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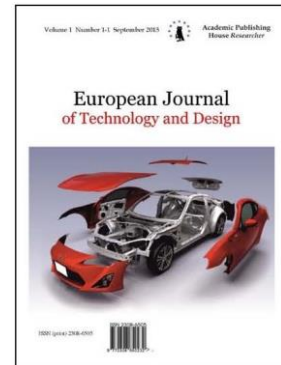
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## Articles and Statements

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### Integrated Design as an Evolutive Transdisciplinary Strategy

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#### Abstract

New challenges should stimulate new research, in order to provide better and higher quality of life. The essence of transdisciplinary design consists of different professions closely related to architectural design aiming for better and qualitative solutions, which with new findings exceed the usual and conventional disciplinary boundaries. Incentive mechanism for lateral thinking in the design process is accomplished when all the team members overcome a conventional barrier, in creating fundamentally something new, unique and creative. The analysis from the results of this research with subject a city without a river will show the need of implementation of a transdisciplinary strategy. By incorporating the new design strategy in the existing legal guidelines, it is expected to have a significant positive impact in the community by raising the quality of life in Prishtina.

**Keywords:** integrated design, transdisciplinary, sustainability, environment.

#### Introduction

There is real cause for concern about the well-being of nature. Negative phenomena are reflected on our health, natural resources, economic, recreational and aesthetic occurrences. In general, it is hard to implement maxim's of sustainability because of the difficulty's that often accompany them: conflict of interests, market activities, private interests of users, so this environmental premises often end's in the sphere of interest of enthusiasts, aesthetic activities and the interests of naturalists. New challenges should thus stimulate new research and should be directed at the exploitation of all resources in order to achieve better quality of life. The architecture in terms of its activities programs to participate in transdisciplinary problem solutions can contribute more appropriate in aiming to achieve the health of the whole. The new millennium brings with it a new way and styles of life, a result of a number of determining factors. So, we come to the situation where we wonder about the necessity of redefining many of actual habits.

Currently, we can state that there is a certain gap between academic knowledge and architectural practice, the principles of integrated design strategies have not been adequately implemented in design practice. So, there is no quality of integration in the concept design and

there is only one reflection of the overall system, which makes it very limited efforts to implement these principles to a real design projects. However, there is no consolidated information on what the real obstacles are to implementing the strategies of design integration.

“Our design process is such that only pieces are optimized and not the whole. Each of these professionals is designing fully within the silo of their discipline, and the interaction between each discipline is usually kept to a minimum ... The optimization of the building’s individual systems is primarily done in isolation, based on rule-of-thumb conventions that target abstract, generalized standards. These systems are then assembled into a building” [1]

## Material and Methods

### 1. Process Description

Ancient cultures, without the use of the word "ecology" were built with ecology in mind, otherwise the phenomena will bring social disintegration, disaster and ruin. It can be noted that the need can create harmony between the necessity’s and the genius idea in certain environments and situations. One from its genesis respected and valued environment in which he dwells, with emphasis in finding harmony and symbiosis between his needs and nature.

Biology has studied how organisms and living communities are built. But it is no less important to understand what such living systems know, in a broad sense; that is, what they remember (what agent-object sign relations are biologically preserved), what they recognize (what distinction they are capable and not capable of), what signs they explore (how they communicate, make meaning and use signs) and so on. These questions are all about how different living systems perceive the world, what experience motivates what actions, based on those perceptions... Man’s specific environment is not situated in the universal environment like content in its container. A living being is not reducible to a meeting point of influences. Whence the inadequacy of any biology which, through complete submission to the spirit of the physicochemical sciences, would eliminate from its domain every consideration of meaning. A meaning, from the biological and psychological point of view, is an assessment of values in keeping with a need [2].

Humans from beginning respected and valued environment in which they dwell, with emphasis in finding harmony and symbiosis between their needs and the nature, or the Umwelt.

The expressions 'collective Umwelt', or 'swarm's Umwelt', should also be in accord, since organism can hardly be modeled as a centralized system. However, the relationship between the Umwelt of organism and the Umwelts of its cells requires further explanation and more detailed analysis. The whole becomes seen through functional circles which, for example, include the body of the (swarm) organism moving together, in one piece [3]. The approach to analysis and possible explanations of the problem will be used the following research questions:

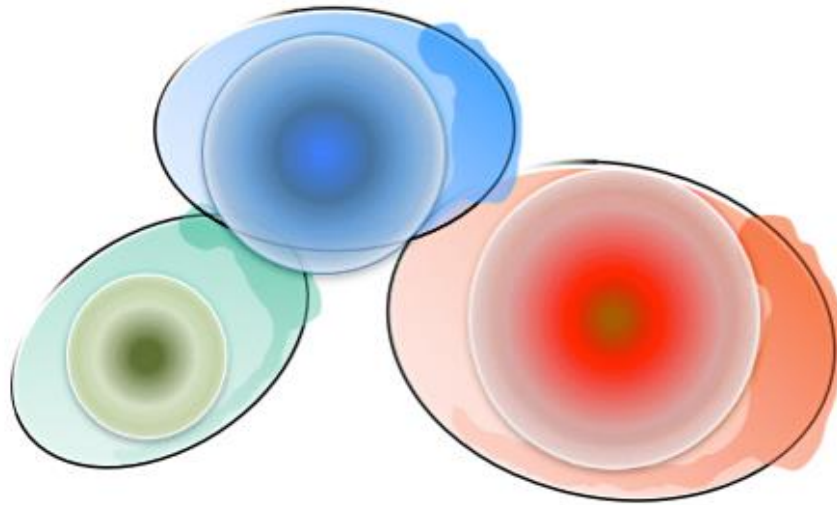
- What have we done with the river Prishtevka?
- What do we, do now, with the river Prishtevka?
- Why, and what is the benefit?

The essence of transdisciplinary design is still not quite clear whether it is a handful of different professions closely related to the task of designing the best possible solutions, or perhaps activities beyond the usual and conventional boundaries of disciplines with the new knowledge that is not contained in any of the disciplines involved. Currently, we are witnessing a supplementary academic studies, furthermore including the creation of new professions in this digital era. Architecture, a profession from its genesis implement interdisciplinary approach, and the necessary process of design by multidisciplinary nature, new era, new concepts, a symbiosis.

Ju rgen Mittelstraß uses the term in defining ‘transdisciplinarity’ as a form of research that transcends disciplinary boundaries to address and solve problems related to the life-world. Mittelstraß argues that transdisciplinarity is primarily a form of research for addressing and reflecting on issues in the life-world. Against the background of harm and serious risk posed by technologies and growth that does not fit within the disciplinary paradigms of academia, he calls for the transgression of disciplinary boundaries for identifying, structuring and analyzing problems in research (Mittelstraß, 1992).

Contrary to the more pragmatic approach of transdisciplinarity as a form of research, others argue for a further intellectual endeavor on a fundamental theoretical level. They conceive

of transdisciplinarity as a theoretical unity of all of our knowledge, which they think is needed to respond adequately to knowledge demands for problem-solving in the life-world (Nicolescu, 1996; Max-Neef, 2005); [5].



**Fig. 1.** Transformation of system models (Source: Authors, 2012)

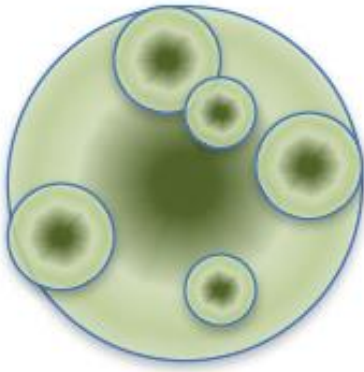
In a world characterized by rapid change, uncertainty and increasing interconnectedness, there is a growing need for science to contribute to the solution of persistent, complex problems [4]. It also includes a focus on real world problems, through collaborative work involving academic and non-academic stakeholders. Transdisciplinary research is therefore driven by problem solving and integrates perspectives from public agencies, the private sector and civil society in the research process (Swiss Academy of Sciences, 2008).

In order to define and understand what is meant by ‘transdisciplinary research’ it is useful first to consider other forms of knowledge product. According to Tress et al. 2006, various approaches in this field provide the following summary of definitions:

Disciplinary: “Process projects that take place within the bounds of a single, currently recognized academic discipline“ [4]

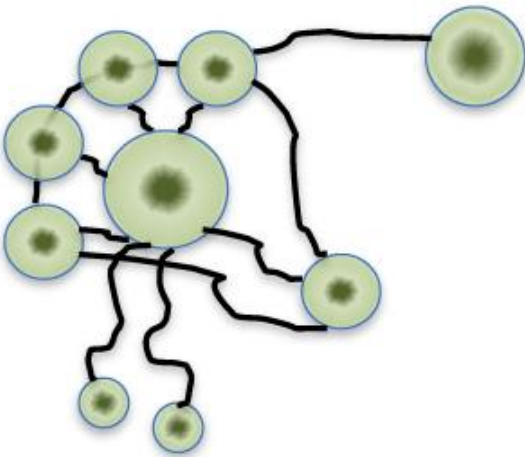


**Fig. 2.** Disciplinary process (Source: Authors, 2012)

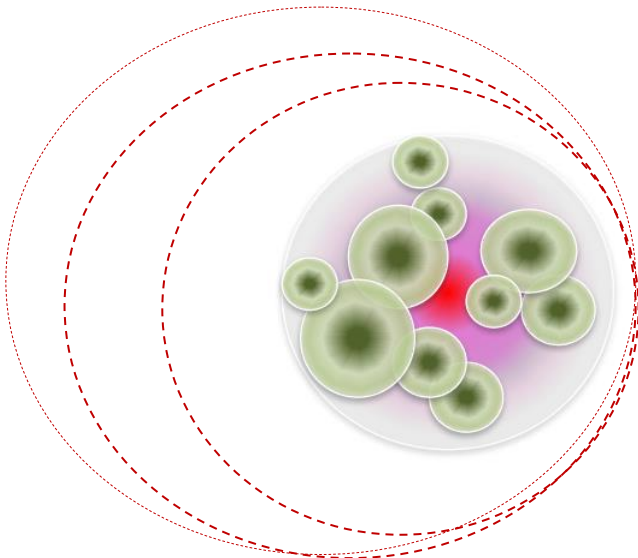


**Fig. 3.** Interdisciplinary process (Source: Authors, 2012 )

Interdisciplinary: “Process of several unrelated academic disciplines involved in a way that forces them to cross subject boundaries to create new knowledge and theory and solve a common research goal“ [4]



**Fig. 4.** Multidisciplinary process (Source: Authors, 2012)



**Fig. 5.** Transdisciplinary process (Source: Authors, 2012)

Transdisciplinary: process of projects that both integrate academic researchers from different unrelated disciplines and non-academic participants, to research a common goal and create new knowledge and theory. Transdisciplinarity combines interdisciplinarity with a participatory approach [4].

## 2. A city without a river

Gërmia is the most beautiful part of the Pristina city, now a national park or the so called the lungs of Pristina. It is located in the region Golak plateau. It flowed from the aforementioned plateau, a rather small river Prishtevka from a place called Stalova. Pristina would be environmentally handicapped without this part of the hillside, because the entire air mass of fresh air actually comes from this direction of the mentioned mountain. By the end of the 80's it was decided then, by municipal authorities of Prishtina to buried Prishtevka river, on behalf of epidemic conservation, general hygiene and human well-being.

According to the Master Plan Pristina (GUP-1987), the river environment was highly endangered by pollution. River Prishtevka is ranked out of class in the context of pollution from germs (coliform bacilli), with also river Sitnica into which flows Prishtevka with the function a collector of polluted water, industrial water and waste out of all categories.

**Table 1.** Pollutants by categories and municipalities – Region of Prishtina (Source: Authors, 2015).

Region	Municipality	Collective polluters	Specific pollutants
Prishtinë	Prishtinë	12	7
	Fushë Kosovë	12	2
	Drenas	14	1
	Podujevë	9	9
	Shtime	3	0
	Lypjan	10	4
	Kastriot	7	1
	Graçanica	8	1
	Total	75	25

Rivers should carry health and life, not death and disease. In the context of a rapid solution and persistence of ongoing problems, it was decided to be covered the symbol of life, health provider and serenity, and opted including the modest size and the volume of the river Prishtevka.



**Fig. 6.** Prishtevka river covered at the 80's. (Source: Authors, Google Earth, 2012)

From the standpoint of then, explanation of “burial” the river maybe had a dose of the real solution. It is obvious that the urban culture and the culture of living style has resulted in coverage of the river, and also it was the last line of eliminating potential disease, infection, and ultimately the possible epidemic condition. However, if we remember, in the former Yugoslavia we find many labor youth actions and surely there wasn't lack of workforce, and surely it could be found optimal solution for Prishtevka River with its length of near 2 km in the city.

## 2. A déjà vu of prishtevka river

Prishtina. Although municipal authorities have already spent beyond millions of euros for reconstruction of infrastructure, some areas and still remain without essential mainframe of infrastructure. Village Makovc, seven kilometers from the center of Pristina, among the problems which inhabitants have is solution for sewage. In the absence of sewage, residents of the village are throwing pipes of fecal waters into the river of Prishtevka.

According to Makovc residents in April/2011, “Our sewage is in the river, however, when the level of water in river is reduced in summer period, a hard smell is formed and is sickening, a hazardous air for human health. On one side is sewer smell and on the other is waste thrown into the river, who also stinks. From the all of this, it is a poisoned environment in which we cannot survive.”

In analogy, on same urban places where the water was in destitute, the necessity and philosophy was to bring water near settlements and cities, and certainly without covering in concrete sarcophagus. Of course the Prishtevka River, it is not even close in size and volume of the Thames or the Seine, however, implementing right environmental strategy to solve the real life problem is encouraged, even if at first seemed hopeless. It is in human nature to weighs towards better and more qualitative conditions of life, therefore it is a continuous process and aspiration towards to quality and prosperity. Otherwise its inability to cope with the problem, quick decisions and improvisation, stagnation and eventually depression in the end.



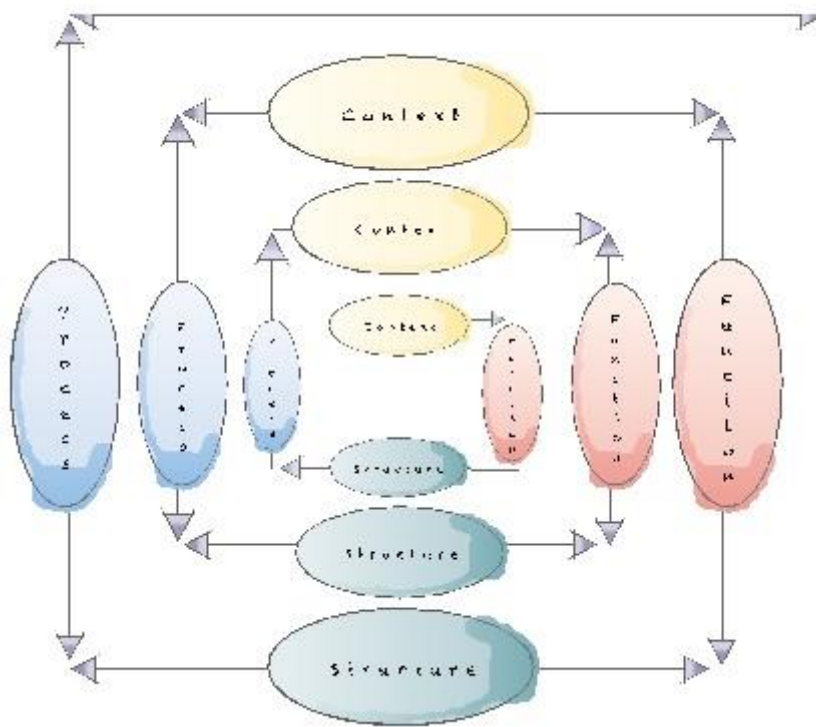
Fig. 7. Building, covering of river Prishtevka. (Source: Public Domain, 2012)

## Discussion

Many authors, claim that the iteration is the key to understand the complexity of the process, Wolfram S. 2002, indicates that the iterative process, the application of simple rules, is at the heart of the mysterious ability of nature, in the production of complex phenomena and processes.

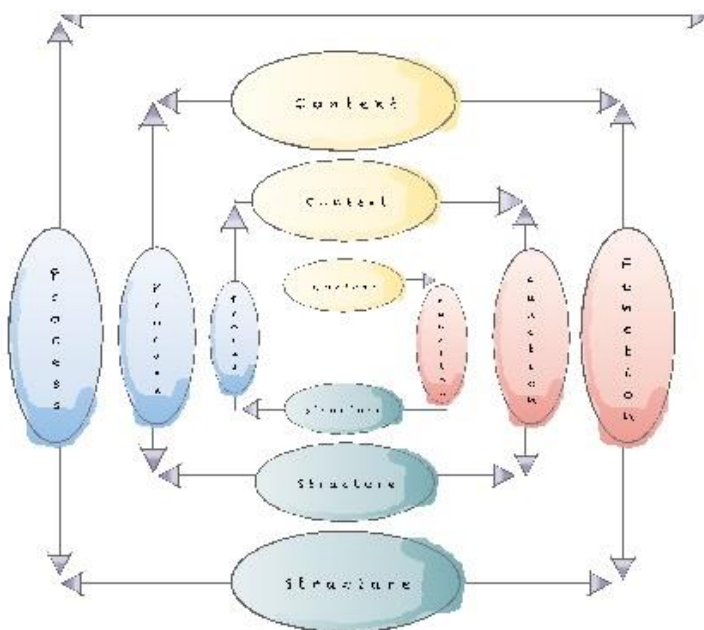
Iterations of structure, function, and process in a given context would examine assumptions and properties of each element in its own right, then in relationship with other members of the set. Subsequent iterations would establish validity of the assumptions, then compatibilities and/or conflicts are identified and dissolved. Dissolving conflicts may require re-conceptualization of the variables involved. Finally, successive iterations will produce an integrated design [6].

The principle of iterative inquiry is reinforced by Singerian experimentalism: “There is no fundamental truth; realities first have to be assumed in order to be learned.” (Singer, 1959). Successive iterations would yield a greater understanding and more closely approximate the nature of the whole. These iterations, then, are like a reverse zoom lens through which we see the system we are trying to understand as a working part of successively bigger and bigger pictures.

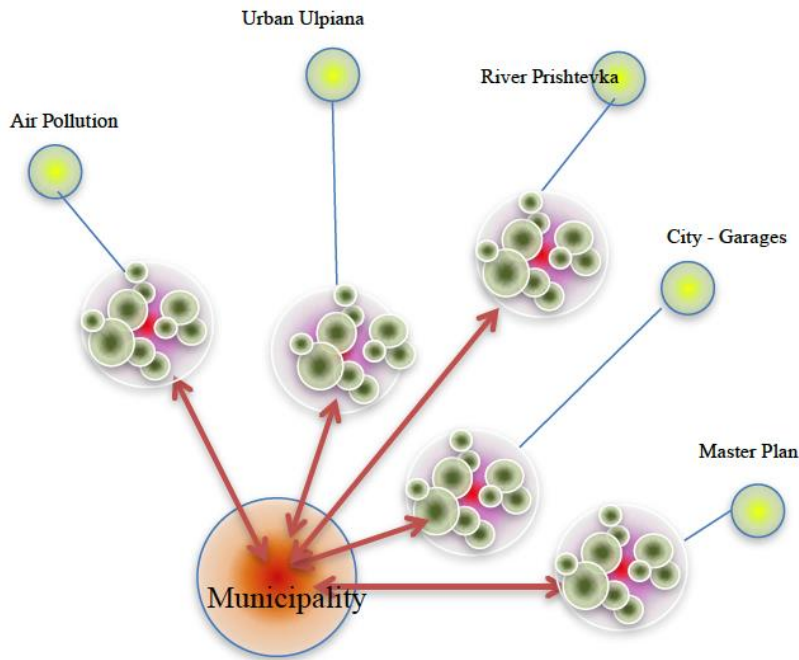


**Fig. 8.** Iterative Process of Inquiry for Understanding Complexity. (Source: Authors, 2015: Adapted from [6].

A holistic approach to architecture, in accordance with these principles, iteration can be used as a working model in finding the best possible solution and a holistic implementation. If we look at architectural design holistically, we need to understand the function, structure and process of the system in requiring context.

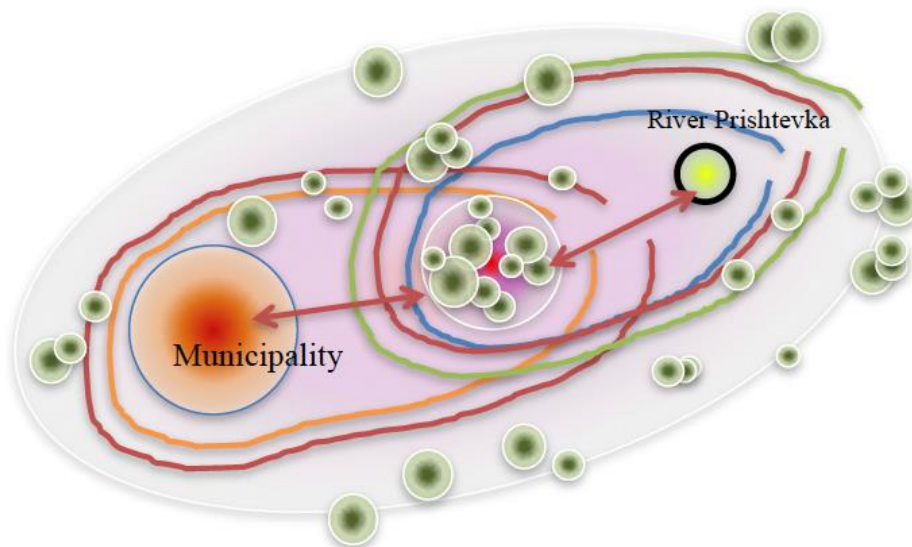


**Fig. 9.** The actual process of problem solving. (Source: Authors, 2015)



**Fig. 10.** The actual process of problem solving. (Source: Authors, 2015)

The entire system and subsystem are included in solving unique problems, where participants cross the fictitious barriers, forming a specific and unique homogenized whole. Overcoming the usual and conventional boundaries of disciplines with the new findings that are not contained in any of the disciplines involved, finding unique architectural solutions to the vital problems of the city.



**Fig. 11.** The Unique problem solving, system and subsystems. (Source: Authors, 2015)

### Conclusion

Inadequate and not comprehensively solving the problem of a given task, not only drops the current problem, but also has a negative impact on future generations. Not adequately solving the specific problems of the time, results in mega problems for future generations. The current resolution of the situation with the standard members and same Commissions, formally fulfilling legal standards cannot be solve comprehensive and future challenges. Challenges, associated with



the development of technology, life style, real issues and global world trends. Thus, one and the same permanent committee, the same strategy cannot respond to all specific problems faced by live city issues. Specific city problems will require specific and original solutions. Therefore, introduction a transdisciplinary strategy in resolving specific problems allows the comprehensive and day to day finding optimal solutions. The aim of this research was to accentuate the sensibility and the necessity of taking the legal measures in introduction the establishment of specific professional teams and design strategies, which will have the right of law in scientific recommendations to authorities in the municipalities.

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