

Architecture In The Wild (Architectural Research In A Digital And Global World)

Josep Muntañola Thornberg,
Technical University of Catalonia

Dafne Muntanyola Saura, Fulbright
Research Postdoc, University of
California , San Diego

INTRODUCTION

In order to define the place of architectural research, the paper uncovers in its first theoretical section some basic conditions of the relationships between theory and architectural practices. The first condition is that, together with education and legislation, architectural research is based upon a theoretical wisdom oriented to practice, predicted by Aristotle a long time ago. The second condition is the need for new theoretical architectural theories that inform the use of powerful design media in construction, as well as in the social use of space, transport, communication, etc. The third condition is that the specific place of research in architecture should be the research of *placeness*, where other experts do not easily replace architects.

Consequently, in a second section, the paper will analyze a concrete empirical example of research: the children conception of places to live in, in order to uncover the specific core of the research on architecture, where environmental research, cultural research, design research etc., are tied together. This core is made of pluridisciplinary knowledge coming from different fields, so architectural research should be open to all the new cultural, scientific, aesthetic and ethical inputs. Nevertheless, our aim is to show through an innovative qualitative methodology that the role research ought to follow the three basic conditions pointed out above, and that the architects are the best candidates to research on their own field of expertise.

Finally, in a third section, we present a possible analysis of this architectural research core. Naturally, there is no single way to proceed, no universal methodology. However, environmental, cultural or design research done outside the architectural research core do not necessarily improve architectural theories and practices from the core. We discuss the need for guidelines that uncover some basic concepts for architectural practices' analysis, both in design, in construction and in the use of space.. One of these basic concepts is the chronotopic dimensions of architectural design defined by Mikhail Bakhtin eighty

years ago. The analysis of these chronotopic dimensions can open a plurality of research topics and new dissertations. Research on architecture becomes useful and the feedback between theory and architectural design can be a reality

1. Research in Architecture: A Challenge that Goes a Long Way

The difficulties to articulate research and architecture are not a new challenge for architects (Muntañola 2009). Richard Bodeüs (Bodeüs 1982) defined some years ago how Aristotle himself devoted a big part of their works on ethics to analyze in detail what are the key dimensions of this challenge. Some fundamental ideas by Aristotle are presented in the selection of quotes in Fig.1.

"In practical knowledge, as in architecture, in education or in legislation, the finality is not to arrive to the total knowledge of everything that is good, but to implement them in action.
"In relation to these cases knowledge is not enough, it is necessary to be virtuous and to practice that virtuosity."
"The science that is made of action laws about what should be done and what should not be done is the architectural science, the most excellent of all."
"The transmission and communication of this architectural science demands knowledge besides virtuosity."
"The sign that allows to differentiate between who knows and who does not know, is the capacity to teach and, for this reason, art, in relation to the experience, is rather a science."
"Perhaps it is not impossible, but it is very difficult, to be a good judge of this architectonic science without an initiation to practice."
"The architectonic wisdom and the practical wisdom must be closely related to each other, because, as in Pericles, wise men in relation to themselves are wise also for the judgment of the acts of others."
"We go too fast in forgetting the past and too slowly in proposing a new future, a bad abstraction in both cases."

Figure 1: Selected quotes from Richard Bodeüs (1982).

These definitions by Aristotle look strangely familiar to our discussions about how to do research related to architectural design and planning. We will not reproduce here the possible philosophical implications (Muntañola 2004a, 2004b, 2005a, 2005b, 2005c).

However, it is important to insist upon the specific and common quality of architecture, education and legislation in the face of research (see diagram I). Diagram I shows the professions involved in the architectural wisdom. This common specific quality among these three professions is the space and time anticipation they need, that is, their chronotopic dimensions. This explains the difficulties encountered by architects when trying to conceive a unified theoretical field, they need to articulate

architectural theories and practices, which are two sides of the same coin. The specific quality of architecture should push architects to conceptualize a strong architectural research dimension, and a good feedback between research and practice that exists in other professions (Muntañola 2008, 2009a).

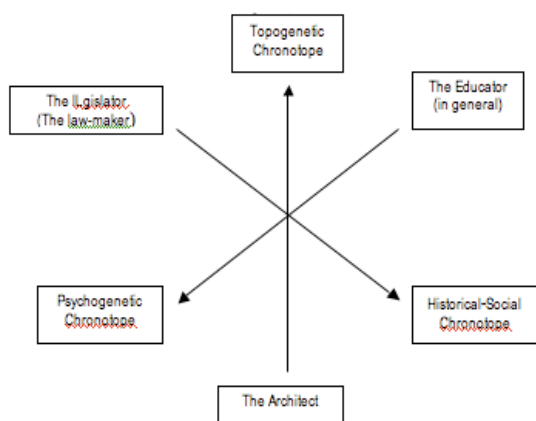


Diagram I: Three professions that share the same architectural wisdom. The chronotope is, according to Bakhtin, the articulation between physical space and time and social space and time structures.

We just need to take care of our specific synthetic qualities, since architectural design implies aesthetic, scientific and ethical (political) factors, altogether (Muntañola 2009), and this combination of factors is the only way to articulate design, building and dwelling by architects (Ricoeur 2003). In diagram II these three fundamental activities of architects are shown, and each one has a very different space and time dimension, that is, a different chronotopic dimension (Bakhtin 1990)

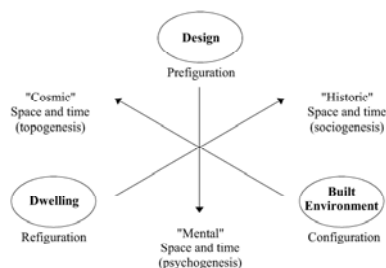


Diagram II: The three main dimensions of architecture as *placeness*.

In spite of the years separating today from the old classic Greek philosophy, the "architectonic wisdom" defined by Aristotle as the "key stone" of his philosophical

construction, still is a good starting point for our inquiry. Aristotle's model applies to the relationships between architectural design and architectural research, as stated in five theoretical claims.

- 1) Architecture, education and legislation share a specific "virtuosity" (or wisdom). Because of this specificity the architect should orientate himself to "good practices," not to some kind of theoretical knowledge of everything.
- 2) As a consequence, architecture, education and legislation should share an "architectonic wisdom," (or virtuosity) in order to build a good city for everyone.
- 3) This "architectonic wisdom" that good architects must have, and also, analogically, educators and legislators, is based upon a "virtuous" link between theory and practice, between art and science, and, finally, between ethics and politics. This link demands, both, experience and theoretical wisdom in order to know how, when, and where to implement the right practice in the right situation.
- 4) A keen summary of these three conclusive points is the following general argument by Richard Bodeüs:

"Aristotle calls "architectonic wisdom" the function needed in order to uncover the best laws for a specific society, in the same way that the function of any "virtuosity" (in a common sense dimension) is to uncover and to undertake the best actions in each specific situation". (Bodeüs 1982: 79)

- 5) The origin of this wisdom is neither "natural" nor "divine" nor caused by universal theoretical laws, is it simply "human."

2. METHODOLOGY, FINDINGS & ANALYSIS

Diversity and Unification in Architectural Research: The Case of Education

The name of this conference contains a valuable first step in order to reconsider the attitude of architects in relation to research. Seven branches, or research topics, are tied together by the special role of *placeness* as the kernel of these branches (see diagram III).

We will try to examine this concept in the analytical section. But first we will present some results of a research on architectural child education and we will see how diagrams I, II and III apply to the empirical data collected.

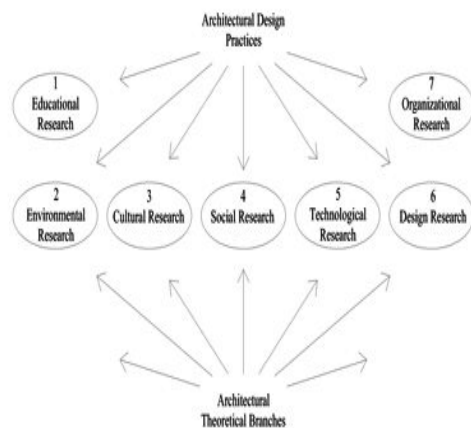


Diagram III: The seven branches of applied research in architecture

2.a. METHODOLOGY

The methodology has been carried out in different countries (Muntañola 1980, 2007). We present here two examples, recorded in 2007 by a PhD student, of children's conceptions of places to live in from two different schools in Barcelona (Fig.3a-3b). The whole research analyzed six schools and in each school three different groups of children from 6 to 12 years of age were asked to participate. Each group included from 4 to 6 children, half boys, half girls. They are asked to build a city with a wooden block game without any other order. The video of a single process, and twelve of them were recorded, two for separate age groups in each school, lasted approximately thirty minutes, including preparation, construction and verbal explanation of the city model. The two groups analyzed here (see Fig. 3a, 3b, 4a, 4b) represent two very different kinds of cities that correlates with two very different kinds of social interaction (see analysis point 2.b) and also with two diverse school curriculums. A broader description of the methodology is in Muntañola (1973).

The findings were analyzed with a qualitative analytical tool for audiovisual data, ELAN®, software developed by the Max Planck Institute for Psycholinguistics, for gesture and small-scale interactions. Systematic audiovisual analysis needs a strong model or codification to start with, in order not to get lost with the data. Our units of analysis were labeled Activity Recurrent Episodes (or ARE) [activity occurrences that are judged to be significant happening in the learning context and that are delimited by a change in theme (Barab, Hay & Yamagata-Lynch, 2001: p. 66). Through the classification of (or ARE), we traced the directive interactions between the children

when constructing the city. We looked at the type of interaction (unisex or mixed), the modalities of communication involved (speech, touch, gesture, gaze, movement), and the moments for joint action, when the children moved blocks and planned the ideal city collaboratively. In Fig. 2 we see two snapshots of two sampled schools, both private schools located in Barcelona. The children came from upper class urban families, so they had a similar social background, We coded and analyzed in depth two representative schools of the overall sample (6 schools in Barcelona) dividing them into two categories, A and B, depending on their resulting cities, monological or dialogical (see Fig. 3a-3b).



Figure 2: A snapshot from the ELAN® software for qualitative analysis.

2.b. FINDINGS

Our descriptive analysis of the interaction differences between the two types of schools is summarized in tables 1 and 2.

Interactive Activity	SCHOOL A		SCHOOL B	
	Duration (in seconds)	% Total Duration	Duration (in seconds)	% Total Duration
Collab_girls	789.6	43.5	102.7	17.4
Collab_boys	253.2	13.9	76.1	12.9
Collab_mixed	772.9	42.6	411.3	69.7
Total Duration	1815.7	100	590.1	100

Table 1: Distribution of children interactions by gender and school.

Comparing schools A and B, we see how the main type of interaction by gender varies: in the first schools, interaction takes place mainly among girls, with a 43,5% of all interactions, closely followed by girl-boy collaboration in a 42,6%, and a residual exclusive boys collaboration, 14%. In the second schools, the main collaboration is mixed, with almost a 70%, with a low 17% girls collaboration second, and a similar residual masculine collaboration as in school A, around 13%. From here we see how in schools like type A, the interactions were strongly polarized, with high girls' interaction and very low masculine interaction. This fact alone makes us categorize A as having a less of a real and meaningful interaction for design. In school B, the boy-girl interaction dominated. Taking into account that all groups were composed by 3 girls and 3 boys, it is apparent that school B types displayed closer transgender interactions, as a group, which also shows in Fig. 4a-4b. The children from the type B school pose as a group next to their city, while in school A each kid stands next to his or her individual construction. Nevertheless, in both cases some common identification was expressed since the participants created a name for the city that integrated all the group components.

Collaboration Modalities (in %)	School A			School B		
	Girls_Collab	Boys_Collab	Mixed_Collab	Girls_Collab	Boys_Collab	Mixed_Collab
Planning/Action	22.6	0.0	26.9	26.6	0.0	35.4
Building	55.6	0.0	27.0	73.6	100.0	44.6
Passing Blocks	21.1	94.7	33.7	0.0	0.0	20.0
Question	0.7	0.0	5.6	0.0	0.0	0.0
Comments	0.0	5.3	6.8	0.0	0.0	0.0
Total Duration	100.0	100.0	100.0	100.0	100.0	100.0

Table 2: Distribution of collaboration modalities by type, gender and school.

If we look into the modalities of collaboration by gender, in table 2, we see how the distribution of modalities also varies by type of school. Both groups of girls' interactions have building as the main interaction. However, while in schools B it represents a 76,6% of the total girls'

interactions, in schools A this percentage goes down to 55,6%, while 21,6% goes to passing around the blocks necessary for individual construction, which represents a lower level of coordinated actions. The second most common interaction is planning further actions, which implies common negotiation of what ought to be built, how, and where. The percentages are 22,6% of all girls' interactions for schools A, and 26% for schools B, so it is higher in the latter. In all schools the girls' interactions show a high level of joint action at the imagination level (coordinating intentions to decide what will be built next), with a lower involvement in actual building and higher involvement in the preliminary and secondary coordinated actions of passing around the building blocks in school A.

The large difference comes in the boys collaboration group, which is the less collaborative group, as shown in table 1. In school A, 95% of the interactions amounts to the peripheral activity of distributing blocks, while 5% amounts to comments related to complaints, critical comments and emotional interjections about the others' behavior. Those are cases of very low meaningful interaction. In school B, 100% of the boys' interactions amounts to building, which indicates a higher level of interaction than the other school. Interestingly, in none of the schools there is an exclusive masculine interaction directed to planning, which is dominated by girls.

Finally, in the third group of interactions, which are those that cross gender boundaries and that we consider as indicators of higher interaction levels of and distribution of cognition, we see important differences. In school A the main type of interaction is passing blocks, that we classified as lower-level and less central type of collaboration, with 33,7% of total girl-boy interactions. In contrast, in school B the main interaction is building, with a clear 44,6%. So not only the collaboration boy-girl is higher in school B than in school A (69,7% for B and 42,6% for A), but also in school B this collaboration seems to involve the central process, the building. Accordingly, the planning activity, which is also key to the building process as it involves the joint formulation of desires and decision-making, is more represented in school B (35,4%) than in school A (26,9%). Finally, while in school B comments and questions are not recorded as a single type of interaction (they do occur simultaneously to other types, such as building or planning), in school B we find an approximate 12% of verbal interactions that consist in questions about the identity or function of a construction built by an individual child, which can evolve in a suggestion of change of function or a negotiation of its physical location.

Fig. 3a and 3b show different types of cities built by groups of children from two different schools. The differences in types of cities come from the type of

interaction that each school establishes in the social life of the school as the chapter 2.c. explains.

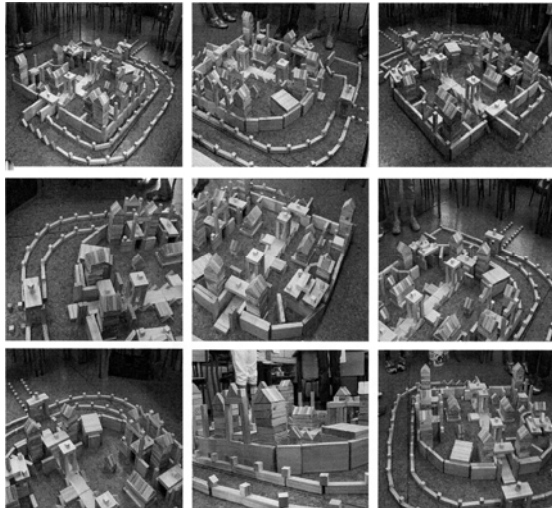


Figure 3a: Dialogical cities built by school A.

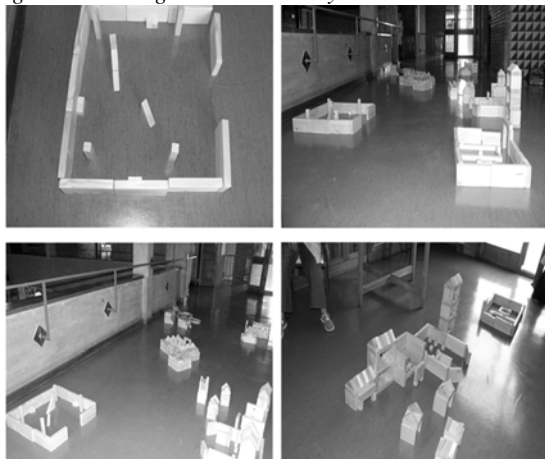


Figure 3b: Monological cities



Figure: 4a



Figure: 4b

Fig. 4a shows a dialogical city, with children gathered in a group and close to the city. Fig. 4b is a group of children that build a monological city. They do not look to each other, each child is alone and close to the building he has built.

2.c. ANALYSIS

These findings point towards a correspondence between the type of interaction and the resulting city that is effectively constructed. In spite of the concrete quality of this research focused on class activity in schools, the outputs explained in diagram IV and in table 3 go beyond any pedagogical consideration. The correlation between social intersubjective relationships and physical spatial and temporal object forms is extremely powerful, investing architectural design and planning with strong socio-physical significance and an ethical dimension.

	Monological City "A"	Dialogical City "B"
Number of different elements	10	60
Parent participation in the school	Does not exist	High participation
Organized visits and celebrations	Does not exist	Many
Theatre	Does not exist	Very important

Table 3: Cultural dialogical differences in children's conceptions of cities in relation to the curriculums of the schools

In this sense, architecture is made of socio-physical coexistence. One of the outputs of this research has been the key indicators included by UNICEF in 2009 in the environmental evaluation of child friendly cities (Aranda & Muntañola, 2009). Presented in table 4, they are a good example of these specific qualities of architectural research too. Extremely different dimensions of human life are necessarily tied together in the children's use of real cities. Each indicator in the table 3 belongs to a different branch in diagram III. The life of children is affected by the combination of all these indicators. We have uncovered in this way a nice example of the interrelation announced by Aristotle between education, urban policies and architecture of our cities.

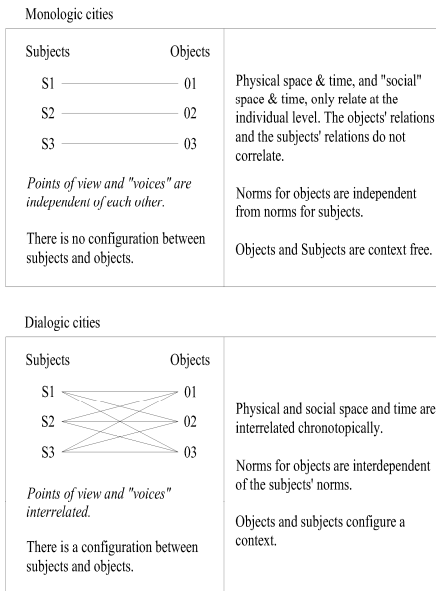


Diagram IV: Sociophysical structure between subjects and objects in monological or dialogical cities

As Bill Hillier (1996) claimed, architectural theories are non-discursive, that is, are not unified scientific theories but constructions, jumping between practical treatises and general conceptual frameworks. Feedback between art and science is always found in architectural theories. In diagram III we see how different research branches are useful for a better architectural practice and theory, if, and only if, they are somehow coordinated with the other research branches. This is true, not only in childhood, but in adulthood too, which is a harder task.

Finally, in Fig. 5 we reproduce the pathological dimensions shown by "wild children" according to Linnaeus, in the seventeenth century in Sweden. The father of the modern natural sciences summarized several cases of wild children around the world at that time. He points out to the need of social interaction for the child development. There are specific human qualities of the human body that cannot develop in wild children (Linnaeus, 1758). It is very clear that these pathologies are closely related to social cultural space and time dimensions embedded in architectural and city planning design shown by educated children. Also we can consider these pathologies, both as a proof of the social "external" and "extended" awareness, and as a confirmation of the role of the human body's inner qualities in order to avoid these pathologies regardless of the specific cultural situation they are. In some sense, all these facts seem to be positively related with the recent hypotheses by Andy Clark (2008) on the specific role of the body in the development of human consciousness. If the embodied

hypotheses in cognition are true, then architecture and *placeness* should re-occupy, again, its role in the life scenario. According to Andy Clark:

the body is the locus of willed action, the point of sensory-motor confluence, the gateway to intelligent offloading, and the stable platform whose features and relations can be relied upon in the computations underlying some intelligent performances (2008: p. 207).

The pathologies of wild children keenly defined by Linnaeus in the XVIII century were:	
a)	They do not recognize their images in the mirror.
b)	They cannot follow the rhythm of day and night. They have a distorted sleeping pace.
c)	They have not developed linguistic, geometric, mathematical, etc. ways of intersubjective communication.
d)	They have bad postures in walking, moving, etc.
e)	They show emotional disequilibrium and lack of control in social encounters.
f)	They do not have sexual identity.
The rehabilitation of these children depends upon at which age and for how long they have lived alone or with other animals. If it is a long time and from birth it is almost impossible to be "normal" again.	

Figure 5: Cultural pathologies of wild children according to Linnaeus (1758).

Indicator	Theoretical branches (Fig. III)	Definition	Limits & actions
I-1 Noise levels	2,5,6	Noise as harmful for children.	Noise Measure Limitation: If it impedes human communication (40 Db)
I-2 Pollution	2,5,6	Pollution of air, water, earth and materials within a populated area.	Normal environmental controls, e.g. prohibition of asbestos, arsenic, polluted water, etc.
I-3 Electromagnetic Radiation	2,5,6	Harmful installation of aerials, high-voltage lines, etc.	Min. Distances. High voltage. Aerials: 200 m.
I-4 Safe playgrounds	4,1,6	Playgrounds near residential areas.	Max. Distances between dwellings Max. Size
I-5 Safe routes between main community areas	4,3,6	The importance of daily routes for the community.	Max. 15 mins. on foot or 2 km, or well-planned school transportation.
I-6 The school as a dynamic center	1,3,6	Schools are open to the community as social agents.	List of major activities at, or around schools.
I-7 Public facilities for all age groups adapted and supervised for children's use	4,3,6	Promoting the use of facilities by different age groups.	Public facilities within walking distance.
I-8 Child-friendly public services	4,3,6	Adaptation of services for all age groups.	Facilities for the youngest age groups, adequate supervision, information/communication.
I-9 Adequate privacy of home and in community	4,1,6	To ensure privacy as child grows, in accordance with each age needs.	From 7 y. of age: privacy at home; from 12 y. of age: privacy in quiet spaces and in public areas.
I-10 Juxtaposition of built areas and the countryside	2,3,6	To ensure optimum spacing between built-up areas and countryside.	Min. distances to garden areas or non-asphalted areas. Easy access to countryside.

Table 4: Ten indicators of urban quality for the assessment of child friendly cities (UNICEF 2010).

3. The Place of Research and the Research of Place

The ideal for our architectural research in the next future is described in diagram V. The right function of this diagram implies a permanent feedback between research on architectural design and practice on the one hand, and between research on theories and applied research in the different branches of diagram III, on the other hand. As we have pointed out, applied research in each research branch needs to be connected with the other dimensions of practice, in one way or other. The role of theory is not only to allow this connection, but to push for it to make it real. This is an explanation not far from the present discussions on the mind and body interactions, or on the anthropological development in social cognition (Hutchins 1995), or on ecology and environmental sustainability. However, the situation is far from being ideal in current architectural research. Theoretical and practical misunderstandings, and the individualistic structure of our profession, much more oriented towards competition than to cooperation and participation, hinders architectural research (Muntañola 2009). In diagram V some improvements from previous decades in architectural research, psychology, cognitive science and the remaining social sciences are shown. Some theoretical branches interact with the applied research branches, and the beginning of a feedback between practice and theory can be uncovered. These three new perspectives are:

- A) Intersubjective social (historical) architecture
Dialogical social chronotope (sociophysical): (Bakhtin 1990) (Hillier 1996) (Leddy 1994).
- B) Intersubjective mental architecture
Mind and machine interfase (psycho-physical): (The Extended Mind) (Clark 2008).
- C) Intersubjective cosmic architecture
Byfunctional psychosocial feedback: (Gottlieb 2003) (Langer 2004).

Can we by seek a "unification" between these three theoretical branches (Rapoport 2008). Placeness is always the key, but we should be very careful at this point, because we could "reduce" practical architectural design to a virtual cosmic ghost, to a machine-like mental tool, or to a Hegelian aprioristic social system, in the three cases it is a deterministic architectural research fiasco. We should analyze each city or territory, that is, each place, as an articulation between research and practice, and among all the dimensions in diagram V, but this articulation is different in each place, and the global dimensions should never eliminate the specific qualities of it. In order to escape from that fiasco, we can, for now, confront architectural practice with these three theoretical branches, trying to look for one common "architecture" between them. Diagram V shows one manner to get to this fundamental link. It is not surprising that the link reproduces the three old dimensions of architecture.

However, there are new dimensions that should be taken into account. First of all, there are historical (social), cosmic (natural), or mental (ideas) dimensions that architects should apriorically take into consideration. First, we can speak of an open system in the shape of social or neuronal networks (Latour 2005). Second, architecture is present in our society, in our environment and in our mind. The key point now is to uncover the interplay between these three "architectures," not far from the way social history or mental cultural memories and utopias are built and analyzed. Another way of considering this interplay is the relationships between three different research settings: The educative setting (design), the urban social setting (dwelling), and the professional setting (building). Paradoxically many PhD dissertations on architectural practices end up going down this theoretical path without really being aware of this three-dimensional articulation. Architectural research should introduce awareness in graduate studies in architectural education and environmental evaluation in general, as shown in diagram V. Of course, we can argue that awareness alone does not guarantee improvement in architectural design, but we have no choice: our civilization needs awareness in architecture, in sustainability (global warming), in economics (the financial globalization), etc. In spite of having survived until now without it, we need awareness because of our accelerated technological development and social cultural transformations from modern to global cultural social interactions. Culture today is different and needs an extra awareness factor in order to be able to forecast a better future for children.

We will end our paper as we began, in a homage to Plato's prediction in *Timaeus*, when he analyzes *placeness*: And there is a third nature, which is space, and it is eternal and admits no destruction, and provides a home for all created things, and is apprehended when all sense is absent, by a kind of spurious reason, and is hardly real, which we, beholding like in a dream, say of all existence that it must of necessity be in some place and occupy space... (*Timaeus*, 52b).



Diagram V: Research and practice in Architecture from a dialogical perspective.

CONCLUSION

Research in architecture can be very diverse. In any case, the aim is to facilitate good architectural planning design practices. The six research domains and the three theoretical paradigms indicated in diagram V, should always point towards a better understanding of architecture as a conception, a construction and a better use of places to live in.

Social interaction, as the children conceptions of cities indicate, is the kernel of architectural research. However, it is a very specific "architectonic" view of social interactions, because we are seeking an interface between the social space and time dimensions of physical spaces, and the physical space and time dimensions of the social behaviors, meanings and values. This crossing process is what we have defined as a "chronotopic" sociophysical interaction.

Hence the act of design, the act of construction, and the art of dwelling are coordinated by the same "architectonic wisdom" forecasted by the old Greek philosophers. As Paul Ricoeur defined very clearly, there is a hermeneutic cycle between the three architectural acts that constitute *placeness* in diagram II. As Mikhail Bakhtin insisted upon, each place is produced by a specific intersubjective architectonic agreement (or disagreement) manifested by a specific chronotopic dialogical structure made of physical and social space, together with the time conditions.

In other words, research on what an architectural place is, or should be, leads us towards the same architectonic wisdom that converts it, builds it and uses it, and there is no way to escape from the chronotopic and hermeneutic qualities of this research.

LIST OF REFERENCES

- Aranda, Gregorio, And Josep Muntañola. 2009. Indicadores Municipales. Spain: Unicef.
- Bakhtin, Mikhail. 1990. Art And Answerability. Austin, Tx : University Of Texas Press.
- Barab, S. A., Hay, K. E., Yamagata-Lynch, L. C. 2001. Constructing Networks Of Activity: An In-Situ Research Methodology. The Journal Of The Learning Sciences 10(1&2): 63-112.
- Bodeüs, Richard. 1982. Le Philosophie Et La Cite. Paris: Les Belles Lettres.
- Clark, Andy. 2008. Pressing The Flesh: A Tension In The Study Of The Embodied, Embedded Mind. Philosophy And Phenomenological Research, Volume 76, 1: 37-59.
- Gottlieb, Gilbert. 2003. "Probabilistic Epigenesis Of Development." In Handbook Of Developmental Psychology, Ed. Jaan Valsiner And Kevin J. Connolly. London: Sage.
- Hillier, Bill. 1996. Space Is The Machine. London: Cambridge University Press.
- Hutchins, Edwin. 1995. Cognition In The Wild. Cambridge: Mit Press.
- Kirsh, David. 1995. Thde Use of Space. Artificial Intelligence 73, 31.
- Langer, Jonas Et Al. 2003. "Early Cognitive Development: Ontogeny And Phylogeny." In Handbook Of Developmental Psychology, Ed. Jaan Valsiner And Kevin J. Connolly. London: Sage.
- Latour, B. 2005. Reassembling The Social- An Introduction To Actor-Network-Theory. Oxford: Oxford University Press.
- Leddy, Tom. 1994. Dialogical Architecture. Philosophy And Architecture. Atlanta: M.H. Mitras Ed.
- Linnaeus, Carl Von. 1758. System Naturae. Volume 1: 20. Stockholm.
- Muntañola, Josep. 1973. The Child's Conception Of Places To Live In. Environment Research And Practice. Volume 1. Edra-Iv Proceedings. Usa: Dowden, Hutchinson & Ross Inc.
- Muntañola, Josep. 1980. Towards An Epistemology Of Architectural Design As A Place-Making Activity. Meaning And Behavior In The Built Environment. London, Uk: Broadbent, Bunt, Llorens.
- Muntañola, Josep. 2004a. Architecture As A Thinking Matter. Paper Presented At TheInternational Congress Of Semiotic Studies, July, In Lyon, France.
- Muntañola, Josep. 2004b. The Child In The City: Towards A Dialogical Model Of Children-Environment Relationships. Paper Presented At The Second International Congress Of The Child In The City Foundation, October, In London, Uk.
- Muntañola, Josep. 2005a. Architecture, Education And Social Dialogy. Paper Presented At The Enhsa Forum (European Network Of Heads Of Schools Of Architecture), September 2-3, In Hania, Crete, Greece.
- Muntañola, Josep. 2005b. Architectural Design Education In Europe: Mind, Land And Society In A Global World. Paper Presented At The Enhsa Forum (European Network Of Heads Of Schools Of Architecture), September 2-3, In Hania, Crete, Greece.
- Muntañola, Josep. 2005c. On The Search Of The Research Core Of Architecture. Paper Presented At The Enhsa Forum (European Network Of Heads Of Schools Of Architecture), September 2-3, In Hania, Crete, Greece.
- Muntañola, Josep. 2007. Las Formas Del Tiempo. Badajoz (Spain): Abecedario.

Muntañola, Josep. 2008. Architecture On The Threshold Of The Digital Age: Revolution Or Regression? Paper Published In The Proceedings Of The Eaae/Arcc, Vol. 1, In Copenhagen.

Muntañola, Josep. 2009. The Relationships Between Architectural Practices And Architectural Theories: Some Basic Misunderstandings Regarding Architectural Research. Paper Presented At The Fourth Eaae-Enhsa Sub-Network Workshop On Architectural Theory, October 17-25, At The Western Switzerland University Of Applied Sciences, Fribourg College Of Engineering And Architecture, Switzerland.

Muntañola, Josep. 2009a. Topogénesis. Fundamentos De Una Nueva Arquitectura. Published In The Series Arquitectonics, No. 18. Barcelona: Edicions Upc. Original Version In French, Paris: Anthropos, 1997.

Muntanyola, D. (2009) "Coreographing Duets: Gender Differences In Dance Rehearsals". E-Pisteme, 3, 2 (2), [Http://Research.Ncl.Ac.Uk/E-Pisteme/](http://Research.Ncl.Ac.Uk/E-Pisteme/)

Muntanyola, D. & Kirsh, D. (2010) "Marking As Physical Thinking: A Cognitive Ethnography Of Dance". Iwcogsc-10 Ilcli International Workshop On Cognitive Science Conference Proceedings. 339-366.

Plato. 1961. Plato. The Collected Dialogues. New York: Pantheon Books.

Rapoport, Amos. 2008. Mind, Land And Society Relationships In An Environment-Behavior Perspective. Arquitectonics 15: 33-62. Barcelona: Upc Editions

Ricoeur, Paul. 2003. Arquitectura Y Narratividad. Arquitectonics 4: 9-30. Barcelona: Upc Edition.

With the support of the Ministerio de Ciencia e Innovación. (MICINN). Spain.

Research Project number: SEJ2007-62970.