

# The Paradigm of Science Ultimate Nusantara Reasoning Local Knowledge of Traditional Architecture in Scientific

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## Abstract

*This paper explores the impacts of the expertise level of designers during analogical reasoning. In study 1, participants were asked to select source examples and explain their selections. It was found that experts were more likely to consider Experience and Esthetics as reasons for their selections. Third-year students were more inclined to draw inspiration from Symbolism, whereas first year students considered more about Function. Another group of participants took part in study 2, performing analogical design. The behaviors of participants during design process were coded and the behavioral frequencies as well as durations were analyzed. We conclude that experts and third-year students pay more attention to the completeness of the design, while first-year students put more efforts on the functionality of design. 2014 Elsevier Ltd. All rights reserved.*

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## 1. Introduction

Archipelago has a wide variety of intellectual property architecture is very high, in the form of mental ecological wealth, the development of guidelines to a variety of unique understanding of architecture. The knowledge is now increasingly forgotten, some have become nothing more than a historical record. As time passes, the cultural change has brought this knowledge transcended space civilization, until finally he lost the power to develop, then lost to Western knowledge. In evolution this situation is a consequence of global norms pervasiveness influence the practicality and effectiveness of the Western scientific culture of the local forces. However, it should be aware that compared the local knowledge with Western science and call it more simple and primitive is not appropriate. Lately it appears the scientific findings of the latest science that proves how high knowledge of Eastern culture, to science Westerners too must recognize the limitations of its range. Cutting-edge science was unreliable because the basic assumption that a more holistic and synergistic (Zohar: 1994 & Kaku: 1997), based on the notion of organismic organization and self-configuration of the complexity of the information.

However a range of normal science reasoning West to knowledge, as well as local socio-cultural phenomenon of the archipelago has its limits. Normal science ambition to want to always be able to explain everything perfectly becoming too political pretense to control the entire discourse of scholarship. Through this description the author tries to show, on the basis of experience of theoretical studies, the potential emergence of cutting-edge science to the development of local knowledge of the architecture of the archipelago, as well as the boundaries of a recent empirical science that could be explored for menalarkan "Local-indigeneous Knowledge" architecture of the Archipelago. If these conditions do not watch out and we are too dependent on the efficacy of cutting-edge science komprehensifit as, reduktivisme that characterizes the development of local knowledge will remain archipelago architecture and the lack of knowledge is seen as the fruit of the typical mindset that may be more advanced than the normal western science Advanced.

## II. Local Knowledge In Shifts Towards Science Ultimate Wacana

Agreements and assumptions underlying reasoning architecture one of which is formed by normal science tradition. The agreement created a model of reflection and mental models that underlie the definition, naming, imaging, understanding and good judgment bad about something, which in this discussion is the architecture. However, normal science is used in the disclosure of the intellectual architecture in academic discourse today is mainstream western science mechanical or Newtonian science, or positivistic.

Mechanical science which has been widely accepted in the normal and formal education many sciences reducing local to the practical aspects alone. Reasoning architecture as an object functionally placed in the environment, the separation of the spiritual aspect and aesthetics of the design materials objectively materialistic, sterile and free of contexts, as well as positioning the architect exclusively as a figure of absolute "creator" outside the system architecture of a character supposition, fruit normal science mechanical The. This form of reasoning is not always in line with local insights inherent in the architecture of the archipelago, which is very customary heed spiritual and diffuse linkages with the environment rather than merely functional objects are exclusive. Some things were intentionally not included in academic discourse because it is unscientific even fetched (ignored). For comparison, in the concept of Tantra Shamkya material that is deemed material containing Tanamatra aspects of consciousness and personal qualities. This concept is certainly contrary to the character of Western science that is separate aspects of bodily material and spiritual awareness.

Sejalanan lack is seen not matter which one is wrong and right. Along the proliferation construct cultural regarding the emancipation of local knowledge, as well as criticism of the principles of objectivity, determinism, absolutes, hierarchy absolute, and insulating portions of science Mechanically, conflict is seen more as a difference foundation of knowledge that each stands on the historical context, and the environment, without necessarily presume to marginalize or authorizing one of them, both for normal science and local knowledge.

### ***III. Local Knowledge Paradigm in Architecture Nusantara Ultimate Science***

Normal science tradition today or also called mechanical science or positivistic science indeed confronted faced with a paradigm shift following the emergence of the phenomenon of scientific findings that are considered revolutionary not collectively against mainstream science has been growing. Cutting-edge science to indicate a shift towards basic assumptions empirical science that are more complex and are likely correct-holistic mechanistic reasoning criticized as some critics of science and culture are oversimplifying reality and finally often referred to as the cause of the disintegration of man and his environment.

Some recent scientific theory that supports instance: Chaos Theory that nature has unpredictable dynamics but has regularity. Aspects of change are natural variables that should not be overlooked in the system. Aspects of temporality and contextualitymenjdi so important. Structure and construction of traditional buildings many of which are not permanent, not merely limited natural resources or knowledge, but due to constraints of nature is seen as part of the dynamics of life that is not always a barrier. Perumbakan, changes and kehancuranpun is part of the creative process. Quantum demonstrate the holistic nature of reality as a whole plural and non-linear. Relativity shows the entities of space, time, and participatory events appear in a dynamic configuration integrity affecting and affected observation observer. In many cases the functions of the archipelago architecture building overlapping functions alternately diversity status and varied, not always explicit and singular as to the understanding of the functional architecture of the West. The magnitude of the effect of the presence of the spirit of Ancestors in the order of ritual formation of environment might be seen as a form of communication between the times in the memory of the past that could be present in the present - a reality that cannot be accepted by reasoning linear time.

The first is environmental friendly in the architecture discourse ecological logic. The scope of the environmental or ecological insights have a manifestation of a much deeper problem than polemics such as environmental degradation, as well as the technical effort to overcome them. Paradigm cutting-edge ecological science as epistemological prestige of complex and non-reductive, an appreciation of the values of contextual, spiritual and holistic perception of the environmental field called Ecological Papanek. Epistemological notion of architecture, ecology is a method of thinking of architecture as a holistic system environment.. This concept of life on the local knowledge of the architecture of the archipelago, but "put to sleep" by the ethics of the industry, which is the speed of the rhythm of life high machine civilization has decided human bonding with the environment .In local guidelines archipelago architectural design, outlined many laws that are protecting the sustainability of natural resources. Managerial principles and in shades of spiritual humanity has always created a range limit for activity and human interference with nature, which is usually dibahasakan poetically through mythology.

Secondly, advances in information technology to encourage the ever-expanding role of computers as a part of human life. In addition to effective technology in the form of artificial Intelligence pragmatism epistemologically in the form of cybernetic concepts. But further ontology complexity.

These same logic, rather than mechanical science, better able to explain some of the concepts of indigenous science discourse through genetic distinctiveness prestige an environment in relation to the formation of the built environment is a typical format. Perhaps the concept of the unit of environmental information is comparable with the concept Genome which is a pattern structure smallest Menam-pung all the information about the genetic code in DNA :, (Kaufman and Conway: 1992 quoted in Mahzar; 1994, 12), Bit computer (Shannon & Weiner : 19 ..., and strange attractors in Fractal (Gleick: 1987). The concept shows that a locality is a memory field with attractor trigger. How our ancestors chose to live as a residential locality seems interesting to study as a form of interaction that attractor tying man on the environment. Studies like this are often hidden through semantic structure mythology of legends of the people who can notdinalarkan with mechanical logic. The design process is the establishment of a network kesalinghubungan environmental element - "Emergence" reality. And the shape is an end product rather than the destination - Giving Form (Papanek: 1995). As if an area has the software each with data specific ecological.

The logic of this cybernetic information might assume a very lively discussion mechanism in the tradition of traditional society. Mechanical view put knowledge as mechanical oleahan material that produces intelligence (Minsky: 1968). In this sense local knowledge is more of a guide or tutorial sequence builds on the assumption baha objectivity of meaning and virtues inherent in those guidelines. The logic of this cybernetic information on the contrary, looked objectivity significance and primacy of knowledge is not attached to the guidelines, the manuscript, nor the rule, but in a participatory mechanism to apply the collective agreement. And hence these guidelines is an attribute of interaction, not just substance Here, traditional institutions, customary deliberation and the like to be meant as a "processor" to generate meaning and virtue are in accordance with the circumstances. Third, cutting-edge science is called a lot of literature have equality with the teachings of mysticism Eastern societies. Quantum theory one step further to explain the esoteric aspects of the natural, it-was still in the domain of matter. Through the theory of "Formative causation", a biologist, Rupert Sheldrake, hypothesize a field called morphic fields. This field is cross time; contain flavor and ambiguous status between material and energy. Morphic field is a field that influences the regularity of alignment forms an environment. Geomancy architecture and traditional architecture is an example of architectural design experience with physical considerations, ritual, and aesthetics holistically. Further studies of the intelligence community are untouched traditional science because of rationalization of Western intellectual who is so intense. Cultural history of the original architecture in Indonesia-even, which is filled with rules of Cosmology and characteristics of geomancy had broken up and put to sleep by Colonialism (Andrew Corsini: 1994). Even then, for those who are not too understand it, will be rewarded mechanically limited to purely practical aspects.

And it seems now the development of science in the West became interested again to study the phenomenon. Because it's not unusual for a referral back to the pre-industrial architecture or Tribal Architecture (Zohar: 1994), such as traditional architecture, vernakuler (Papanek: 1995; 113) and Geomancy (Peat) has the potential to be reappointed. Papanek revealed that traditional architecture and vernakuler called intelligent because it systematically chaotic abstraction is a model of environmental texts. In any Geomancy-world scene is viewed as a continuum and whether it is a natural activity would-matter supra-natural, consciously and unconsciously, subtly linked with each other. The concept of energy conservation in Geomancy described as continuity between humans and the earth. Limitations of Mechanical Science Metaphor Quality Normal to Local Knowledge Archipelago Architecture Mechanisms of normative-positivisttidak epistemology of science will never be separated from determinism, while organic and natural inerja local knowledge work is very dynamic, but the local knowledge cannot simply be called unscientific and without foundation, because it can still be found order and harmony performance.

In the body of the West's own normal science occurs debate about the position of science in the middle of controversy possibility of cutting-edge science of reasoning will reach the soul, aesthetics and spirituality or matters relating to the mystical, relativism and paradox. Not surprisingly, opposition movements from Western science-was so intense as well, such as New Age, Anti-Science etc. It is interesting to consider the experience of a Biologist Rupert Sheldrake in the theory of "Formative causation."

To explain the concept of inter-spatial memory field, and cross time dipostulatkannya shape memory fields forming the alignment behavior of a specific environment, he had to borrow the terms Shamkya - namely Akasa and Prakriti. The impact, his study into the validity of controversy among scientists. This shows how the claim that local knowledge is not scientific is not due to the fact it is, but because of the existence of such ignorance of the mechanism of normal science itself as a result of the limitations of the local knowledge menalarkan. Of all its

limitations, acceptable explanation is a change in the quality of the body of science ontologies normal, due to the appearance. Ontology is the science to date ontology of critical realism (Guba: 1996) or also non-reductive ontology (Lissack: 1998), which still stick to the assumption "basic idea" generally accepted (Guba: 1996). With these ontology parameters of objectivity is no longer clarity of composition and clarity of boundary elements, but their integrity. Perception system so heed the existence of a critical limit that works dynamically between order and disorder (edge of Chaos).

But the ontology pouring the normal practice of empirical science to be used in modeling of local knowledge with positive science of language is very difficult. Normal science epistemological tradition of normal science are always looking for scientific models through the encoding process natural and organic facts in the formal system (guidelines, criteria, mathematical equations, formulas) universal, to then become a universal decoding instrument has not been fully successful. And if they managed to only touch the physical stage, such as mapping the physical typology, scale and proportion rules and rules build. It is understandable because the encoding process (equalization) occurs quantification only involves aspects of clear and objective so as reduktivisme not the inevitable, while the decoding process (operations) for the application of pragmatic is a context-free, but local knowledge is contextual and can not necessarily be sorted out easily. In this case the presence of high-speed computer might be more helpful applications-dynamic complex formulation environment. This practice is already practiced in Feng-Shui consultation. Herein lays the major limitations inherent in intifilsafati Newtonian-Cartesian paradigm in which the organic modeling finally finally ended in modeling complex machines. The reasoning deeper and organic can only be displayed axiomatik as a metaphor modality architecture as an organism, and expressed through advice, legal social customs, and ethics of ecology, and practiced not through outlets logical reasoning alone, but the abstraction of imagination, love, spirituality and belief.

### ***III. Organism Metaphor Ultimate Science for the Reasoning in Local Knowledge Architecture Nusantara***

Consequences of mechanical science paradigm shift to cutting-edge science with a mechanical metaphor directs the material status of the dead, covered, dead, static and isolated into an organic, dynamic and creative (Capra: 1988). Capra detailing intelligent behavior and organic as open systems and the quality of feedback that is responsive, and the ability of the transaction information and energy simultaneously cause a system will always cycle (Self-Organization) and cannot always be disaggregated into smaller parts, Everything is unified in a field that constantly balances the integrity of the self. In terms of mechanical science. Architecture does not is not merely seen as a building material per se, but rather as a part of the ecological unity which is also formed by resources, human mentality, and cultural unity. No wonder if the role arsitekpun not a simple role. Therefore natural that when traditional architectural guidelines archipelago tend to be institutionalized in a container that is spiritual, for example in the hands of a priest or through traditional kinship deliberations. Architects as a figure who is recognized as a name is not overstated, because the architecture is seen as "sound" environment "voiced" through human intelligence, rather than expertise fruit of human reason. The use of the proportion of the body of the occupant on the guideline-scale proportions in Bali, in addition to having relevance ergonomic, also showed that the presence and character of the human being as a whole is a tractor occupancy for the house.

#### **III.1 The status of "Life" in the organism metaphor Advanced Science Reasoning**

One of the great speculations of Western science is menalarkan "soul". But this effort is considered unlikely because the roots of science itself already distinguish organic character and the presence of the soul. This is the fundamental difference metaphysics East and West. On the basis of the distinction of two faculties of matter and spirit that western scientific civilization is built up to now. Perceptions of the material can be distinguished from the Western understanding of the material. As with the sense of spiritual science East such as Hinduism or Shamkya who explained that in addition to the material (tamas), substantial character of the universe (gunas) built by energy (rajas) and the quality of the intelligence (satva). All three interact in the balance of the universe or the principle of the material world Prakriti. Energy-materialistic was not seen as package elementary quanta, but has a system of awareness.

This makes the faculty awareness of aesthetics and spirituality in Samkhya becomes a part of who helped build the intelligence of the universe, not just the effects that arise. Chi 'in Feng-Shui is an energy entity that is not completely dead, but it has a dimension of consciousness and life.

### **III.2 Aesthetics and Spirituality in the organism metaphor Advanced Science Reasoning**

Since Rene Descartes positivist science permeates social-scientific constructs, all calculations and actions must be accountable scientifically-mechanical. Since then the beauty of the product is seen as a subjective and emotional mind of the observer. Spirituality is seen as an emotional instinct born of the fear of death (Hobbes), hunger (Malthus) and sex (Freud) (Capra: 1988). Scientific methods are too linear in the scientific verification memudahkan side but on the other hand weaken the meaning of creativity. These mechanical mindset increasingly settles and becomes a basic social institution of society that a close eye on the reality compound. This situation creates a system of mechanical appreciation of the spirituality and aesthetics.

Paradigm cutting-edge science ontological has more ability in memperumpamakan spirituality and aesthetics. Scientific reasoning paradigm of science to date provide for the disclosure of (abstraction), in addition to testing (Guba: 1991). The beauty of the bridge to find scientific truth (Leahy: 1991). No wonder there is the argument that the system is more complex-Dynamic can be explained on the basis of the understanding of art and spirituality rather than science. David Peat stated that contemporary science looked at science and mystical holism as a single unit which can each build. In this sense of beauty, creativity, satisfaction, and even spirituality began to be appreciated as an indication of intellect and intelligence, not just emotional and subjective experience alone. In this sense, the aesthetic is not solely dilihat as a combination of elemental composition system. The beauty in the architecture becomes a quality inteligibilitas unspeakable, because holistically summarizes certain regularity combined layers intact, harmonious, and intelligent and interconnected in interrelatedness-organic relationship. Art becomes a mechanism for defining complex social ties, maintain social norms, and strengthening social value (Geertz: 1983).

### **IV. Conclusion**

It is interesting to observe the writing of this paper. All use language and expression that is so complicated and confusing. Perhaps it was that the verbal media that I use myself is the fruit of the scientific tradition of normal science are mechanical and linear, which always pretend to explain every detail of the facts in the verbal structure. Perhaps the practice of local knowledge, especially the architecture of the Archipelago us by our ancestors is not as difficult as this. With a sincere soul, happy, solemn, even a little playful, all of it can be absorbed. Hence good human qualities, positive spirit, and a light heart into the outlet of creativity and intelligence are effective (Papanek: 1995: it). It is this quality which became the main supporter of the effectiveness of local lore knowledge architecture archipelago in dibangun-traditional buildings of our archipelago, in his time. Basically the cutting-edge science like science Mechanic will not be separated from nature reductive, deterministik, and materialistic. Only cutting-edge science, with the degree of complexity and a high qualitative dimension chance for more, help show the reality more thoroughly than glasses science mechanically, also communicate local knowledge of architecture in a more comprehensive, and complete a certain extent.

However, the next question is whether the means we'll go back into the past and leaving a typical modern architecture which has been pervasive in the format of academic culture? Are relevant when the traditional architecture was resurrected? Civilization drove along the time in the field of political power. Unconsciously we like always convinced that scientific truth normal science is taught in formal institutions are the best. Local knowledge is more appreciated through historical discourse. This condition lasts until we ourselves become agents of production norms Western scientific, in the form of ethics, institutions, and mentality of modern life, until finally the civilization cannot be separated. In these conditions would need a very large force to turn the local knowledge along with the infrastructure and normative reproduction device.

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