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Syntegrity for designing designing

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This paper presents a cybernetic structure adopted in an architecture design course that makes two interrelated shifts in the usual approach to architectural education and practice. One is the shift from teaching to learning, a shift from teaching design by framing and solving problems to what John Chris Jones names 'designing designing'. The other relates to the transcendence of the usual participatory processes that, by over-relying on the professional's culture, end up patronising socio-spatial groups and instead build a more conversational design approach. The shift from teaching to learning draws on Seymour Papert's mathetics and the idea of peer-to-peer learning, which focuses on the centrality and responsibilities of the students in the educational process. Drawing on Vilém Flusser, the idea of responsibility extends from the learning process to the design practice and focuses more on its intersubjective and dialogical aspects than on the object itself. To reinforce this approach, we bring in ideas from Cedric Price, such as *value-free* and *enabling,* that point towards a wider and more open approach to design. From the teacher's point of view, the challenge is to build a structure that does not impose ideas but offers them up for discussion so that students can build their own collective critical understanding. In order to enable such a structure, we have been experimenting with the dialogical strategy of *Team Syntegrity* proposed by Stafford Beer. However, somewhat different from Beer's original protocol, which is directed to help decision-making, we have experimented with the syntegrity model in different contexts and with a diversity

of purposes. One of the essential features that are crucial to our experience is the different roles the students play in each round as advocates, critics, and observers. In this paper, we discuss a dialogical experiment in which we adapted *Team Syntegrity* in a design project that linked students and a community-based in a Brazilian mining district. Our intention was to collaborate with a local theatre group and help with the renovation of their headquarters without resorting to conventional problem-solving techniques. The result was that not only did both students and the community become acquainted with the "designing designing" strategy, but the theatre group was able to see the renovation of their headquarters and the design of a building as part of a broader and more complex series of questions concerning the whole neighbourhood.

Keywords: syntegrity, open design, responsible design, value-free design, architectural education, emancipation

RSD: Architecture & Planning, Cases & Practice, Learning & Education

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Introduction

This paper discusses a design course in architecture and urbanism at the School of Architecture at Universidade Federal de Minas Gerais, Brazil. It draws on a series of teaching-learning experiments carried out by the research team of Lagear (Graphics Laboratory for Architectural Experience). Since its foundation in 1993, the lab has a history of combining hands-on activities with critical thinking. Such experiments have impacted teaching-learning practices at our school, as Lagear's researchers are mostly responsible for the design basics in the Architecture curriculum. The experience is radically centred on peer-to-peer learning and draws on the idea of *The ignorant schoolmaster* (Rancière, 1991), the one who creates a structure that leads the students to learn a subject the teacher does not necessarily know. It is also based on cybernetic's propositions of circularity, feedback, and conversation.

The referred course, titled "Designing designing: second order instruments and interfaces" (Projetar o projeto: instrumentos e interfaces de segunda ordem),[1] started a collaborative conversation with the theatre group at São Gonçalo do Bação (a small village in the state of Minas Gerais, Brazil). This village is in the heart of the mining area in the Upper Rio das Velhas water basin. It is a region that historically has suffered greatly from the impact of mining, an unbroken history that began with the gold rush in the XVIII century and has continued to the present day in the intensive extraction of iron. Amongst other things, this has produced a highly polluted landscape that has had a devastating effect on the health of the local population. It has also required the construction of a massive retaining wall to protect communities from the ever-present danger of landslides and is currently threatening the residents with the construction of a dry port. The village traces its origins back to the XVIII century and has much in common with other mining villages in Brazil in terms of social and economic inequality and environmental degradation, mostly as the result of predatory activities such as neoextractivism and the exclusionary and gentrifying tourism. Beyond entertainment, the theatre group has been central in giving the community a voice with which to raise their concerns. Importantly, in its twenty-five years of existence, it has often assumed a leading position in conflictual situations with external agents, in particular, the mining companies who, in an attempt to legitimise their activities, have developed compensation schemes. These mostly involve small-scale physical interventions such as renovations of buildings and minor infrastructural improvements. Whilst these appear to residents as important achievements, in reality, they have a negligible financial impact on the company. It is also the case that whilst many of the mining companies' promises (and participatory processes) serve their purpose in winning the hearts and minds of the population, they often fail to materialise. Amongst the mining company's many promises was the renovation of the theatre headquarters. Despite the group being cautious, they came to us asking for technical advice to develop a design project in case the company actually provided the resources to build it. Avoiding the usual architectural strategy of problem-solving, our response was to propose a design course

[1] This course was also an opportunity for meta-learning for Masters' students who joined us for a sort of internship on architectural education. The students taking part in this design course were Ana Paula Pitzer Angelo, André Siqueira de Mendonça, Emídio Dias Maciel e Souza and Larissa Guimarães Reis.

engaging students and the theatre group in a process of problematisation inspired by Cedric Price's provocation: "no one should be interested in the design of bridges – they should be concerned with how to get to the other side" (Price, 2003, p. 51). With that in mind, we created a structure for a design course that set out to encourage students to move beyond conventional problem-solving practice, and to create interfaces with which the members of the theatre group, and eventually other residents, were able to broaden their imagination, raise more informed design demands, make decisions and, even, create their own spaces

Designing designing in theory

In one of his last works in the Design Methods Group in the 1990s, John Chris Jones (1991, pp.158–166), self-critically points to the fact that the group have mainly dedicated themselves to developing design methods for architects and designers, and ignored the fact that everyone is a potential designer. In other words, the group's focus was always on methods for products designed by specialists and not on 'open processes' in which non-professionals interested in the production of space would be able to articulate their own demands and decide how to satisfy them.

From this critical standpoint, we have envisaged two main shifts in conventional design approaches to inform the design course "Designing designing: second order instruments and interfaces". The first shift in the course's structure changed the focus from teaching to learning and was based on Seymour Papert's (Harel & Papert, 1991) idea of constructionist learning. As already mentioned in the introduction, at Lagear we have always been concerned with creating a structure for students to learn what we (as teachers) do not necessarily know and stimulating them to learn by themselves (peer-to-peer). We strongly believe that creativity is something one can learn but is not something that can be taught. Nevertheless, this shift in the design course means not only peer-to-peer constructionist learning but also a shift from teaching design by framing and solving problems to designing designing (Jones, 1991). According to Cedric Price (2003, p.92), “architecture should have little to do with problem solving — rather it should create desirable conditions and opportunities hitherto thought impossible.” In this view, the learning environment provides the students with critical tools to escape

what Reyner Banham (1999) called *modo architectorum*, a black box reproduced by students and architects without questioning the imposition of a prescriptive and formalist value system. So, more than learning by themselves, the students learn otherwise, questioning formalist and prescriptive design processes and favouring experimentation with a design process open to others. This leads to the second shift regarding students' responsibility and the questioning of conventional participatory processes.

For this second shift, we drew from Vilém Flusser's concepts of design and responsibility. Flusser understands design as an obstacle to removing previous obstacles that gave rise to the demand for the design. In his words:

> An 'object' is what gets in the way, a problem thrown in your path like a projectile (coming as it does from the Latin *objectum*, Greek *problema*). The world is objective, substantial, problematic as long as it obstructs. An 'object of use' is an object which one uses and needs to get other objects out of the way. This definition contains within it a contradiction: an obstacle for/to the removal of obstacles? This contradiction is what is called the 'internal dialectic of culture' (if by culture we mean the totality of all objects of use). This dialectic can be summed up as follows: I come across obstacles in my path (come across the objective, substantial, problematic world); I overturn some of these obstacles (transform them into objects of use, into culture) in order to continue, and the objects thus overturned prove to be obstacles in themselves. The more I continue, the more I am obstructed by objects of use. (Flusser, 1999, p. 58).

Flusser alerts us to how design tends to reproduce the objective culture of creating obstacles, leaving little space for intersubjectivity and freedom. However, he also indicates the possibility of overcoming such a fate with responsible design. Responsibility in design is the “openness to other people" (Flusser, 1999, p. 59) that emphasises the intersubjective (dialogic) rather than the objective in order to avoid other people being obstructed as much as possible. This means opening the designs to others. Such openness is not possible with conventional participatory processes. By conventional participatory processes, we mean those in which the architect prepares a

set of pre-defined options from which participants choose. Like Flusser, we are concerned with a dialogical engagement of people with themselves and with the spaces and objects around them. In Cedric Price's words (Obrist, 2003, p. 57), "dialogue with each other [...] might be the only reason for architecture". For that, we propose to discuss the possibility of overcoming people's conventional participation by means of their dialogic engagement, which seems possible with the opening up of the design process.

Price was very critical of participation, stating that "it's almost formalised into an assumed social right – almost a birth right of the democratic man" (Obrist, 2003, p. 66). It has become a means to impose dull things from randomly selected individuals onto the collective, as in radio programmes with live audience participation, "almost as if everything is justified because the audience can participate" (Obrist, 2003, p. 66). Price helps to understand the shift from conventional participation to actual engagement. According to Royston Landau (2003, p. 11), his architectural principles might be named a *philosophy of enabling*, as the effect of his architecture on its occupants enabled them to attribute value instead of taking part in processes or products with values prescribed by the architect. Such a value-free architecture suggests a move away from architecture as a finished product (or participatory) to architecture as an open process (for engagement).

We have been working with open processes in which the design of interfaces has been our main drive for the last two decades. "Interfaces can be concrete or abstract, already existing or invented, informational or operational, physical or digital, or any hybrid combination of these possibilities. But they are to be used without the presence of the designer." (Kapp, Baltazar & Morado, 2008, p. 23). Interfaces might be seen as a structure in a value-free cybernetic system that does not prescribe organisation (Baltazar, 2021). This fits the definition proposed by Maturana and Varela (1980, p. 77) that structure and organisation are two distinct and necessarily related things, but also contradicts Maturana's assertion that self-contained systems will have a fixed organisation; if the organisation changes, the system collapses (Maturana & Poerksen, 2004). If we envisage an open process approach to design, we might consider a value-free system with "no prescribed match between structure and organization. A system that is described by the contingencies of its relations instead of the relations of

its properties." (Baltazar, 2021, p. 54). Interfaces might trigger such a contingent relation without prescribing outcomes or fixing relations between properties prior to their use.

The above-mentioned design course was intended to encourage students to discuss the limits of prescriptive projects and to look at the possibilities of interfaces, drawing from the cybernetic pair structure and organisation (without prescribing organisation). On the other hand, from the point of view of socio-spatial political problematisation, the course also proposed a learning process in dialogue with a socio-spatial group,[2] aiming to question participatory processes and the usual patronising (or missionary) technical assistance in order to engage the group in a dialogical open process.

Syntegrity articulating theory and practice

From the teacher's point of view, the key question in designing the course was how to create a structure to raise such discussions without imposing an agenda whilst simultaneously enabling the students to build their own collective critical understanding (their own organisation). An approach based on cybernetic strategies seemed the most adequate, as cybernetics is concerned with formal relations within a system and focuses less on the components of a system and more on the connections between those components. In this regard, Team Syntegrity, a protocol developed by the cyberneticist Stafford Beer (1994) for managing small group discussions without resorting to a vote to reach an agreement, presented itself as a compelling method to deal with our challenge.

Team syntegrity appeared as a way of managing disputes and maintaining a variety of viewpoints (perspectives) without impoverishing or flattening the complexities and nuances of a discussion. Previously, Beer had developed a model for dealing with medium and large companies called the viable system model, but later on, he became interested in small-group organisational issues, looking for formal strategies that would

[2] According to Silke Kapp (2018, p. 223) "the term socio-spatial group denotes a group of people that relate to one another in a space, which is constitutive of the group and, conversely, constituted by the group".

allow the articulation of people of a community or people just interested in a specific subject. As a content-free methodology that works with the absence of hierarchy amongst participants, it was originally based on the geometrical figure of an icosahedron, implying thirty participants that are mapped onto the thirty struts and twelve questions, previously elected by the group that are mapped onto the vertices. In this arrangement, a participant is connected to two different questions and, in each iteration, will discuss a question with the five other people connected to the same vertex/subject. One of the most interesting characteristics of syntegrity is that the participants will change their role in each iteration, as advocates (discussing the designated question), as critics (that criticise the discussion, playing the devil's advocate) and as observers (the ones who wander and only observe the discussions in order to inform their own participation in the next round). The iteration promoted during discussions and the changes in participants' roles enable the reverberation of the discussed issues around the whole group. The methodology was further developed to consider other geometries so as to accommodate a different number of people.[3]

After choosing syntegrity as the main tool for the course, we carried out several adaptations to respond to the specificities of the pandemic scenario. We were teaching remotely (because of the lockdown and the necessity of social distance). We were also restricted to the school schedule and daily timetable and could not be certain of the number of people that would be present at each class. Systemic thinking by means of a cybernetic structure turned out to be helpful in establishing a course in a pandemic environment that engaged both students and the community in a collective work. Adapting syntegrity protocols to work remotely over the internet was not difficult, as the Zoom communication platform we were using for teaching has an easy-to-use structure of breakout rooms that enable parallel discussions to happen simultaneously. These were reinforced using other digital communication tools and social media (WhatsApp, Instagram etc.). Beer (1994, p. 169) had already envisaged this mixed communication media and had coined it ‘technosphere’. The work in such a technosphere was also useful in helping the local community engage with the students. In our teaching

[3] For a detailed explanation of Syntegrity's protocol and its functionalities see Beer, 1994; Truss, Cullen & Leonard, 2000 and Pickering, 2010.

experience, this is rather difficult to achieve when students are present in the village for a few days, as the experience tends to be much more dispersed than in the technosphere. This happens because the residents tend to take for granted the presence of the students and are not able to collectively organise their time for joint immersive work. The dispersion happens almost naturally, making it impossible to engage students and residents in systematic problematisation processes.

According to Flusser, "contemporary dispersal cannot be reversed, on the contrary, it requires a new form of assembly" (Flusser, 2011, p. 68). We envisaged this new form of assembly as syntegrity. So, we took advantage of the remote environment for teaching, not only transferring the usual in-person teaching to the digital platform but moving further into the technosphere to engage both students and residents in a series of meetings during the limited time of the classes, using syntegrity. In agreement with Truss, Cullen and Leonard (2000), we have come to see

> ... Team Syntegrity as offering an 'organized space within which self-organizing can occur'. This organized space is content-free until 'inhabited' and informed by people. The non-hierarchical nature of the form ensures an equivalent opportunity for all participating to contribute freely and to share with others in the outcomes and benefits that result from their collaboration. (p. 17)

The possibility of having a structure for self-organisation was precisely what we needed to ensure that residents and students engaged with each other (and with the changes proposed in the course) in a manner that avoided the limitations of conventional participatory processes.

In addition, we adopted syntegration as a means to articulate diverse perspectives that are essential to the plural and dialogical construction of knowledge. These ranged from making the students acquainted with the principles of designing designing and building a collective understanding of its subtleties to putting the students and socio-spatial groups in conversation with each other in order to broaden their imaginations concerning the usual framing of design problems so they might achieve that which Paulo Freire calls problematising dialogues (Freire, 1975).

The first step towards a syntegration in the design course was to make the students familiar with a range of texts by ourselves and other authors that discussed concepts and strategies for open design processes and the structure we were proposing drawing from cybernetics. The texts were assorted in a way that the students were stimulated to read just two or three full texts but were able to discuss the content of all of them using the syntegrity protocol. The idea was to offer a critique of problem-solving and conventional participatory processes so that students could develop their own understanding of it and be able to communicate with the residents in order to decide together how to drive the design process without reproducing a conventional practice towards designing designing. For that, we divided the students into five groups, and the texts were assembled in Group 1 (Flusser, 1983; Baltazar & Melgaço, 2015), Group 2 (Flusser, 1999, Baltazar, 2005; Haque, 2006), Group 3 (Jones, 1991; Cabral Filho, 2013), Group 4 (Baltazar, 2020, Price, 1966), and Group 5 (Beer, 1973; Baltazar & Cabral Filho, 2011). Then, we had what we called semi-syntegration, which engaged the students with the themes proposed in each group of texts. It promoted a structured discussion to define the questions for the first syntegration to happen in the following meeting with the residents. At this stage, the students that read different groups of texts were able to cross references and help formulate questions regarding their already established interest in specific community issues. The semi-syntegration achieved more than expected: the students were able to criticise their own reproduction of *modo architectorum*, raise questions based on what they have read, and engage the residents in conversations about the very work process.

Designing designing in practice

In practice, the different rooms in the first syntegration with the theatre group articulated twelve topics, discussed in two different rooms in six rounds. The theatre group members always played an active role in the group discussions (advocate or critic, never observer), and the students experimented with different roles, one in each different round. Each round was informed by the understanding of the participants from previous rounds in different rooms, which enriched the construction of a collective understanding.

In the first syntegration the participants agreed on a joint work process in which the members of the theatre group were responsible for gathering information from the community at São Gonçalo do Bação. They were asked to bear in mind a procedure more attuned to the idea of harvesting (what already exists and is cherished by the locals) than that of mapping (systematising data in an authoritative way). From that first stage of independent work, the members of the theatre group contributed with themes they had harvested in the community, such as infrastructure, tourism, environment, heritage and history, the impact of mining activities, the existing heteronomous projects for the region, the theatre headquarters and the possibility to assimilate demands from the community, such as a library and communal kitchen. These themes informed questions formulated by the students for the second syntegration, again with twelve questions in two rooms and six rounds. This led the students to formulate their own interests to create interfaces to deal with what they had seen with the 'designing designing' in mind. On the other hand, the theatre group members were able to broaden their imagination beyond problem-solving, further problematising the demands for the theatre headquarters and examining how they are entangled with other needs in the village.

The third syntegration was then proposed to attune the interests of the students with that of the socio-spatial group. It was crucial to not let students jump to solutions and reproduce conventional design processes and to keep the residents' minds open to proposals beyond the theatre's headquarters refurbishment. This third Syntegration informed students' ideas for interfaces, which were then discussed with the residents in the fourth syntegration. After the fourth syntegration, the students assembled five groups (with different amounts of people) according to their interests and affinities and proposed a range of preliminary interfaces that were presented to the community.

The feedback from the theatre group was quite positive. They understood the contribution of the students' prototypes in helping to inform possible demands directed to the mining company. However, as the course was very short (two months), and the shifts proposed in the learning process were new for the students, the time was not enough to develop deliverable interfaces. At the end of the course, twelve students asked if they could continue the process with the theatre group. As the syntegration

process had led to "a community with a sense of shared purpose and of responsibility", as asserted by Truss, Cullen & Leonard (2000, p. 5), we agreed to structure a new course module. So we created a more radical structure based on self-management, in which the students became responsible for the design of Syntegrations with the theatre group. In this new strategy, the students had weekly meetings with us to provide critical feedback and adjustments for their independent meetings with the theatre group (without our guiding presence).

Working collectively in this second module, students and the theatre group developed a series of interfaces (digital and physical) that improved upon the prototypes produced in the first module. It included a set of pieces (model parts) to experiment with a problematisation of the demands for the headquarters aiming to enable a thoroughly informed decision-making without prescribing a final building; a jigsaw board game to stimulate the bringing-up of memories regarding socio-spatial issues; a collaborative digital platform to encourage non-predatory tourism; and a set of mobile physical structures that could be assembled in different ways by the population.

After the end of the second module, three students developed further the ideas brought about in the two previous modules in their diploma projects under our supervision. They continued the self-management approach, engaging with the theatre group in a series of activities, this time also in person. There was significant progress in the extramural process, making it possible to raise three themes in order to expand the work to the community as a whole. Mining was identified as one of the main themes, touching several aspects, such as daily life, the environment, the theatre group, etc., but whose impacts are not clearly perceived in their entirety by the residents. Another theme raised was the wealth of São Gonçalo do Bação in relation to the past, present and future possibilities. The third theme was the legacy of José Victor, a polymath who lived in São Gonçalo do Bação, having a great presence in his time but with no systematic record of his life and production. From there, three digital and hybrid interfaces were developed in the period of one year, which are discussed further in Baltazar, Cabral Filho, Bartholo, Moritani & Paiva (2022).

It is worth saying that the students described the sequence of syntegrations as an opportunity to socialise with and better know their peers even remotely (during the pandemic) and the shy ones found it the right environment for expressing themselves. This integrative aspect of the Beer protocol also worked for the community, which created a bond with the students that endured after the courses and the Diploma work had ended. The cumulative development of the students throughout the three moments was remarkable, and syntegration definitely helped to catalyse the changes proposed in the extramural educational process based on designing designing.

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