Collective improvisation and the controversy of the determined work; An interdisciplinary approach to the correlation of music and architecture.

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Abstract: This paper summarizes the key issues of an ongoing doctorate research, principally conducted in architecture and correlatively in music. The interdisciplinary subject of study is shaped partly by the general, reciprocal characteristics of selected areas in terms of artistic composition, and partly by their special correlation in terms of improvisatory action. The text thus describes the extensive association of architectural and musical synthesis according to several temporal – spatial considerations, and continues by focusing on suggestions and references that document the emergence and development of improvisation in both examined fields. It is considered that the research for improvisation methods and techniques in both architecture and music, and especially the focus on what has been accomplished after 1960, provide evidence for shared incentives, parallel visions, as well as common practices and theories aiming at the decentralization and popularization of work-production procedures. The examined paradigms comprise of a wide range of examples that relate improvisation principles from both arts to multiple social, cultural and historical circumstances. In addition, an analysis of two basic cases, the architect Christopher Alexander and the musician Cornelius Cardew as well as reference to their broader frame, constitute a corpus of data that support correlation assumptions of the thesis and particular conclusions on the basis of the conference theme.

To introduce the interdisciplinary aspects of this research, we first concentrate our attention on the shared foundations of both – musical and architectural – creative processes and artistic manifestations. The basis of this discussion is primarily philosophical and concerns independent and / or mutual features for both arts, while taking into account general time and space considerations. The related issues refer to the view of traditional creation procedure as a skill-demanding sequence from work-composition to product-realisation, the transition from determinate to indeterminate work that took place particularly since the 1960's, the emergence of open work and the controversy of established compositional conventions, such as traditional means (stave notation and design by drawing respectively) and established roles typified by the terms 'master-composer' and 'end-user'. Furthermore, we examine the particular aspect of assumed relationship between architecture and music that concerns their correlation in terms of improvisation. Therefore, we make a brief reference to the general characteristics of improvisation as a multifaceted performance action opposed to composed, pre-arranged work-production, while we examine the relation of improvisatory principles and practices with the historical dichotomies between process and product. Finally, we analyse the distinction between self and collective element in improvisation and we describe the symbiosis of music and architecture in the frame of associative definitions and the assumed distinction of self-design as solo improvisation and participatory planning as collective improvisation.

Although the overall study includes various examples of acts of improvisation from both architectural and musical theory and practice (inside and beyond Avant-Gardes, before and after the 1960's), the study of two paradigms, as our main material for verification in this research, is the main link with the particular conference's theme. The next chapter illustrates two case studies, the musician Cornelius Cardew and the Scratch Orchestra, and the architect Christopher Alexander. In the first case we examine, on one hand, the musical activities of the orchestra along with the Scratch cottage as a collective building project designed by Stefan Szczelkun, and on the other hand, Cardew's stance and practice as the orchestra's prominent member and particularly his works 'Treatise', 'Schooltime Compositions', and 'The Great Learning'. In the second case we look first at Alexander's early work 'Notes on the Synthesis of Form' followed by his later collaborative work, the trilogy 'The Timeless Way of Building', 'A

Pattern Language', and 'The Oregon Experiment'.

General conclusions, in the last chapter of this article, describe in brief some of the initial postulates of the overall interdisciplinary research that concern collective improvisation, open form and participatory planning in music and architecture correlatively. In addition, we shall refer to the evaluation of research subject under the specific musicological guidelines of the conference, as referred to Avant-Garde techniques and aesthetics.

Artwork and its study in music and architecture correlatively

The development of a symbiotic relationship

When we think about spotting analogies between music and architecture, we may first focus on their correlation, as two artistic expressions of human creativity, and as art works. This correlation in terms of mutuality may find its assertion in Heidegger's dismissive statement that "Every art […] is essentially poetry"[1] and more specifically in his later discovery that "art in its whole […] produces space."[2] However, correlations cannot solely consist of such similarities, but also incorporate fundamental distinctions. Such a distinction is based on the elementary difference of the alleged final product, i.e. sonic (mostly) for music and spatial (mostly) for architecture.[3] Even if we take for granted the simplifying proposition that architecture is "frozen music"[4] along with the more complex assumption that "architecture in its static solidity employs causes and effects which are common to the essentially mobile methods of music",[5] we cannot ignore the fact that the purposes of music and of architecture have some insurmountable differences inherent to the very nature of each art's object of creation. Thus, what we examine in this article in terms of correlating music and architecture refers both to their nature as processes of production and to the nature of their products.

Artistic form and time – space analogies

Architect Hassan Fathy points out that "There is an exact analogy between music and architecture, and the rules for beauty in both are the same. Where a single house may be a melody, a whole town is like a symphony."[6] Besides this straight and simple analogy, there have appeared several positions in both fields, which attempt to reveal deeper connections between architecture and time and between music and space, and these attempts reflect an indirect way of correlating music and architecture. For example, Lexmann states that "Music can be also enriching in terms of spatial feelings. Although it has a direct impact on hearing, it evokes the perception of meaningful musical shapes and contents. Because of the fact that music develops in time, the changing musical shapes manifest as an *action,* a *movement* within artistic apperception of music. This action may be demonstrated in space on the basis of the experience that each material action happens in space. Musical theorists have known the concept of *musical space* for a long time. This space is unreal, virtual, imaginary and very unclear."[7] Despite its elusive character, the correlation of music and space appears to be strong enough to reveal profound aesthetic assumptions based on the perception of musical form. Dahlhaus declares that "Like a work of plastic art, music is also an esthetic object, a focus of esthetic contemplation. However, its objectivity is displayed not so much immediately as indirectly: not in the moment when it is sounding, but only if a listener, at the end of a movement or section, reverts to what has passed and recalls it into his present experience as a closed whole. At this point, music assumes a quasi-spatial form (Gestalt). What has been heard solidifies into something out there, an 'objectivity existing on its own.'"[8] Respectively, time considerations appear to impact architecture and especially the notion of user's intervention in building. Referring to his 'Diagoon Dwelings' project, Hertzberger states: "My mistake was perhaps that I was beginning to place too much emphasis on the idea of individual interpretation when this also applies to time. I could have told the whole story then in terms of time […]. What you see in the designs of the houses in Delft is nothing less than an exercise in how to interpret and therefore flesh out the same building in 100 different ways

[…]. We architects are too intent on finding a perfect form, perfect in the way we want it, but when thinking along these lines you have to let go of the idea that we are the only ones to decide what the final outcome is to be. It's like city planning. There you can decide where a street is to be, but you don't decide what it will eventually look like. After 50 years it will have changed completely."[9]

From composition to realisation

Searching for parallel trajectories of music and architecture as processes of constructing a work, we may find some reciprocal characteristics by formulating the relation between musical composition and architectural design. In architecture "there are two quite different levels at which design can be carried out […]. The first is the simple, primitive and concrete one of being able just to put things together – real things together, to get a satisfactory result. This skill simply involves the ability to perceive and manipulate and appreciate spatial relationships. The second kind of skill is the much more difficult one of designing in the abstract, which involves manipulating an analogue or a code, because you simply can't manipulate the real things – they're either too big or too heavy, or too complex, or they're not there anyway in the case of a building that you are projecting."[10] Thus, and having in mind the presumed correlation of musical composition and architectural design, we can state that musical and architectural works can be produced either simply by straight handling the raw material[11] in order to create directly a certain artistic form, or by conceiving and arranging the representation of a work, intended to be interpreted, produced and / or used from multiple agents in any future realisation attempts.

Especially in the second case, the composer (musician and architect respectively) predicts the final form through a more or less detailed representation, using a variety of means from the most imprecise and ambiguous to the most accurate and rigid. Hanoch-Roe mentions that "As a mode of communication distinct from sounding music, musical notation has assumed a variety of forms, reflecting the changing needs and purposes of those who write and read it. Being a medium that facilitates the passage of music from the composer's imagination to physical reality of the performance, notation specifies what the composer wishes to control. The compositional score is composed in »frozen time« (rather than 'real' time of performance), allowing the deliberate suspension of time. The silent reading of a score is similar to the observation of spatial art: The reader chooses the tempo, accentuation and the linearity of the process, and may stop, turn back, return and do as he pleases. When the silent reading of a score is performed the interpreter must choose one possibility of the numerous ones inherent in the score."[12] Respectively, architectural drawings comprise of a variety of types for different purposes of representation, all of them essential for the transformation of a concept to actual building, from the most vague sketches, through plans and elevations, to the most detailed construction drawings. "[S]ketches are notoriously imprecise; valueless physically, and seen as a means to find something or communicate rather than as prized objects in and of themselves. They are usually, but not necessarily, loose and lacking in detail. […] In most cases, sketches are a personal exploration unlike the conventions of construction drawings, without precise meaning and often destroyed upon the completion of the building."[13] On the other hand, construction drawings as well as strict musical notation describe a complete project in such a detailed manner that renders its exact realisation as a prerequisite for the authenticity and integrity of the envisaged work. In addition, the demand for specified interpretations forces the performer to be very precise and thus, the expertise needed to understand the representation and translate it accurately into the predefined work is invariably indispensable.

Determinate – indeterminate work and the controversy of composition conventions

The true work of art, as evolved in western civilisation, refers to a complete creation predetermined by a master and symbolises an established form of producing artistic objects. When B. E. Benson refers to classical music, he states that "there are two basic concepts or

ideals that are particularly prominent in that practice, and thus in our thinking. They are (1) the ideal of *Werktreue* and (2) the ideal of composer as "true creator." […] The idea of being "*treu*" – which can be translated as "true" or "faithful" – implies faithfulness to someone or something. *Werktreue*, then, is directly a kind of faithfulness to the *Werk* (work) and, indirectly, a faithfulness to the composer."[14]

Composition as a determination of a work of art and the definition of compositional structure as "a time-resistant principle that identifies and distinguishes every architectural creation, from its birth till even after its death,"[15] underlines the constant necessity for strict control and development of a completed, rational object and represents an authoritarian approach for both architectural and musical creative action. This traditional approach to artistic creation defines the work of art as a more or less 'closed'[16] and 'crystallised'[17] formation. In this way, architectural planning and musical composition tend to fix ideas into forms that are described using precise provisions and plethora of specifications and thus, the potential for intervention in the realisation process is limited or even eliminated. However, even in this rigorous process of realisation, there may be enough space for creative interpretations and individual arrangements. As professor Tassos Biris states concerning architectural composition, "Over the main rule of basic compositional structure the composition is involved in successive stages until its complete integration. It is however characteristic that the evolution of this further elaboration is not a one-way process. This means that it does not necessarily lead to a conclusive result, but to a whole system of answers in the same architectural problem. It offers a spacious field for free expression, subjective selection and personal interpretations, which ultimately may give to architectural creation an inimitable and unique character. But this is not an occasional uniqueness. It comes from the conventionality of internal order of this particular compositional code that has been selected from the beginning and maintains with it a deep genetic relation and relevance. Like the houses of a traditional village that they are always different, but alike at the same time."[18]

Of course, the above-cited assertion describing variation procedures is far enough to represent an indeterminate work. As long as it describes a freedom of expression exclusively intended for the creator, it is rather closer to functionalist principle of determinism, "the idea that the actions of the user are predictable and every event has a cause."[19] On the other hand indeterminacy suggest that the form of the work is flexible and its production is open to other agents' (namely performer – listener for music and builder – user for architecture) involvement. As Nyman cites, one can describe "an indeterminate piece as one in which the performer has an active hand in giving the music form […]."[20] This definition, along with the consequent controversy of traditional roles of the agents involved in the production of the artwork, holds a central position in Avant-Garde music and in architectural design methods after the 1960's. Furthermore, new positions emerge that oppose the dominance of traditional modes of representation introducing alternative tools (such as verbal descriptions, diagrams, graphic notations, event scores etc.) or alternative use of traditional tools, in ways that support indeterminacy. It is worth noting that these practices have also tried to incorporate in their procedures non-skilled and non-specialized people as a tactic to increase the variety of agents and widen the range of their intervention. Experimental creation in Western music and Jazz as well as participatory planning movement show a tendency to overlap roles, promoting the active listener and creative user, instead of the conventional roles of the author as sole creator and the end-user as passive consumer. Consequently, this approach to artistic creation questions the necessity of strictly predefined form and determined work, advocating that the 'open' work "sets in motion a new cycle of relations between the artist and his audience, a new mechanics of aesthetic perception, a different status for the artistic product in contemporary society."[21]

As new tendencies in artistic creative procedures emerge, there appears a fundamental shift in the way work-production is considered. A significant part of Avant-Garde and experimental music as well as new user-responsive design methods in architecture (especially collaborative

design and participatory planning) supported a new thinking that introduced a process-oriented conception of work-production: "In place of the traditional, object-oriented conception of design, a proliferation of definitions of design has arisen in which the words *design* and *designing* are qualified in terms of the intention behind design. No longer is designing seen as a unitary activity for the planning of objects; rather the new and varied definitions of design reflect the multiplicity of possible outcomes of the design process and, more importantly, the way in which users' experiences are accounted for in the process."[22]

Improvisation as self-design and as collective process

Open processes such as indeterminate compositions are considered to have an informal character in the sense that their outcomes do not have any standard, predicted form attached to their representation. Improvisations as open processes may use substandard plans of any kind, in order to attain the desired arrangement and thus, they may constitute a part of a project or the project itself. In Greek language improvisation is called *autoschediasmos* (*αυτοσχεδιασμός*) that literally means 'self-design'. Being an individual act of creation and / or intervention, improvisation generates from personal spontaneity, by acting on the spot, using whatever is available. Although it is an open process, simultaneously it is an action with personal requirements and goals that shape a unique form, even unpredictable. However, improvisers, as Bailey asserts, "seem to prefer formlessness. More accurately, they prefer the music to dictate its own form."[23]

Taking into account the – partly controversial[24] – distinction between idiomatic and non-idiomatic (free) improvisation that Derek Bailey describes,[25] we may assume that idiomatic improvisation validates its product through the strict and skilful use of an idiom and thus, it represents somehow an object-oriented activity, whereas non-idiomatic improvisation – as evolved after the 1960's in western music and in experimental Jazz – represents principally a process-oriented action, fulfilled by means of the creative interaction of agents involved. Respectively, if we consider 'do-it-yourself' practice as a case of architectural improvisation, then it is obvious that such an activity as a purposeful, *ad hoc* action[26] is concentrated and aims by default at the production of a certain object with unique form. On the other hand, collective improvisatory interaction expressed as a notion of creative dialogue in collaborative, participatory planning procedures[27] reflects a focus on design as a process-oriented action, intended to form multiple and unpredictable outcomes susceptible to individual dispositions and needs.

From the above assumptions becomes obvious that free improvisation, when generated from collective interaction, represents a completely process-oriented activity. "[T]here is almost […] no musical act, which convincingly portrays the internal phonetic structure of a process – as an alternative to the 'closed form' – like the collective improvisation of a team that plays well."[28] Having in most cases a social basis, group improvisation offers a creative outlet potentially to everyone, even the most unskilled, but it requires at least a common language to be established, even on the spot, to be deemed successful. "A collective improvisation is a freely interactive discourse. A composed work is – by contrast – an authoritarian one. […] Improvising means individual responsibility for the sound produced, and collective responsibility for the overall performance."[29]

Case Studies

Cornelius Cardew and the Scratch Orchestra

What has been studied so far is epitomised in the works and days of the collective project of the Scratch Orchestra (S.O.) and more particularly in the contribution of the Orchestra's leading member, Cornelius Cardew. For him, "this was his most far-reaching experiment in social music making: to seek out players who had not been conditioned by the discipline of a formal musical education and to give them the freedom to respond to his proposals in ways

that could no be controlled or foreseen."[30]

Cardew's early apprenticeship to Karlheinz Stockhausen gave him the opportunity to study and work in determinate music through serial compositions. However, he soon moved away from determinate forms and shifted his attention to indeterminacy, as a member of the free-improvisation group AMM and with the S.O., where he followed a more dialectical approach concerning collective improvisation. Especially within the collective of the S.O., a more social-interactive approach to music making was developed, assigning to their participatory project ritual dimensions. As Cardew mentions in the S.O.'s 'Draft Constitution', "An improvisation rite is not a musical composition; it does not attempt to influence the music that will be played; at most it may establish a community of feeling, or a communal starting point, through ritual."[31]

A very important work of Cardew, prior to his involvement with the S.O. and exemplary of his Avant-Garde stance, is 'Treatise'. Composing this piece and providing no interpreting rules at all, he introduced a graphic score open to be implemented at will.
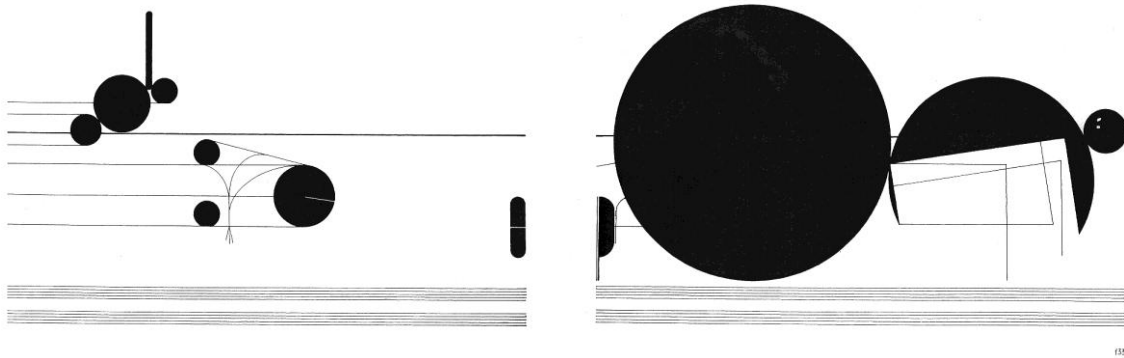
Figures 1, 2. Excerpts from 'Treatise' (pages 132, 133) by Cornelius Cardew: © Copyright by Hinrichsen Edition, Peters Edition Limited, London; Reproduced by kind permission of Peters Edition Ltd, London.

"I wrote *Treatise* with the definite intention that it should stand entirely on its own, without any form of introduction or instruction to mislead prospective performers into the slavish practice of 'doing what they are told'."[32]

'Schooltime Compositions' represent another significant manifestation of Cardew's Avant-Garde stance and are considered as "the chrysalis from which the Scratchbook, and Scratch music, emerged. […] The Scratch Orchestra symbolized the *socialization* of *Schooltime Compositions*."[33] It is a work that expresses a deeper study of improvisation elements in composition, "a post-Fluxus notebook of observations, ideas, notations, hints, diagrams, concepts, scientific experiments, geometric analogies – some direct, some oblique, mostly presented as 'facts', with no covering instructions. For Cardew each composition was a matrix to draw out the interpreter's feeling about certain topics or materials."[34] As 'Treatise', 'Schooltime Compositions' encourage improvisatory implementations using ambiguous forms of representation, by providing potential performers with an open work "challenging and unsettling traditional and hidebound perceptions of what constituted a 'musical' performance."[35]

'The Great Learning', which has been connected with the S.O.'s formation, is the work that best expresses the Orchestra's social and philosophical interactivity with Cardew. Based on the homonymous text of Confucius, Cardew's composition, through its realisations within the S.O., illustrates a participatory movement towards ritual improvisation. 'The Great Learning', through its unconventional approach to sound, "creates a fresh and vital awareness of its actual physical, spatial and acoustic properties; in contrast with the abstraction of much avant garde music, it deals directly with the real physical materials of sound as such: with speech

and song, with wind issuing from blown pipes, with the striking of stone, wood, metal and skin, with scraped or plucked strings, and with the actions and gestures of the human body."[36]

The inclusive character of the S.O.'s activities is evident in a construction built for the Art Spectrum Exhibition, named Scratch cottage. Designed primarily by the S.O.'s member, Stefan Szczelkun, this building project has been constructed with the contribution of all members to house their artistic events during the exhibition. Its construction, which was conceived as a vernacular, rural dwelling, has been developed using primitive techniques and available materials. It was an opportunity to build up a temporary settlement and thus it was realised as a spatial expression of the S.O.'s experimental collectivism and improvisation ethos.
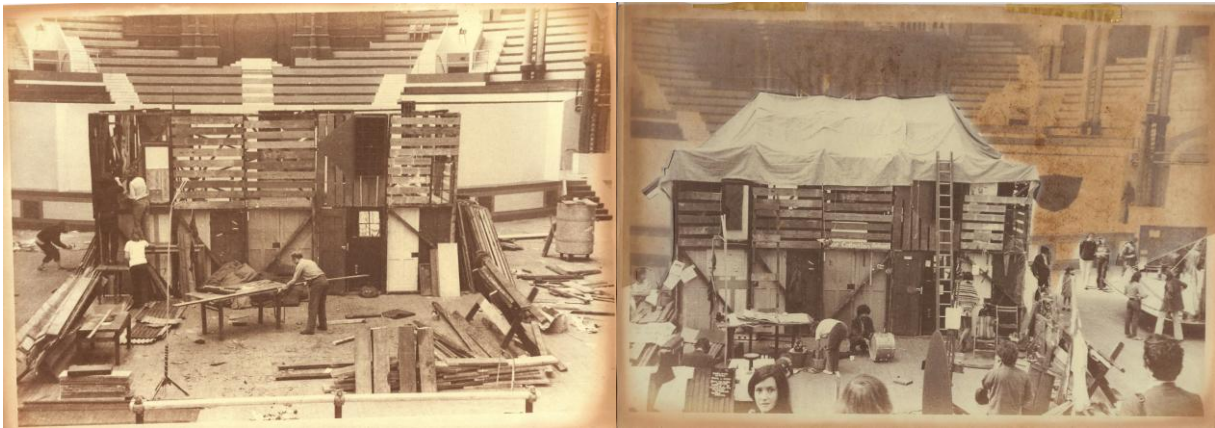
Figures 3, 4. The Scratch cottage designed by Stefan Szczelkun and constructed by the members of the Scratch Orchestra for the International Art Spectrum Exhibition at the Alexandra Palace in August 1971. The pictures are available in Szczelkun's photo album at flickr.com (http://www.flickr.com/photos/stefan-szczelkun/).

As it becomes apparent from the thorough study of these consecutive works, the Scratch Orchestra carried out a variety of actions (temporal, spatial), using several tools and techniques (production materials, means of representation), with experimental disposition and social spirit. As a collective project it has been developed through the members' interaction and Cardew proposed a divergent approach to composition that renegotiated, on one hand, representation and interpretation rules, and on the other hand, the members' roles within the creative community. "Cardew's intention was not to replace trained with untrained performers, but to bring them together into a participatory situation in which different abilities and techniques could be fruitfully combined and contrasted, and in which performers from different backgrounds could learn from each other, and so extend the creative capacities of all participants, often in unexpected ways."[37]

Throughout his involvement in the S.O. and later, Cornelius Cardew developed social – communist views that led him to a more militant approach of artistic production, serving a clear political purpose and communicating a straight political message. This was an approach that removed him from the Avant-Garde and Experimentalism to more conventional and determinate techniques, and forced him to reject his previous idiosyncratic undertakings, searching for popular aesthetics.

Christopher Alexander; from professional design to participatory planning

Among contemporary architects, Alexander has been one of the most influential, both for his work on design methods[38] and for his orientation to collaborative and participatory planning. A series of specific books, the first written by him and the rest by a team, have been published from 1964 to 1979 and illustrate a transition from the rationalism and specialisation of object-oriented production to more open and user-oriented processes of designing and constructing. In these books, Alexander seems to suggest initially a complex method for the diagrammatic

representation of form-composition, but later he rejects this super-functional approach by proposing a pattern language as a more simple and socially interactive design method.

In his book 'Notes on the Synthesis of Form', as professor Anastassios Kotsiopoulos summarises, Alexander suggests a method "consisting of the following phases: a) the catalogue with the requirements, b) the relations between them, c) the de-composition of the sum of requirements into subsets, based on the relations between the requirements; a process performed with the help of a computer and d) the diagrams that compose the «realisation»."[39]
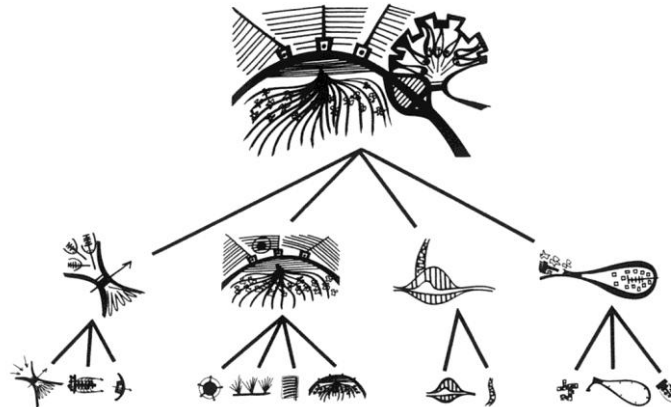
Figures 5. The tree of diagrams made for the exemplary project of an agricultural village (the diagram on the top represents the "Entire Village") that "is to be reorganized to make it fit present and future conditions developing in rural India." [Ch. Alexander, *Notes on the Synthesis of Form*]. As Mitchell comments, "This diagram, […] reflects the design methodologists' attempt to map ideas in a way that was more tangible than thinking but less detailed than a scale drawing." [Mitchell (1993), p. 48].

Although Alexander's approach "is based on the idea that every design problem begins with an effort to achieve fitness between two entities: the form in question and its context",[40] his assertion that "The ultimate object of design is form",[41] as well as his complex and mathematically analysed model of managing the design process, articulate an authoritarian point of view; Alexander seems to consider the composer as a form specialist able to describe, calculate and solve the problems of design to a suitable and functional object.

As these methods of design based on the scheme analysis – synthesis proved ineffective and problematic, especially in terms of their consequent social issues,[42] Alexander, working within a team, developed a user-friendly method for design and construction: a work that has been elaborately presented in the trilogy 'The Timeless Way of Building', 'A Pattern Language' and 'The Oregon Experiment'. Respectively, a theory about the use of patterns in the production of suitable architecture is explained in the first, whereas the second describes in full the 253 suggested patterns. The third book, introduced as the master plan for the University of Oregon, provides an example of hypothetical implementation, presented as an experiment. In this book it is stated that "the process of building and planning in a community will create an environment which meets human needs only if it follows six principles of implementation: organic order, participation, piecemeal growth, patterns, diagnosis, and coordination."[43] Being a design tool, pattern language is intended to function as a means open to be used and adapted by any potential dweller according to his / her special requirements and needs. Through the constitution of a building language, simple and direct, Alexander and his team aim at providing a basis for social interaction, intervention and improvisation, suggesting a collaborative process of building similar to the practice of 'do-it-yourself', as well as analogous to traditional and 'timeless' way of space production. As Alexander states, "The people can shape buildings for themselves, and have done it for centuries, by using languages which I call pattern languages. A pattern language gives each person who uses it, the power to create an

infinite variety of new and unique buildings, just as his ordinary language gives him the power to create an infinite variety of sentences."[44]

Within the frame of teamwork, Alexander moved from the early specialisation and abstraction of the 'Notes' to a more tangible and applicable method of design and construction, putting the role of master-planner under question and suggesting a building procedure susceptible to individual interpretations by creative users. "The philosophy behind the pattern language constitutes a fundamental challenge to all of the mainstream design approaches that have emerged since modernism. Through use of the pattern language the design process is radically transformed; the principal benefit is that the people affected by designing become empowered to shape their environments for themselves."[45]

Conclusion

In this brief examination of the selected case studies, even though they have different starting point and ending, there appears a basic common element that has to do with the controversy of the mastermind and the masterpiece. What is concluded both for music and architecture is best described by the particular reference of Jonathan Hill to the work "The Death of the Author" of Roland Barthes: "'The Death of the Author' suggests a new writer as much as a new reader, both having a role in the creation of a text. […] at first glance, 'The Death of the Author' implies the death of the architect. However, according to my application of 'The Death of the Author' to architecture, it suggests the death of a certain type of architect, one who claims sole authority of the creation of architecture. 'The Death of the Author' implies a new architect who, first, acknowledges that architecture is made by design and use and, second, considers the creativity of use to be the central issue of design."[46]

The research presented in this paper, while referring to Avant-Garde music in terms of improvisation techniques and aesthetics, reveals an interdisciplinary aspect of experimental principles and practices correlatively in music and architecture. What is presented as a study of a symbiotic relationship does not comprise solely of considerations about mutuality, but it is also about indicating and verifying obvious and underlying dissimilarities. Therefore, while ascertaining that both cases, i.e. Cornelius Cardew and Christopher Alexander, express an oscillation from authoritarian approaches on object-oriented management to alternative, participatory methods of organising the creative process, we need to consider in detail their particularities as to the social-political purposes of musical action in the case of Cardew, and holistic approaches of architectural design methodology in the case of Alexander. This study has to be done in depth in order to meticulously document the selected cases, and more precisely the interdisciplinary assumptions of the overall research, and thoroughly correlate them. In addition, extensive correlation of the selected cases with their broader, contemporary frame is required, which means that we have to examine other improvisation tendencies, theories and practices such as Jazz and Afro-American experimental music as well as structuralism and vernacular movements in architecture.

Moreover, further research has to be conducted concerning the presumed symbiotic relationship of music and architecture on the basis of the 'synthesis-improvisation' scheme, while taking into consideration the notions of time and space. In particular, there is the need for deeper study in aesthetics in order to cross-examine the infrastructures of musical and architectural products as artworks, whose production employs a variety of agents and means. In this way, those specific social-cultural conditions have to be studied, as they lay the foundations in the correlation of music and architecture in terms of improvisation (for example, as these examined by David Brown[47]), especially in reference to the appearance of new improvisation principles and practices after the 1960's, based on the distinction between solo, group and communal improvisatory action.[48]

It is believed that this research may reveal hidden characteristics in the relationship between an artwork's invention-authorship and its implementation-adaptation process, as well as

contribute to the knowledge about a particular aspect of the correlation between music and architecture that concerns improvisation.

Notes

[1] Heidegger (2006), p. 14. [Cited in translator's introduction – Author's translation]
[2] Ibid., p. 20. [Cited in translator's introduction – Author's translation]
[3] The degree in which music and architecture have a final product that is sonic in the case of music and spatial in the case of architecture depends on the period of examination.
[4, 5] Waterhouse (1921), p. 323.
[6] Fathy (1989), p. 72.
[7] Lexmann (2009), p. 49.
[8] Dahlhaus (1982), pp. 11 – 12.
[9] Hertzberger (2005), pp. 85 – 86.
[10] Abercrombie (1969), p. 120.
[11] By mentioning the term 'raw material' we refer respectively to space for architecture and sound for music. Of course, space can acquire literal materiality through the physical presence of construction materials, while sound can be understood as a material only figuratively.
[12] Hanoch-Roe (2003), p. 147.
[13] Schank Smith (2005), pp. 2, 4.
[14] Benson (2003), pp. 3 – 5.
[15] Biris (1996), p. 30. [Author's translation]
[16] The term 'closed work' is mentioned in contrast to the "open work" as described by Eco.
[17] Xenakis states that "music and arts in general have to be necessarily a crystallisation, an implementation of [human] ingenuity." Xenakis (2001), p. 170. [Author's translation]
[18] Biris, op. cit., p. 40. [Author's translation]
[19] Hill (2003), p. 15.
[20] Nyman (1999), p. 57.
[21] Eco (1989), pp. 22 – 23.
[22] Mitchell (1993), pp. 67 – 68.
[23] Bailey (1980), p. 131.
[24] For further reading, see: Prévost (2004), pp. 13 – 18.
[25] "Idiomatic improvisation, […] is mainly concerned with the expression of an idiom – such as jazz, flamenco or baroque – and takes its identity and motivation from that idiom. Non-idiomatic improvisation has other concerns and is most usually found in so-called 'free' improvisation. […] Free improvisation, in addition to being a highly skilled musical craft, is open to use by almost anyone – beginners, children and non-musicians. The skill and intellect required is whatever is available." Bailey, op. cit., pp. 4 – 5, 99.
[26] For further reading concerning *adhocism* and improvisation, see: Jencks and Silver (1972).
[27] For further reading concerning improvisation principles and practices in Lucien Kroll's building project for the Catholic University of Louvain in Belgium, see: Kleidonas (2009).
[28] Friedemann (1988), p. 83.
[29] Prévost, op. cit., pp. 20, 132.
[30] Cardew (2006), p. xiii.
[31] Ibid., p. 91.
[32] Ibid., p. 97.
[33] Tilbury (2008), p. 361.
[34] Nyman, op. cit., p. 119.
[35] Tilbury, op. cit.
[36] Michael Parsons' Programme Notes, in: Cardew, op. cit., pp. 319 – 20.
[37] Ibid., p. 319.
[38] Developed in the 1960's and 70's, "The design methods movement was an attempt to capture the quality of craftwork in the new, larger design tasks that were then emerging. Specifically, the methods were attempts to develop a means for symbolically representing the design task that matched physical form to contexts of use, unlike the geometrical criteria of drawings, which is a symbolic representation responsive only to itself." Mitchell, op. cit., p. 44.
[39] Kotsiopoulos (1994), p. 157. [Author's translation]
[40, 41] Alexander (1964), p. 15.
[42] As Mitchell ascertains in: Mitchell, op. cit., p. 50.
[43] Alexander et al. (1975), p. 4.
[44] Alexander (1979), p. xi.
[45] Mitchell, op. cit., p. 56.
[46] Hill, op. cit., pp. 2, 72.
[47] For further reading, see: Brown (2006).
[48] As indicated by Borgo in: Borgo (2005), p. 10.

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