

Self-generation of form and the new ecology

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Source: *Ekistics*, Vol. 34, No. 204, URBAN DESIGN: THE PEOPLE'S USE OF URBAN SPACE (NOVEMBER 1972), pp. 316-322

Published by: Athens Center of Ekistics

Stable URL: <https://www.jstor.org/stable/43618056>

Accessed: 26-03-2021 19:55 UTC

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# Self-generation of form and the new ecology

Leonardo and Laura Mosso

We must first understand that we all have to plan, not only a few of us. In consequence it may be our right and duty to renounce the use of delegated planning; but it is simultaneously our duty to create those structural instruments of service which are indispensable for everyone in exercising their right and duty of planning.

The planning aim which interests us is not remotely that of the planner who desires a formally perfect society, but the personal and collective planning aims of everybody.<sup>1</sup>

## The need to interchange subject and object in the human condition

Now the plan in the sense we have described it is clearly not nowadays everyone's plan, for man is currently treated as an object, and not as a subject. Hence his alienation: an alienation from his responsibility of self-determination at every level, alienation from that power which is his human right, alienation from his work and, in the last analysis, from himself.

Man's labor in transforming the world has had none of the marks of humanity, and his environment will not have them unless such labor develops each individual together with all others; or rather unless the individual himself is fitted into a common process of personalization. Indeed, the humanity of the human environment is tied to the destiny of man himself and his ability

to be completely human. If human self-realization were to be effected by delegated planning we should be falling into the contradiction of desiring to free ourselves through the agency of others.

The interchange of subject and object in the human condition must be reflected at all levels for everyone. That is to say, all men, and not just a few, acting in the name of all, must become subjects who decide and hence plan and operate in the first person.

This inversion, if carried to its logical conclusion, would bring the notion of 'intellectual' and 'expert' to a severe crisis, turning it from the function of a component in a directing elite, which always somehow tries to direct people even when its tendencies are socialist, into that of effective service for popular construction.

## Personal and collective construction

Only the global concept of culture as human activity and construction for the development of the community can eliminate the dichotomy between labor and culture as opposed fields, and can isolate them as permanently dialectic occasions in every human activity, in the sense that everyone labors and studies in a continuous education across the whole span of human life.

The problem of the relation between creativity and culture (that is, between the invention of new languages and their popular adoption) is that culture which is

COMMUNITY SCALE		i	ii	iii	1	ii	iii	iv	v	vi	vii	viii	ix	x	xi	xii
EKISTIC UNITS		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ELEMENTS	NATURE															
	MAN			•												
	SOCIETY													•		
	SHELLS															
	NETWORKS													•		
SYNTHESIS							•									
		MAN	ROOM	DWELING	DWELING GROUP	SMALL NEIGHBORHOOD	NEIGHBORHOOD	SMALL TOWN	TOWN	LARGE CITY	METROPOLIS	CONURBATION	MEGALOPOLIS	URBAN REGION	URBANIZED CONTINENT	ECUMENOPOLIS

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**ARCHITECTURE**

**LEONARDO AND LAURA MOSSO**

**FOR A DIRECTED ARCHITECTURE**

**FOR A HUMAN ARCHITECTURE  
LOGICAL AND PROGRAMMED  
FOR AN ARCHITECTURE AS  
ORGANISM**

**BEYOND THE ARCHITECTURE  
OF THE ARCHITECTS  
FOR A DIRECTED ARCHITECTURE**

**BEYOND THE VIOLENCE OF  
THE ARCHITECTS  
FOR A DIRECTED ARCHITECTURE**

**BEYOND THE VIOLENCE OF  
POWER  
FOR A DIRECTED DEMOCRACY**

**STRUCTURAL PROGRAMMING  
FOR THE SELF-CONDUCT OF  
THE FORM  
AND FOR THE SELF-CONDUCT  
OF THE LAW BY MAN  
WITHIN THE CONFINES OF  
STRUCTURAL LEGALITY  
OF THE ECOLOGICAL SYSTEM  
MAN-ENVIRONMENT**

**FORMAL PROGRAMMING  
FOR THE FREE CREATION OF  
ALL COMPATIBLE FORMS  
NOT AS A GAME  
BUT AS THE SELF-  
DETERMINATION OF LIFE  
AND OF EACH ONE'S  
PERSONAL ABILITIES**

**STRUCTURAL PROGRAMMING  
FOR THE SELF-PROGRAMMING  
OF MAN**

**FOR THE REALISATION AND  
CONSERVATION  
OF THE EQUILIBRIUM MAN-  
ENVIRONMENT-KNOWLEDGE-  
RESEARCH-FREEDOM-LIFE-  
ARCHITECTURE**

**STRUCTURAL PROGRAMMING  
AS DIRECT TRANSFER  
OF THE SUPERCOMPLEX  
RELATIONS OF THE UNIVERSAL  
ECO-SYSTEM  
INTO THE SELF CONDUCT OF  
THE FORM**

**WITHOUT THE MEDIATION OF  
REGULATIONS**

imposed and not popularly constructed is really ac-  
culturation and not culture. It is created by the form-  
giving power of the few, which the others undergo as  
violation. In this sense, buildings are extraneous to  
the historical occasion if they are cultural objects and  
resurrections which only learned specialists can pro-  
duce.

For example, on this point it is possible to observe  
how the architecture of the Renaissance might, from  
this point of view, indeed be, as Wright said, the be-  
ginning of decadence: inasmuch as it is not only a  
planned and unformed architecture, but also an ar-  
chitecture standing outside the historical moment.  
An artificial activity as far as the collective culture of  
the time is concerned, which has revived forms be-  
longing to a past culture, and showing the split be-  
tween a popular form of culture and the language of  
the experts; even though, for example, in the country  
the popular language of the Middle Ages would still  
continue for centuries.

But constructive experience in authentic popular  
culture is tied to a structure of form which remains un-  
changed for long periods of time, so long as it is not  
made obsolete by economic or technical consumer  
artifice, and it is persistently transmitted by historical  
tradition.

We agree with Ernesto Baroni's contention, that the  
historical process only becomes history if it actualizes  
the destiny inherent in man: that is, as we should say,  
if it realizes the self-planning of the community; and  
it is anti-history if it is a succession of events which  
annul this plan.<sup>2</sup>

By 'construction' we understand personal and col-  
lective participation in the self-planning of the com-  
munity, by exercising our proper rights as subjects in  
the historical process and not objects of it.

It seems to us that we must upset the interpretation  
Alexander gives of the notions of "self-conscious" and  
"unself-conscious." Indeed Alexander says our cul-  
ture "is self-conscious in its architecture, its art and  
its engineering," and he contrasts it with other cul-  
tures which are "unself-conscious in their correspond-  
ing disciplines" and which would seem to be just those  
which "are little preoccupied with architecture and  
planning as such," and in which "there is a right and  
wrong way of building" and where "any sort of spe-  
cialist is rare, there are no architects, and everyone  
builds his own house."<sup>3</sup>

If by culture we understand everyone's knowledge  
and awareness, as we have suggested, then we must  
conclude in opposition to Alexander that ours is an  
unself-conscious culture, precisely because it lacks  
common awareness.

Indeed, from our point of view, only the personal  
and collective generation of form, including not only  
houses, cities and surroundings, but also political  
choice and collective aims, in a perennial dynamic  
equilibrium with the ecological and ecosocial situa-  
tion, represents true and complete self-conscious-  
ness; it is the indispensable premise for self-realization.

**IN THEIR NATURE ARBITRARY,  
MERELY INFORMATIVE AND  
STATIC  
AND STRANGE TO THE  
DYNAMIC FORMATIVE  
DEMANDS  
OF LIFE IN EVOLUTION**

**THE MEMORY OF THE  
COMPUTER  
FOR A DIRECTED ARCHITECTURE  
THE MEMORY OF THE  
COMPUTER  
FOR A PROGRAMMED CITY  
FORMED DIRECTLY BY ITS  
INHABITANTS**

**THE MEMORY OF THE  
COMPUTER  
FOR THE RIGHT TO  
UNCONDITIONAL FREEDOM OF  
KNOWLEDGE  
FOR EVERYONE  
THROUGH THE STRUCTURE OF  
UNIVERSAL RELATIONS**

**THE MEMORY OF THE  
COMPUTER  
FOR THE DEFINITIVE  
REVOLUTION  
THE REVOLUTION OF  
KNOWLEDGE  
AS THE INSTRUMENT OF THE  
REVOLUTION OF BEING**

**THE MEMORY OF THE  
COMPUTER  
FOR THE SELF-PROGRAMMING  
OF MAN  
THAT IS THE PROGRAMMING  
OF PERSONAL CONDITIONS  
OF EVERYONE IN THE  
COMMUNITY  
FOR THE SELF CONDUCT OF  
THE LAW  
AS A CONTINUOUS ORDERING  
OF THE PERSONAL CONDITIONS  
TRANSFER OF THE EXPERIENCE  
OF ARCHITECTURE  
FROM AN OPERATION OF A  
SINGLE PROJECTION  
TO A WIDER OPERATION  
IN WHICH IT FINDS ITS PLACE  
AS ONLY A PARTICULAR  
ELEMENT OF THE WHOLE  
THE DEFINITION OF A SYSTEM  
OF INFORMATION  
AND OF THE CONSEQUENT  
INTERVENTION OVER THE  
TERRITORY  
THAT SHOULD HAVE THE  
CHARACTER OF REALISING AND  
CONSERVING  
THE EQUILIBRIUM OF LIFE  
OVER THE TERRITORY ITSELF  
ITS STABILITY**

This definition puts the basis of our thinking, even in its political and educational and research aspects, in total opposition to Alexander and by extension to the whole current of rationalized power planning.

A statement of Alexander which follows puts us, if it were possible, even more in disagreement: "I shall call a culture 'unselfconscious' if the creation of form is learned without rules, through imitation and correction. And I shall call a culture 'selfconscious' if the creation of form is taught academically, without explicit rules."

We are fully aware, that without the aid of cybernetic, logical and mathematical tools it is inconceivable that man might overcome present-day ecological complexities. Nevertheless, our first preoccupation concerns the ethical and political use of such tools.

Collective construction is truly revolutionary only at the extreme limit, because it is only at the moment of collective construction that the power revolution is enacted, as popular culture withdraws itself from the power elites and emerges autonomously and dynamically in the historical process.

But such a moment of construction is also perennially revolutionary only if that power, which the revolutionary act has restored to every man arbitrarily deprived of it, stays with him and is not recentralized in a bureaucratic power external to the man himself.

### **The urgent need for collective construction to save the earth: the new ecology**

The contemporary ecological situation has reached such a low level nadir as to require a new type of global action if mankind itself is to survive. Such activity, if it is to be truly global and alternative in all its aspects, requires not only the total reconstruction of urbanism in territorial planning, of programming and economic intervention, but at the same time the reconstruction of the very concept of traditional politics.

Indeed, the generalized ecological imbalance which currently occupies so much space even in the tabloid press, the 'great ecological fear' that mankind and so-called industrial civilization have finally broken the natural balance of the biosphere, with DDT, radioactivity, smog, defoliants, oil and automobile exhaust, in reality discloses only a few final links in the complex chain of imbalance in the man-environment ecological system.

The chief difficulty, because it unleashes the revolutionary consequences of such a realization, lies in the absence of direct first-hand information, and in the existence of sources of information manipulated and tainted by those same public and private powers who are chiefly to blame for the economic and social imbalance.

The huge complexity of the problems involved has explicitly revealed the shortcomings and the illogi-

**VARYING UNDER THE  
INFLUENCE OF THE  
ENVIRONMENT  
THROUGH THE PERSONAL  
CREATIVITY OF INDIVIDUAL  
BENEFICIARIES**

**RETURN TO THE FORMATION  
OF THE ARCHITECTURAL  
ORGANISM  
DIRECTLY AND WITHOUT  
MEDIATORS  
WHERE THE WORK OF THE  
PROJECTOR WOULD TEND  
MORE THAN ANYTHING ELSE  
TO PRODUCE IMPERSONAL  
SYSTEMS**

**GENERATED BY THE CREATIVITY  
OF MASSES OF INDIVIDUALS  
EVEN IF OBVIOUSLY, AND THIS  
I EMPHASIZE  
ENFRAMED IN A SYSTEMATIC  
PROGRAMMING OF TOTAL  
SPECTRUM**

**REACH OF A LOGIC OF  
ARCHITECTURE  
THE CITY TERRITORY OR  
PROGRAMMED CITY  
THAT SHOULD RETURN TO BE  
THE INTEGRAL OF ALL ITS  
CULTURAL MEANINGS  
AND THEREFORE HUMAN,  
HISTORICAL, SOCIAL, DIDACTIC,  
OF SCIENTIFIC KNOWLEDGE  
AND SPIRITUAL, CREATIVE AND  
POETIC  
AND WITH JUST SUCH A  
POLITICAL SENSE  
ACHIEVING THE ELIMINATION  
OF THE DICHOTOMY  
BETWEEN THE ARCHITECTURAL  
EVENT AND THE OUTSIDE  
REALITY**

**PROGRAMMED ARCHITECTURE  
IN A FORMALLY  
UNDETERMINED WAY  
NOT BECAUSE OF LACK OF  
FORM  
BUT BECAUSE INFINITE IN THE  
RELEVANT VARIABILITY OF LIFE  
IN EVOLUTION**

**WHERE EVERY PART OF THE  
WHOLE  
SIMPLIFIED BY TECHNICAL  
OPERATION ON SIMPLE PARTS  
SHOULD HAVE OBJECTIVELY  
THE SAME IMPORTANCE  
AND ACCEPT THEREFORE THE  
INTERCHANGE WITHIN THE  
FRAME OF A SUPERCOMPLEX  
SYSTEM  
BUT BE ABSOLUTELY  
CONTROLLABLE, CAPABLE OF  
MUTATION.**

cality of current delegated planning, which the ruling class has used as one of the major causes of human degradation, for the use of such delegated culture in a political sense seems to be a permanent tool of tyranny.

So it is urgent and indispensable that we appeal to the incomparable richness of all human creativity, to be expressed as a continuous conscientious objection to all world power and cultural elites, as a preliminary to a permanent and final revolution, which will also be an ecological one; and by study and research, to construct the tools for a directly based democracy, and for a self-generated collective programming.

### **Structure and language in architecture**

We therefore believe that satisfactory results at the level of programming human and ecological development can only be achieved individually and elitistically by really concerted research, and a simultaneous rivalry of scientific and political zeal. And we believe that in this sense "the science of programming can only mean the science for man's own self-programming."<sup>4</sup>

But the notions of self-programming and the self-generation of form cannot properly be defined unless we correctly introduce the term 'language.'

The concept of language we refer to comes from Louis Hjelmslev's definition: "The instrument of man's thoughts and feelings, states of mind, aspirations, volitions and actions; the tool with which he influences and is influenced, the last and deepest foundation of human society."<sup>5</sup>

Indeed, language is always concerted expression. It also has the possibility of becoming common expression; so that many notions of language as applied to architecture and human constructivity appear mistaken. Among others, in this specific field of discipline, is Alexander's, who conceives language only in a restrictive sense which does not basically look unlike the specialist's concept of 'style.' Such a system cannot be called 'language,' since it does not have the proper characteristics of the spoken language: those of being a self-generating structure, and thus a system of transformations and of possibilities "capable of generating infinitely many messages."<sup>6</sup>

The concept we refer to, of architecture as language, we propose to call programmed and directed architecture, the result of structural planning, which we shall briefly analyze.

In order to apply linguistic analysis, we shall have to consider an architecture in which we encounter a social quality equivalent to that found in language sciences. This is the direct as opposed to the delegated generation of expression.

In Piaget's definition: structure is "a first approximation, a system of transformations, which behaves according to laws by which it systematizes (as op-

posed to the properties of the elements) and which is conserved and enriched thanks to the play of its own transformations, without transgressing its boundaries or appealing to foreign elements. In short, a structure comprises these three characteristics: totality, transformation and self-regulation.” And in Hjelmslev’s definition, “the structure of a language is given by its elements and their combinatorial possibilities.”<sup>7</sup>

This concept of structure seems to be immediately applicable in the field of architecture, on condition we use it to define the new type of planning as the planning of structures, and no longer of objects. This we have proposed calling “structural planning.”

Structural planning... does not dictate what shape forms should take, but programs formal structures, emphasizing the structural elements that are adapted to the largest number of contextual alternatives, endowed, that is to say, with the quality of fitting in with the largest number of formal ensembles related to or deriving from these alternatives. Such an examination of the contextual reality, probable or improbable — the enquiry moves from the field of probability to that of possibility — will bear on the planning of a programmed structure, thought out beforehand in its infinite number of logical alternatives, and hence it is not concerned with a heuristic solution of a reality considered probable, but with a system of probability/improbability: the totality of all the possible mutations of the form.

And, precisely in the logical possibility of the system possessing within it some potentiality for change, given a suitable methodological code, lies the point of contact between the structure of the form and the external contextual and socio-dynamic reality.<sup>8</sup>

If language is indeed “a totality constituted by ‘*langue*’ and ‘*paroles*’ ”<sup>9</sup> the term language in the architectural field must mean the capacity of men to express in form their desire to transform nature and to relate themselves by appropriate action to the pre-existent cultural facts; ‘*langue*’ must mean programmed architecture, that is the phonemic and syntactic structural complex offered by structural planning; and the term ‘*parole*’ must mean the operative use of executive decision by everyone, at an individual personal and concerted communal level, to make ‘speech,’ or rather, programmed architecture.

## The problematics of structural planning

In our opinion, a fundamental problem for the future of architecture as a social science, and for the self-generation of form is that of extending the use of cybernetic and logical and mathematical tools.

In this connection and in the light of the theory of structural self-programming, we have undertaken a plan of research in collaboration with the Consiglio Nazionale Italiano delle Ricerche, to do with the problems of environmental form. We are working on a number of models, in an attempt to understand the

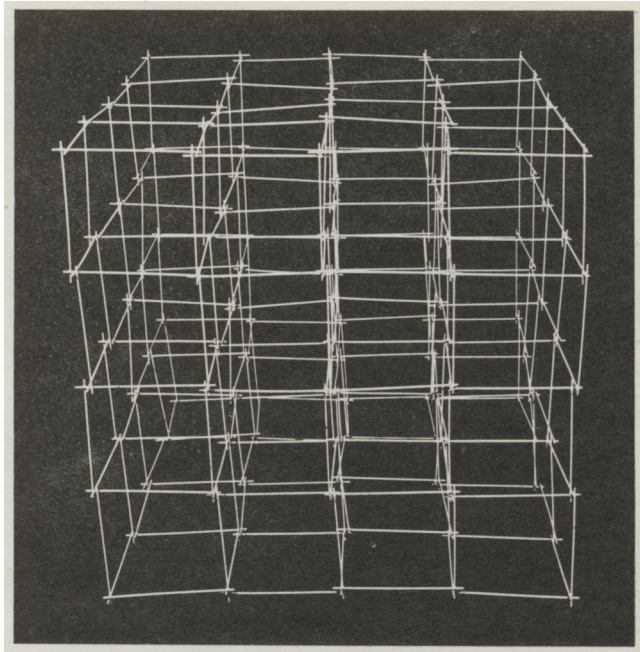


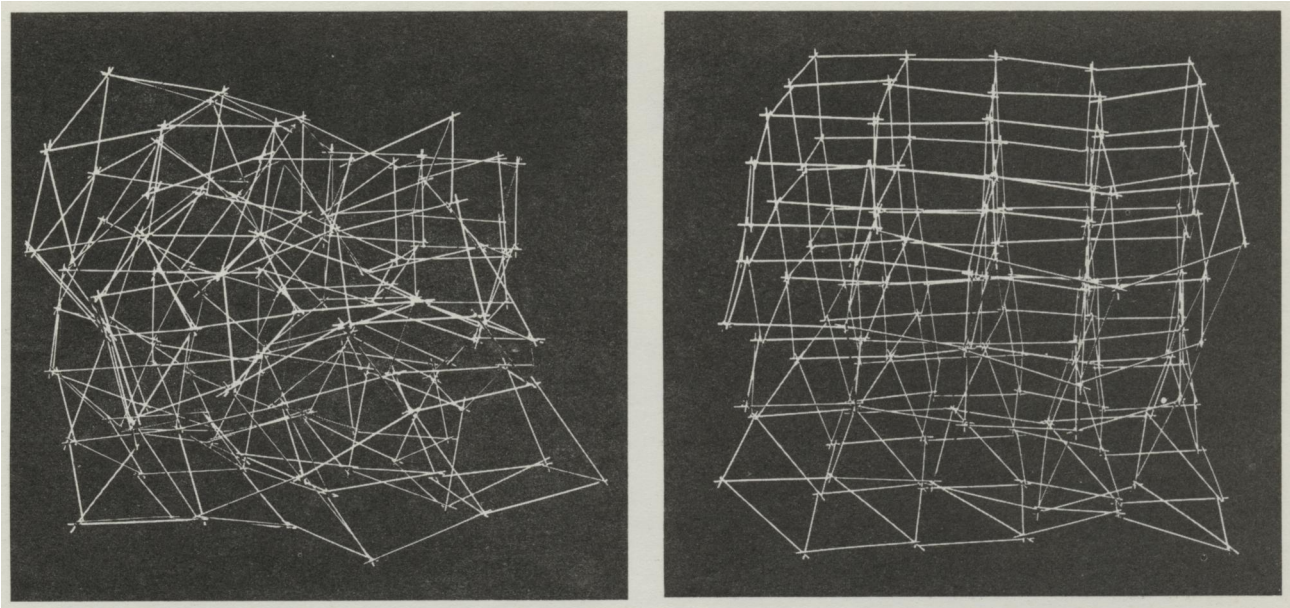
Fig. 1: Universal three-dimensional serial structure, self programming with movable and elastic connections

ecocybernetic dynamic as a structure for a self-evolved language of the environment and of the form at various levels of complexity, inserted in a foreseen chain of self-evolved cybernetics: from political cybernetics to the cybernetics of information, as integrated instruments of evolution in a condition of direct articulated democracy.

Our current studies within the institute for programmed architecture and environmental cybernetics at Turin, on the use of computers in the field of architecture and urbanism, leads us to suppose that in linguistics, as in architecture, conditions for the application of mathematical logic probably only exist at a structural level, and above all, at the level of phonological elaboration. All our aims are bound up with the hypothesis that even for architectural phonology and structural planning, we shall soon be able to speak in analogous terms of a renewal of the science of architecture.

In analogy with the unconscious ‘cognitive mechanics’ of phonological linguistics, it has not seemed at all arbitrary to us to work on architectural phonemes, because we intervene more especially at the phonological and structural level of form and not at the consequent formal level of language.

In order to understand the behavior of the planner in the two alternative conditions of the traditional delegated planner and the planner of formal structures, it is perhaps useful to mention some aspects of the genetic history of our first two programmed buildings: a chapel for artists to celebrate mass in, and the project for a programmed city and territory.



Figs. 2 and 3: Universal three-dimensional serial structure, self-programming with movable and elastic connections

Our intervention as planners of the new type was here exercised only at the interdependent level of phonological and formal structures. Both the chapel, as it was actually built, and the fragment of city and terrain, which is present in the competition for an office building for the Chamber of Deputies in Rome, represent only one of the infinitely many forms which can be generated within the rules of its formal structure (Figs. 1, 2, 3). They were in fact operations at the subsequent level of form, in which our new function as purveyors of a linguistic service had temporarily to yield to the old one of traditional planners, in the absence of persons to whom the generation of forms and phonemic elements from the structures could be entrusted.

The unspecialized makers/users don't need to be conscious at the formal-structural and phonological level, but they must be conscious at the level of language and of expressed forms or '*paroles*' if they don't want to go on being subjected to the outside interference of specialists.

This consideration seems to clarify the distinction between the function of the professional elite of specialists and the function common to all men. For while the first have the task of inventing structures, forms or '*langues*' which are powerless in themselves because the level at which they operate guarantees their neutrality, the second, who obviously include the first as members of the same community, have the task of using the structures of form as a constructive organization of architectural phonemes, in the personal and collective creation of language.

The elements of a language, or phonemes, constitute a closed series, whereas the forms possessed by every language, or '*paroles*' are an open series; or rather, every language has potentially an infinite number of '*paroles*' although only a limited number of phonemes. Here, the parallel with programmed architecture is evident.

"When we speak," writes Lévi-Strauss, "we are unaware of the syntactical and morphological rules of our language. Moreover, our knowledge of the phonemes we use to differentiate the meaning of our phrases is also unconscious. Still less are we conscious, even supposing we sometimes could be, of the phonological oppositions which enable us to analyze every phoneme into differentiated elements. Finally, even when we formulate the grammatical and phonological rules of our language, we lack intuitive comprehension of them. This formulation only emerges on the level of scientific thought, while language lives and evolves as a collective elaboration."<sup>10</sup>

Operating here on the level of syntactic and morphological rules, or rather the structure of the '*langue*' and on the phonological level, it seems logical to assert that we do not influence the phenomenon of architectural language as a collective elaboration.

It could be objected that the phonemes and their morphological and syntactical rules are being planned, and are not created spontaneously by popular culture. But the moment when collective awareness and the historical consciousness of problems are generalized, the continuous interchange between specialist and community, and eventually their perfect and integrated

fusion, will abolish this last occasion for delegation, even at the level of structure.

We are sure that once the process of self-generation has been sparked off, we shall inevitably attain successive conditions of ever better popular planning,

even at a phonemic and structural level, and that consequently the specialist will have even less influence.

But we maintain that the intermediate stage of structural planning as a linguistic service, to be concluded in the reconstruction of a harmonious collective culture, cannot be eliminated.

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