CAAD Education under the Lens of Critical Communication Theories and Critical Pedagogy:
Towards a Critical Computer Aided Architectural Design Education (CCAADE)

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Understanding the dominant ethos of our age is imperative but not easy. However it is quite evident that new technologies have altered our times. Every discipline is now forced to be critical in developing new concepts according to the realities of our times. Implementing a critical worldview and consciousness is now more essential than ever. Latest changes in information technology are creating pressure on change both in societal and cultural terms. With its direct relation to these technologies, computer aided architectural design education, is obviously an outstanding / prominent case within contemporary debate.

This paper aims to name some critical points related to computer aided architectural design education (CAADE) from the perspective of critical communication studies and critical education theories. It tries to relate these three areas, by introducing their common concepts to each other. In this way, it hopes to open a path for a language of critique. A critique that supports and promotes experimentation, negotiation, creativity, social consciousness and active participation in architectural education in general, and CAADE in specific.

It suggests that CAADE might become critical and produce meta-discourses [1] in two ways. Firstly, by being critical about the context it exists in, that is to say, its relationships to the existing institutional and social structures and secondly by being critical about the content it handles; in other words by questioning its ideological dimensions. This study considers that analysing the role of CAADE in this scheme can provide architectural education with the opportunity to make healthy projections for the future.

Keywords*: Critical Theories, Critical Pedagogy, and Critical CAADE*

Introduction

'Many contemporary educators approach what they do as though it is based on a firm foundation with fixed standards, but if no such foundation or standards exist with little or no prospects for establishing them, then it is time to rethink what we say and do' (Cherryholmes, 1988).

One of the most commonly repeated mistake in many discipline, is to consider the outcomes of the research made separated and isolated from each other. This ends up with two or more parallel

developments as well as creating the danger of one of these areas changing context and loosing the relationship with the others completely.

Critical communication theories, critical pedagogy and CAADE are all relatively new research areas introduced to architectural education. Although all of these areas and their objectives have so much in common, the lack of integrity and communication between them, results in separate developments and research designs without adding one's values and outcomes to the other for more complete achievements. Critical communication studies are deeply concerned with changes in social institutions and human relations in a historical context, where issues like the ownership and/or control of communication technologies, necessary conditions for democracy and actual life conditions becomes important factors. Parallel to this, critical pedagogy is interested in the process of "learning how to learn" and tries to introduce new concepts into education such as critical inquiry of social production and expression of different voices as a part of the learning / teaching activity in a democratic and mutual communication process. CAADE on the other hand, tries to radically change the existing structure of architectural education due to its relation to the constantly changing technologies and the new concepts introduced by these changes.

The following parts of this paper discuss the different potentials for Critical CAAD Pedagogy by reviewing the challenges provided by critical education theories. First, it evaluates critical theories then the existing traditional system of architectural education and finally relates these to CAADE.

From Critical Theory to Critical Education Theory

'The concept of critical theory refers to the nature of self-conscious critique and to the need to develop a discourse of social transformation and emancipation that does not cling dogmatically to its own doctrinal assumptions' (Giroux, 1983).

The development of **critical theory** as a body of theoretical work, as well as the first use of the term was brought up by a group of academicians, under the institution known as 'the Frankfurt School'. Firstly it was used as the 'self conscious critique' as well as the development of a discourse of social transformation. Then in more general terms it was used as an umbrella term for *'the theory of criticism, covering contemporary theoretical debates in areas such as philosophy, gender studies, psychoanalysis, literature and other modes of cultural expression'* (Leach, 1995). Critical theory defines and calls for the necessity of an ongoing critique. Self-critique or critical self-reflection is an essential part of this process, enabling disciplines to re-create themselves continuously as related areas providing feedback to these disciplines change. Both historical and practical orientations are evaluated and considered critically for saving the disciplines from the formation of any dogmas.

Critical theories consider *communication and education* in a historical context and discuss their problems by focusing around political economical cultural and social issues that are crucial for them. Research is handled critically, assuming that beliefs of any individual, researcher or subject may be in error. Critical approach does not take things for granted and as a result also assumes that we may always be doing something other than what we think we are.

Critical communication theory, parallel to the critical theory, engages a historical materialist critique of communication institutions and social practices. The scholars dealing with critical communication perspectives problematise the "taken for granted" communication practices and explains them within the framework of cultural studies and political economy. Besides dealing with institutional levels of communication, it also deals with communication at individual level, such as *critical self-reflection* or establishment of critical dialogue. The use of

communication technology and communication tools, their power and effects are all handled with the above-mentioned historical materialist critique. Some of the basic intentions of critical communication studies are: *'toward more democratic and emancipatory forms of citizenship and to produce projects that promote critical imagination - the ability to think beyond what is to what might be'* (Bailie, 1993).

Critical Education Theory or Critical Pedagogy questions the activities, rules, values, ideologies and power arrangements of contemporary educational practice. It is about the theory of education that rejects the traditional banking concept of education and instead adopts a concept of men / students as conscious beings. It replaces 'deposit making' with the 'posing of problems' of students in their relations with the world.

> *'A democratic society needs the creativity and intelligence of its people. The students need a challenging education of high quality that empowers them as **thinkers, communicators** and **citizens'*** (Shor, 1992).

As a result, students develop a critical perception and understanding of the world surrounding them, become conscious of the reality in process, and realise the indispensability of dialogue. In this way such an education might base itself on creativity stimulating true reflection and action upon reality (Freire, 1983). When looked from this point of view it becomes clear that critical education supports students to become active and creative citizens in the full context of the word. Rather than understanding education as a functional, linear process for acquiring professional skills, the students are encouraged to participate in the development of conditions and critiques related to their education as well as social transformations taking place around them.

Critical Pedagogy deals with already shaped subjectivity, rules and ideologies of professions and professionals, and in order to exert control over practice it calls for being explicit not only about what we do but also about what it is that structures what we do.

'Critical' Architectural Education

Despite its significance for architectural education, the relation between critical pedagogy and architectural education is one of the least dealt research area. Although many schools have already abandoned traditional education models it can be said that architectural education is still under the influence of these traditional models. Within their context, architectural ability is reduced merely to a "skill" and architectural education to "skills training". Architectural knowledge is simply "transmitted". Students of architecture are *'blank screens ready to receive unmediated transmissions of skills and information as delineated by experts'* (Giroux, as cited in Crysler, 1995). Students due to their lack of knowledge regarding architecture are as empty vessels whereas the *'faculty occupy the most powerful positions in relation to students because as "full vessels," they embody and control access to what students require to become "full" themselves'* (Crysler, 1995).

In other words; in this traditional approach to education neither the students of architecture nor the users of the built environment are viewed as the creative citizens who can understand and change the world. Students specially are seen as 'objects', which / who need to be educated to answer the acute needs of the architectural practice / market. Such approaches are inadequate for promoting the transformation as mentioned within the perspectives of critical education theory. They are insufficient for the development of critical thinking and inquiry since these systems under-theorise architectural pedagogy.

The historical development of architectural education brings design education to its core. In many schools of architecture, design teaching has the most important position and takes place in the form of "critiques". The teacher of architecture gives "critiques" to each student individually or sometimes to a group

of students at once. "Criticism" in general is described as *'looking for faults; pointing out to faults'* (Oxford Advanced Learner's Dictionary). Though, in architectural education, "criticism" is theoretically concerned with mainly evaluating, interpreting and describing; critical approach is accepted as a natural way of learning and teaching. This natural acceptance is rejected by Freire where he quotes that *'there is no such thing as natural education process'* (Freire, 1983)

On the other hand even though it might seem obvious that architectural educators **do** encourage students of architecture to be conscious of the realities of the world they are in or to become successful and responsible citizens. However, a critical analysis brings out the questions behind the scene. Who puts the laws of these realities? What kind of a world do the students of architecture want to live in? What are the responsibilities of architects? Who decides how much an architect is 'successful' and in which contexts?

The questions can be more extended; *the role of the architect* changed rapidly over the past few decades; more to it, no longer can be talked about a single and simply defined role of the architect. There are several and various 'roles'. Which of these roles do the students want to acquire? Are they critically aware of the hierarchies within these roles? *Architectural practice / the market* is changing and adopting itself much quicker to the changes of the information age than architectural education; *users / the society* itself is changing so quickly that architectural education is loosing the framework for re-creating a conceptual basis: who are actually the people architects are designing for? What are their needs? To which extend are the needs of the society modelled by the contemporary normative effects of the media industries and how much by culture or tradition? How much are they limited by political economical constraints? The communication technologies used both in society and education are changing but in whose interest? Where do these technologies come from? and so on.

When these questions are considered two different pictures are shaped for architectural education. On the one hand is the picture of architectural education functioning as an instrument which facilities the integration of students of architecture into the logic of the present professional system, where skills and knowledge are highly dominated by the societal features of the practice. On the other hand architectural education functioning as a support, through which students of architecture as young citizens deal critically and creatively with the "realities of architecture" and discover how to participate in their transformation.

In relevance to these facts and to the perspective of critical communication scholarship's mission: *'to advance understandings that might potentially transform the world'* (Bailie, 1997) it can be mentioned that architectural education most of the times miss the opportunities for critical pedagogical possibilities in its courses.

From CAADE to Critical CAAD Pedagogy

The above-mentioned problems of architectural education arise if critical analysis is not in the core of its education policies; since it also applies directly to architectural design education. CAADE is currently situated in the traditional educational environment of architectural education, with its ongoing system of educational rituals, attitudes, relationships and practices. In order to bring in a realistic evaluation and criticism of CAAD within the existing structure of architectural education, it will be considered from two different perspectives: the 'content' of CAADE and its 'context'.

Both of these perspectives: looking at CAADE in a context or content scale; when considered from the ideology of critical pedagogy indicated to the existence of a big paradox. The **context** paradox is that; even though the design process is strongly based upon being **critical** in a problem solving activity, when it is transforming itself with the introduction of computer technology from the traditional design education to

CAADE **no** performance of any critical approach is observed. Disregarding the positive potential of the change brought in by the introduction of a new communication tool, it is still locating itself into the existing system of thoughts, relations, ideologies and practices. How these systems are related to each other and what is the position and relation of CAADE within this network of relations? Holding in hand the power these technologies bring, CAADE is responsible for looking for the answers to these questions. The **content** related paradox is not any different. The content of the *traditional design education* with its assignments, project topics, pedagogical approaches; student-teacher relationships/communication patterns as well as responsibilities and relative positioning of students and teachers are transferred to CAADE without going through any critical analysis.

Content

Critical thinking and skills training have always been the origins of an ongoing dilemma in architectural education. As mentioned above this ideological dilemma is borrowed from traditional design education and brought to CAADE without having being questioned. The lack of defined ideological objectives is the inheritance of the traditional architectural education.

The design of pedagogical activities such as projects, assignments, tutorials and critiques is an essential part of any design education. Unfortunately throughout the teaching and learning process very little is discussed about the content of these activities. The pedagogical objectives of these activities are taken for granted and rarely discussed; neither in the past - within traditional design education and nor now - within CAADE. The ways contemporary designs are put into life and developed due to the appearance of computers and related technology are changing rapidly but the way design is being taught and learnt is not keeping pace with this change. Knowing how to design with computers and teaching this knowledge

are two different things.

Education is a complex experience, a 'social' interaction involving both thought and feeling. The 'relationships' that are developed between the teachers and students of architecture throughout the design education process are extremely important. Communication, which plays the greatest part in the establishment of these relationships, is within the concern of critical pedagogy. From the perspectives of critical pedagogy the different cultural backgrounds of students are very important and are considered as one of the most important factors affecting 'critical dialogue' as a basis for the establishment of effective communication. Besides through dialogue, which respects student culture, experience and language promotes an optimal synthesis of educator knowledge and student knowledge. Now in the case of CAADE this cultural background paradigm shifts to another line. The students of architecture get to know computers long before they enter their higher education: some are familiar with them as part of their daily lives, some might have never owned or used one however, either consciously or instinctively they are aware of the power and effect these technologies have on the changes the humanity has been going through over the past decades. Hence, when beginning their education students of architecture usually come in with the expectation of learning to 'reproduce' the established ways of working that are being used in architectural practice. Such an expectation can be viewed as a threat to the promotion of critical inquiry or thinking in the learning and teaching practice of CAADE. This is mainly because the educators first have to challenge the norms, values and relations of the dominant culture and deal with resistance from the side of the students before getting on with critical pedagogic exercises.

All these points mentioned above lead to the encouragement of students to 'submit' and to conform rather than challenging and transforming. They are prepared for jobs offered by potential employers and not for positions in the society as critical citizens and transformer of their worlds. Students do **not criticise**

the role of computers in their education. On surface it seems that CAAD courses provide them with what they expect. However when looked deeper into the problem, they actually perform an **non-problematic acceptance** of the logic of the dominant ideology, which in return creates an illusionary division between their own real world, the real world of architectural practice and the unreal world of media, architectural dreams, theory and critique.

To which extent can a theory of critical CAAD pedagogy, be developed on the basis of such educational activities (e.g. assignments, projects, tutorials etc.) that can educate students of architecture not only how to design but how to think critically, understand and react to the existing in order to transform instead of accepting? How can CAAD educators develop the possibility for introducing critical inquiry and thinking into the design environments / labs or the whole of architectural education?

Context

The context where CAADE exists must also be analysed critically. The power relations within departments, the place of CAADE within the whole of architectural education as well as its relation to sociological, cultural and psychological changes of the societies and individuals comes into consideration under this heading. Cherryholmes explains the internalised structure of any context in general as follows:

> *'One reason for why choose activities coincident with rules and normative commitments of established practice, is ideological: people accept, internalise, and act according to shared ideas they believe are true and valid. A second reason is that social practices are supported by power arrangements. To the extent that ideology and power arrangements infiltrate our thinking and actions, they shape our subjectivity, that is,*

> *how and what we think about ourselves and so act'* (Cherryholmes, 1988).

The usage of technological equipment to achieve architectural design products which in return also allow the technology to function at its full capacity are secondary matters when developing any educational theory. It is actually how the students and teachers of architecture perceive and locate themselves and what they bring into the process of education that really matters for an educational theory.

Computer hardware and software on the other hand are designed for a certain market. For example, they are not designed for children of age two, or for farmers or fire extinguisher. In other words they are aimed at a specific group of people: 'designers'; industrial, or architectural etc. These programs are usually very similar in content, however since they compete for consumers / designers they differ in their style, format, colour, layout etc. It is very rare that these computer programs are designed for students though. Similar to knowing and teaching relationship, designing with computers and teaching how to design with computers are two different issues.

There are many things to be discussed. The teachers of CAAD courses need to get together and share their experiences, problems, suggestions related to CAADE content or context. Usually many issues remain unquestioned; such as: why there is always money to buy computes but not for additional academic members or for extra time for doing research or discussions related to them? To which extend is it possible to understand and introduce these power relations and dependencies within the existing context. How can CAADE transform itself to CCAADP within this context?

Conclusion - Critical Architectural Pedagogy and CAAD in Praxis

This paper has tried to name some critical points related to *computer aided architectural design education* (CAADE) from the perspective of *critical*

communication studies and *critical education theories*, by introducing their common concepts to each other. It suggests that CAADE has the potential to become critical and produce meta-discourses in two ways. Firstly, by being critical about the *context* it exists in, that is to say, its relationships to and positioning within existing institutional and social structures. And secondly, by being critical about the *content* it handles. Some of the topics discussed under these two headings or suggested for further discussion are:

Content related…
- Architectural educational as a platform which is used for questioning, criticising and communicating; where different voices of CAAD educators have an equal say and where past is evaluated and future creatively projected 'collectively'.
- Design of the systems / education models / pedagogical models, bearing in mind the student's development towards critical thinkers.
- Design of the pedagogical examples / projects / learning experiences for developing a critical understanding in students.
- The role of a critical CAAD teacher as a 'problem poser' / designer of the above mentioned pedagogical examples.
- Responsibility of the student towards studentship / approaching learning as active participants / or as / criticising / questioning / what is being offered or used to educate him / her (method as well as content).
- Socio-cultural background (e.g. being computer literate / sociological / psychological) of the student as well as the teacher.
- Teacher-student relationship and communication as subjects to be explored both in individual and institutional levels and updating the outcomes of such studies as individuals, institutions and systems change.
- Critical teachers bridging the gap between

critical architecture studies and CAAD in architectural education and encouraging them toward "Conscientisation": to be able to perceive social, political, and economic contradictions.

Everything related to the content of CAADE is actually smaller parts of a single but complex structure. When one of these smaller parts changes, the rest are bound to be affected by this change and hence the rest also needs to be re-analysed and updated. Single units of a 'whole' become meaningless when considered separately. They have to be evaluated at the same time within a broader socio-cultural context and in a historical process: with their past, present and future. Only such an approach can bring CAADE a more complete, realistic and critical understanding of its 'borders'.

Context Related…
- Questioning and understanding the existing context and its position within a broader context with a critical analysis of the existing situation.
- The relation of CAADE research and developments to institutions and power relations, e.g. personal, departmental, technological, sociological, political etc.
- Understanding the offered conditions, criticising them, idealising the need for the future developments.
- CAADE being under the power / relations / shared ideas / ideologies of traditional AE: the need for a more free and democratic approach / more realistic but creative and critical self-perception of transformations.
- CAADE related people developing a dialectical framework to understand the relation between the institutions and activities of everyday life / collective promotion of suggestions and solutions for the current problems of CAADE / in other words action as the second step after understanding.

CAADE in architectural education needs to define its objectives very carefully because it is a relatively new discussion topic in AE and has a great potential to offer the students the possibility of combining the latest communication technology, with critical communication theory and architectural design practice. Educators of CAAD can become good examples for students of architecture when they need to balance faith in technology with faith in themselves as human beings.

Once hardly arrived at the doors of design education, critical pedagogy is now facing the danger of being not given the required attention. As a paradigm shift takes place in design education (from the traditional one to a computer aided one) CAAD educators have two possibilities: they might either choose the path of critical thinking and try to integrate it to this new and potentially powerful area or they might neglect it and start from the beginning; where traditional design education once started from.

This paper presents the point of view of its authors. Similarly each reader will perceive and evaluate CAADE according to his/her point of view when looking at it critically. As a wise person has once said, *"Answers depend upon the questions asked and the questions depend on one's point of view".*

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Notes

[1] Meta- is 'used in the name of a discipline to designate a new but related discipline designed to deal critically with the original one' (Webster's Seventh Collegiate Dictionary).

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