General Systems Theory (GST) and the Eco-social® Environment.

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Aim: To determine whether Urban design can be based on a biological model or General Systems Theory.

Introduction: General Systems Theory model provides understanding of functional interaction at any level of organisation. Thus, a biochemical model of response to change in the environment led Myers to propose that the theory of the constancy of the milieu extérieur as proposed by Claude Bernard (1813 - 1878), be changed to reflect cellular response or what living units do, namely, optimally maintain the external environment constant, whether as uni - (or units within multi -) cellular organisms. For instance, red cells or circulating cells maintain the milieu extérieur constant so that functional optimisation can occur.

Application: On this basis, noise, lighting, traffic, dust and pollution all would need to be controlled to ensure cell or house or dwelling functionality for those living within them, as would the surrounding space within buildings need to be controlled to optimise the environment for those living within them. The external environment would also need to be optimised for individual activities and habitation or movement in open spaces or transitional domains that people use every day or use as public space and for recreation or education, and respect privacy. Visual impact, lighting, rubbish disposal, Eco-social® habitat for flora and fauna intermingled to enhance diversity underlies health and well-being which is the aim of the General Systems view of the world and Eco-social® environment.

Conclusion: Understanding the concept of the constancy of the milieu extérieur provides a basis to plan projects within cities and providing a framework for strategic design and innovation and a holistic approach, to enhance well-being, while providing for an increase in population growth, specific needs and an aging population, as well as utilising public space and design to educate and stimulate innovation coupled with consideration, i.e. harmonic "Eco-social®" urban design.

Introduction. Claude Bernard proposed that "the constancy of the milieu intérieur" permitted sea creatures to colonize land as they had an "internal sea" within them - plasma and lymph. This explains plasma v cellular [Na+]:[K+] from the organism's* viewpoint.

The Alter Rebbe 1745-1812.
Founder of Chabad Chassidic thought.

Inner light, one's inner being, needs to shine forth. His philosophy connected the inner dimensions of the soul and the outer dimension, to enhance the environment with one's G-dly soul that dwells within, i.e. to develop from within to help others i.e. to bring one's inner light to do 'Good noW!'® to positively affect oneself and one's environment in order to promote health, prevent disease, enhance development and growth, promote well-being and meaningful living into old age.

References:


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Myers, J.B. "Good noW!®, to positively affect oneself and one's environment in order to promote meaningful living into old age.

General Systems Theory.

Myers (Medical Hypotheses.1982;9:241-57) proposed a general biological theory in terms of "the constancy of the milieu extérieur, which is the same as Claude Bernard's except viewed from the cellular rather than the multi-cellular organism's, based on two assumptions of biochemical response.

Two Assumptions of Biochemical Response

A. Innermost membranes maintain the fluids external to that membrane within an optimum range.

This occurs at all outer levels of biological organisation.

B. A persistent disturbance of the external fluid at any biological level of organisation will result in change in the inner fluids.

Adaptation

Physiological response may be rapid (escape) or occurs by adaptation (Hochachka and Somero).

Thus adaptation leads to:

- evolution if breeding and survival is enhanced adequately and appropriate; disease if adaptation is either inadequate or inappropriate; aging if the change in environment is not sensed i.e. not responded to; and death if the environmental change is sudden or overwhelming.

Behavioural response is an attempt to control the external environment.

Ethical response reflects appropriate and/or adequate inner change and appropriate or appropriate response to environmental changes/challenges.

Biochemical response and ethics determine behaviour in response to stress, and therefore can guide behaviour to influence contemporary and leading Urban design.

Conclusion:

GST provides a general understanding of biological responses. Urban design can be measured in terms of stress or non-stress i.e. harmonious Eco-social® effects that determine wellbeing of individuals exposed to urbanisation.

Understanding of biological response is able to be applied to Urban Design in the interests of Eco-social wellbeing.

Recommendation

Design dwellings and community spaces for recreation and living that incorporate the principle of "the Constancy of the milieu extérieur into the design."

Eco-social®Relevance

The more diverse the environment the greater is the wellbeing of creatures living with it, including man.

According to Hochachka and Somero, physiological response may be rapid (escape) or occurs by adaptation. Adaptation may be adequate and appropriate leading to:

- evolution if breeding and survival is enhanced
- disease if either adequate or inappropriate

- aging (loss of functional reserve capacity) if change in the environment is not sensed i.e. not responded to (O2, reactive oxygen species (ROS): death if the environmental change is sudden or overwhelming.

Likewise, behavioural response is an attempt to control the external environment.

Ethical response reflects appropriate and/or adequate inner change and appropriate or appropriate response to environmental changes/challenges which benefits all and which enhances diversity i.e. behaviour that has contextual relevance

Conclusion:

Two Laws of Biological Response and the viewpoint of the optimum Eco-social® environment has relevance to survival and contemporary views and challenges for Urban design.

provides a robust as well as intricate model of social order necessary to promote reproduction, diversity, growth and wellbeing, with particular relevance to cardiovascular risk and disease as well as behaviour and ethics and a positive approach to life i.e. incorporating "Improvisation theory" (LaMarkian as opposed to Darwinian evolutionary theory), and reflection of the meaning of 'survival' and of 'the fittest', has relevance to survival and contemporary views and challenges for Urban design.