

## **Gambiarra and The Prototyping Perspective**

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*This essay is about two states of technical objects: the prototype and the gambiarra. While the first is a popular concept, whose meaning and applications are fairly well-known, the second is very particular to the Brazilian context, but could be reasonably associated with practices such as bricolage and making do. I'd argue that these conditions constitute opposite epistemological / historical perspectives over technological development. This hypothesis draws heavily from the ideas of Walter Benjamin, Gilbert Simondon, Vilém Flusser and Jacques Derrida, whose works are referenced in the bottom of the text.*

The prototype is an object critical of its own function. It is not finished; it may not work. What characterizes a prototype is, first and foremost, the self-reflexivity of its operation: to use it is to put it to test and to engage in its evaluation. The most important effect of a prototype is, thus, the seemingly collateral reasoning about its failure, which is feedback into the process of prototyping. Each prototype is just a dismissible iteration in this chain, a step to be overcome in order to produce the parameters of design of an even more ulterior product. Therefore, the prototype cannot be isolated from this engineering process – it always exists in-between versions, having no identity apart from this serial progression. The sincere objective of every prototype is nothing else than to self-differ, in the same way that the prototyping process aims to produce the fundamental *différance* of a standard, driving the fabrication of a million commoditized artifacts.

This specific sense is borrowed from the domain of industrial design. The parameters of mass manufacture set by the industrial revolution demand heavy machinery and precise techniques, resulting in a rigid topology of production. In opposition to traditional craftsmanship, the industrial process cannot be easily adapted or corrected; it must be implemented as a fully optimized architecture at once. Hence, within industrial paradigm, projecting and producing (*and their respective pedagogies*) become strictly separated activities, which no longer feedback immediately into each other - *only through the process of prototyping*. Being the production of the project, prototyping is the regulating gap between these two firmly localized territories. It structures not only the final object, but also its negative: its mode of fabrication.

Therefore, the laboratorial isolation of prototyping loses its *raison d'être* once the topologies of manufacture become more fluid. When this happens, not only the practices of design and production come closer to each other, but they also become mingled into the everyday use of objects. One of the fields in which this change can be more clearly perceived is *software engineering*, whose increasing complexity demands the testing of prototypes by a large number of users. To cope with this scale, the *agile* programming methodology<sup>1</sup> proposes to make software development more dynamic by dissolving hierarchies and creating an intense feedback cycle between the anxieties of the users and the labour of the programmers. Likewise, the *release early, release often* free software motto commands beta versions to be public released as soon as possible, so that they can be debugged in the wild. Systems such as the

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<sup>1</sup> <http://agilemanifesto.org>

*Flickr*<sup>2</sup> online photo directory and the *Processing*<sup>3</sup> programming framework spend years as unfinished products, and nevertheless acquired enormous popularity – a level of community participation that could be justified precisely by the openness of their underdeveloped, *insufficient identities*.

With the emergence of open, modular hardware, this paradigm is being also implemented in physical object design. A new DIY culture is being promoted around the *Arduino*<sup>4</sup> microcontroller and the practice of *fabbing*, which employs low-cost, portable manufacturing structures once used for fast-prototyping, such as 3D printers. In this new scenario, a prototype can be praised as the sufficient object, whose integrity is produced at the precise moment it is put into operation. Its whole engineering process is concluded by the user – sometimes, by its very use. This allows us not only to see the final object and its production as supplementary to the prototype and the prototyping chain, but also to engage with this fact in a positive way.

The usual specification of prototypes comes from the positivity of industry and science. Just like the novel, the excellent cultural form of the Industrial Age, prototyping implies in a *conclusion* that produces an integer, complete entity. This qualification arises from the progressiveness of history, either as a projection or a revision. Any history of technique provokes the accommodation of scattered objects into a dramatic narrative, reasoning past technologies as the forerunners of new ones. For instance, it is modern cinema theory that qualifies the magic lantern and other optical devices as “pre-cinematographic”. In their own times, these devices were the most advanced ones in terms of optical mechanisms.

Likewise, in the macrocycle of technical evolution, the most integer objects of our times are just prototypes for the ones to come. However, it is not enough to just look at technology as a bridge to overtechnology, since this does not put into question the idea of progressiveness, and still maintain a sort of metaphysical closure around the prototype – the illusion that there is any other condition but the sufficient one: the constant effort to drive around the inevitable fallibility of technology. Technological development does not sum up to the history of anything; it is just the ongoing *duration* of such effort.

Prototyping always points towards the *closure* of the technical entity. In order to allow a more dynamic epistemology of technological development, we should couple it with a practice with the contrary effect. Of course, the most obvious pair would be hacking and other forms of reverse-engineering, directed towards opening up the technical black boxes. However, in their systematicity, such methods of investigation do nothing more than analyze the constitution of an object’s identity. Thus, they end up reinforcing the object’s integrity and the correspondence between the assembly present at hand and an absent process of assemblage.

In an attempt to make the assemblage also manifest, we propose to look for a counterpoint of the prototype in the Brazilian *gambiarra*. *Gambiarra* is an improvised amendment to a dysfunctional artefact, normally by the means of its combination with

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<sup>2</sup> <http://www.flickr.com>

<sup>3</sup> <http://processing.org>

<sup>4</sup> <http://www.arduino.cc/>

another object. One of the most exemplary gambiarras is the use of wire wool in TV antennas to compensate deficient signal reception. Just like prototypes are created based on expectations and the projection of integrity, gambiarras are born from deception and failure. To recover function, the superficial individuality of the artefact must be sacrificed. Simultaneously, another object reveals potentials that were not expected. Their combination results in a technical ensemble whose individuation is performed by the user. Impossible to dissociate from the practice that produced it, the resulting entity is also called a *gambiarra*. Hence, if the prototype narrows the technical object down into concreteness, the gambiarra abstracts it further, at the same time revealing potentials and limitations of its discrete parts. One points towards the industrial standard – the other, post-industrial, strays away from it.

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