that moment.

First, why do I say that it “happens”? Because despite having designed it, despite knowing it inside out and having constructed the scale model, we are still dealing with a reality that is not totally predictable. This intrusion into tangible reality is often a shock that forces one to take a fresh look at everything. That's why it's surprising: as works are completed, many things change. What exactly?

I have chosen to consider this question from three perspectives. There are certainly others. But let us first see what it changes on the site, then in the activity and finally in the project.

As a plot of land of given dimensions inserted into a specific context, a *site* is a sometimes fragile, tenuous network of relationships between static and dynamic elements. There are visible or invisible positions and movements that polarise and define the site. A *construction site* is where things happen through work. More specifically, it is a state of becoming. One or more places will exist as a result of construction. In a way, a construction site is a site that is discovered. New relationships emerge and take form, some are fleeting while others prefigure a new, more or less lasting state. This is the moment when the “given” of the site and its transformation overlap without being fixed. All the preliminary analyses need to be reassessed when works appear.

The site is a space to be discovered, and by being there you also generate “happenings”. There is surprise — nervousness — upon first seeing a work and the entire perception of the context changes as a result. There is a constant back-and-forth movement between what things are for themselves and what perception makes of them when it places them in a network of meanings that is in the process of taking form. I say “perception” and not “my perception” with Bergson and Merleau-Ponty in mind. The eye is not simply a recording device, but a powerful tool for seeking out things exactly where they are. This seeking is an ongoing process: it places you in the present and demands effort.

I insist on placing the work at the centre of the process to emphasise the fact that it is not only technical. The work that appears, that happens, is a presence. How many times have architects experienced that moment of illumination at the end of the structural phase of construction, when they realise that this is where design should begin again?

So let us imagine that you start to think in terms of “works”. It is not so easy to do so, because thinking in these terms is not so firmly rooted in architectural culture. Imagine also that you design the works so that from the outset they have their own existence and identity, and that you do this all through the construction process without change, remorse or effort to conceal. Now consider that the work exists so strongly that it generates a form of sociability with other works. In other words: imagine that the works were designed to be entirely themselves among other works.

“The masterful, correct and magnificent play of volumes brought together in light” is a form of sociability. But not the same sociability. When I replace volume with work, I introduce a slightly oblique or skewed way of approaching space, which of course affects the fact of dwelling and habitability, not to mention the individuation described earlier. The sociability of works reminds us that before there is space, there is spacing or the consistency of the gap.

The appearance of works also transforms the social organisation of the construction site, a dimension already emphasised above. This organisation fluctuates, decomposing and recomposing as the project progresses: the construction site is not a factory. The way it is organised constantly changes and depends on people. There is a subjective form of work where people, the workers, who are subjectively linked, shape production relations and ultimately the production process and the building that is the outcome. This subjective organisation, which in itself is a happening (in the sense that it is a meeting, under labour law) is transformed by the appearance of the works.

Thinking in terms of works means designing them in such a way that the workers who build them can invest their labour coherently. This can be an important factor in the re-enchantment of labour. It means that it is not only expected that a work will be consistent with a plan, but that it will also be invested with productive energy. These simple words “invested with productive energy” are loaded with meaning. But it requires thinking. In the moment of action. Even if it remains unpredictable.

For example, we fairly quickly break down the site into lots based on the qualification levels required for the works (on a previous construction site, three different companies worked with wood). We can then begin to imagine the autonomy and interaction of each worker and as a result the specific tasks make sense. The spirit pervading and ultimately guiding the process comes from the forces on site being able to interpret their work. This possibility of interpretation is prepared and is based on a condition that is both random and objective: the emergence of the work. Creating the conditions for interpretation means being prepared for the imprescriptible, the indescribable and the unpredictable.

When works are seen in this context, their emergence on the site is a way of influencing production relations, of changing the way labour is organised

there, of inducing critical and forward-looking attitudes in labour (which we know is becoming increasingly unskilled), of inducing an attitude towards lost expertise that is not just about nostalgia, and finally of inducing an attitude towards things by considering what unskilled labour is capable of producing.

I believe that by formalising space/work/labour relations we can view the question of deskilling differently. Yet it is not just a formal exercise. For example, if the architect has designed works in such a way that the dry liner, a former plasterer, works like a carpenter, it may influence how the carpenter who no longer works with natural wood installs panels. A number of common concerns that are often unpredictable and imprescriptible can then circulate. They do not restore expertise, but they inspire and call for skills. In this way, I hope, they might create a fertile terrain for skill development.

If we extend this principle to the building, one can imagine the mobility that this requires of my co-designers.

Let us finish up this journey through the construction site by mentioning how the gradual emergence of works transforms the project. After the site and the jobs, it is the project's turn to be transformed, provided one is paying attention. As the works are gradually completed, the project fades away.

First, simply because there is less to do: the more works are completed, the less project there is to build. When construction is finished, there is no more project at all, except for parts that were postponed. The construction site kills the project.

More importantly, the project wanes because the works replace it as reference points. As with the site, relations between things change and perception adapts. That's not all: a work can announce another or, conversely, cause the revision of part of the original design. The project is then the baggage to finish the rest of the journey. Works produce happenings that prompt improvisation as a way of designing in the present (which implies that one learns on the job every day). The Greeks had a word for it: *kairos*, conveying the idea of both the right place and fleeting time that must be seized upon to act. Finally, the project becomes an orientation table.

This is the reality of any construction site that you want to manage with your eyes open.

But the perspective for what I am saying is of course the search for design modes that bring about happenings that draw interpretation into the action.

To conclude, I would say that the work becomes a reference point and that it exhausts the project, not only because it is matter given form (or a set of products given form), but also because it holds a sedimentation of labour. The work becomes a reference point because its reality stems from how it gathers and condenses the process that produced it, because it bears the signs of the labour that created it. P.B.