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A Social Ecological Ethic for Architecture

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ABSTRACT

The emergence of information about the impact of human activity and development on planetary life-support systems shows that human and "natural" systems are not separate, but part of a social ecological system with humanity having a significant impact in the Anthropocene. In the architectural design process, a new ethic that includes not just the architectural client, but also social ecological systems as stakeholders is required to guide the profession in the future. This ethic demands that the design team expand its consideration of stakeholders and community and is informed by a social ecological system philosophy.

ETHICS: WHAT IS IT GOOD FOR?

A fundamental social ecological goal for the design process is to create a vision for the coevolve of the people of a development with the social and ecological systems of the place. Ethics is the branch of study dealing with decision-making and what is the proper course of action for humanity. An ethic refers to a set of moral principles relating to or affirming a specified group, field, or form of conduct (Oxford, 2002). What a culture values and includes, as part of its community comprises an ethic of actions that are "right" or "wrong." Ethics therefore guide either implicitly or explicitly the decisions of a culture and the individuals within the group in making decisions that guide their lives and work. Without ethics, decisions and actions would be random and aimless (Landauer & Rollins, 2001).

The profession of architecture has a number of official codes of ethics. These codes include standards of care to guide the client and protect the public. However, the systemic changes and the existential threats of climate change and ecological degradation make the current code insufficient. Architecture requires a new ethic that includes a standard of care to protect not only clients and the public, but also a larger community of stakeholders than in the past. The construction of a new ethic for the practice of architecture that takes systemic change and existential threat into account requires the consideration of the following questions:

- Must an expansion of the stakeholders in the architectural design process include other entities beyond the immediate building stakeholders?
- If the stakeholders of the design process are extended to include nature or life-supporting systems, does this change the ethics of architecture?
- If a change in the ethics of architecture is required, what are the emerging aspects of this new ethic?
- What are the consequences and implications for the practice of architecture of a new social ecological ethic for architecture?

THE NEED FOR THE EXPANSION OF STAKEHOLDERS IN THE ARCHITECTURAL DESIGN PROCESS

We are in the process of significant social, cultural, technological, and environmental change. In the last thirty years, global temperatures are the warmest in the last 1400 years (IPCC, 2014), biodiversity has dropped by 58% (WWF, 2016) and nearly 50 countries are experience water stress or scarcity. In addition, the percent of the world population connected to the internet has risen from .4% in 1995 to 54% in 2017. Many factors are contributing to these changes in our society's institutions and processes. From environmental to social to technological, as Stephen J. Jackson (2014) puts it: "The worlds we inhabit—natural, social, and technological have real limits and fragility. The euro-centered world that has dominated the culture of the last two hundred years is in the process of coming apart, perhaps to be replaced by new and better stories or perhaps not."To remain relevant and provide value in a time of

flux, the field of architecture must change its structure of practice.

While climate change may be humanity's most urgent problem today, it is not the full extent of the challenge. Technology and population growth have ensured that humanity impacts and affects all the planet's life-supporting systems. According to the World Wildlife Fund's Living Planet Report in 2016, "we are entering a new era in Earth's history: the Anthropocene."Global life supporting systems are losing the ability to self regulate because of the impact of humanity. It is "an era in which humans rather than natural forces are the primary drivers of planetary change."In the report, researchers outline how human activity is affecting the systems that support life on the planet (Figure 1). Based upon the research of Will Steffen (2015) and others, the analysis shows how human activity is disrupting the self-regulation of planetary life-supporting cycles like carbon, water, biogeochemical flows, and others. But while the effects of human activity are pervasive across the globe, the researchers report that "we can also redefine our relationship with our planet, from a wasteful, unsustainable and predatory one, to one where people and nature can coexist in harmony."For both good and ill, humanity's actions are interdependent with other forces affecting life.

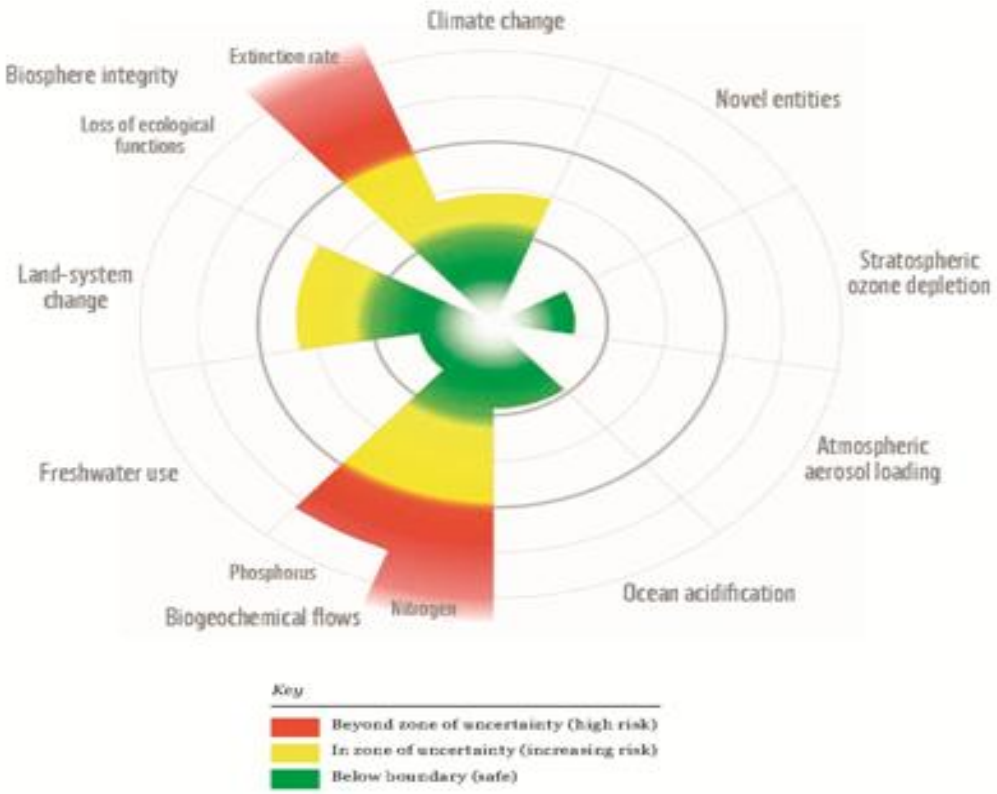

Figure1. *Human Impact on planetary life-supporting systems. Red indicates high risk of destabilization, yellow indicates uncertain risk and green is safe. WWF (2016)*

A world view that separates humanity and nature is incorrect. As Bill McKibben (2006) writes: "This is a historical moment entirely different from any other, filled with implications for our philosophy, our theology, our sense of self. We are no longer able to think of ourselves as a species tossed about by larger forces, now we are those larger forces…the end of nature."

Humanity is both an integral and increasingly impactful part of the natural world, but also different from other living things. With the capacity for self-restraint and potential for ameliorative action, humanity can not only reduce negative impacts, but can also create positive system changes that benefit life. "The governing question about sustaining life for humans revolves around the nature of homo sapiens' role in evolution . . . to be positive and active participants for a thriving future" (McLennan and Reed, 2013).

Architects such as Sim Van der Ryn, an architect and a cultural historian, have long

argued that we must grapple with our enormous impact on the world around us. Because of his professional interest, Van der Ryn has worked to develop an ethic to guide design. In his book *Design for Life*, he outlines four stages of human history in terms of the relationship of culture, design and nature. Each stage represents a different worldview or consciousness that creates an ethic to guide design. The Integral or Ecological stage is emerging. If ethics are derived from culture and community and are an affirmation of valued action, Van der Ryn provides the suggestion of an ethics for the values of the future. The cultural form of connection has moved from band to tribe to empire to corporation in the first four epochs. In the emerging "integral" age, the cultural form of connection will be interconnectedness or interdependence between different social communities and with all life. The current paradigm celebrates the individual and dominance of humanity over "nature." However, the science and social upheaval enlarging our communities are beginning to show that valuing all life and social communities ultimately benefits the individual. (Van der Ryn, 2005).

Sustainability models derived from mechanistic thinking such as the "Triple Bottom Line" allow for "nature" to be valued separately from economic and social issues. Depicted as a Venn diagram of three overlapping circles representing environment, economics, and society that help show the place where benefits to all three intersect, the triple bottom line sustainability model is of limited use. It does not recognize the interdependence of life.

Rather than intersection, a more relevant model considers interdependence and mutual impact. All economic activities rely on raw materials and energy created by nature. In fact, humans never really create anything: Only nature creates. Ecological processes create all the fiber, fish, water, minerals, metals, and energy used by our economy. Humans only convert these substances into goods and services for human use. Even synthetic materials are derived from natural substances and rely on wild seed stock for replenishment (Meadows, 1982). Through the process of obtaining food and shelter and of excreting waste, all organisms modify the environment in which they live. When those modifications become too great, organisms eliminate the conditions necessary for their own survival, which allows new organisms to move in and dominate the system. If the methods that humans employ to convert nature's raw materials into energy, goods, and services severely degrade the climatic or ecological processes that created them in the first place, they will alter the conditions that allow humans to survive and prosper. Bob Doppelt describes this reality through the nested dependency model of sustainability (Figure 2) (Doppelt, 2010).According to Doppelt, all development impacts life at multiple scales.

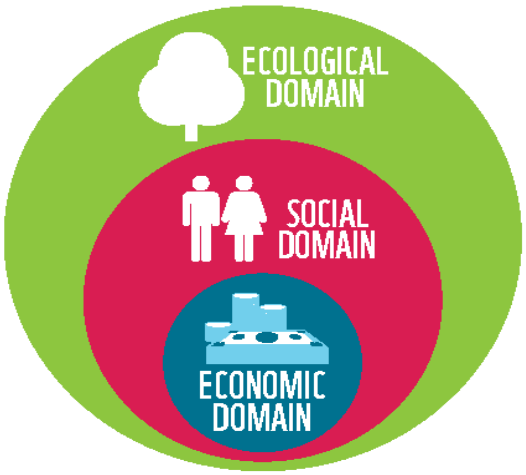

Figure2. *The nested dependency model of sustainability based upon Doppelt.*

An acknowledgment of the value and interdependency of nature is aligned with what Aldo Leopold called the "land ethic." "We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect…all ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts. The land ethic simply enlarges the boundaries of the community to include soils, waters, plants and animals, or

collectively the land." (Leopold et al., 1968). Leopold argued that "the extension of ethics to include humanity's relationship to the environment" is not just an "evolutionary possibility" but also an "ecological necessity." As such, "an ecological ethic limits freedom of action in the struggle for existence."

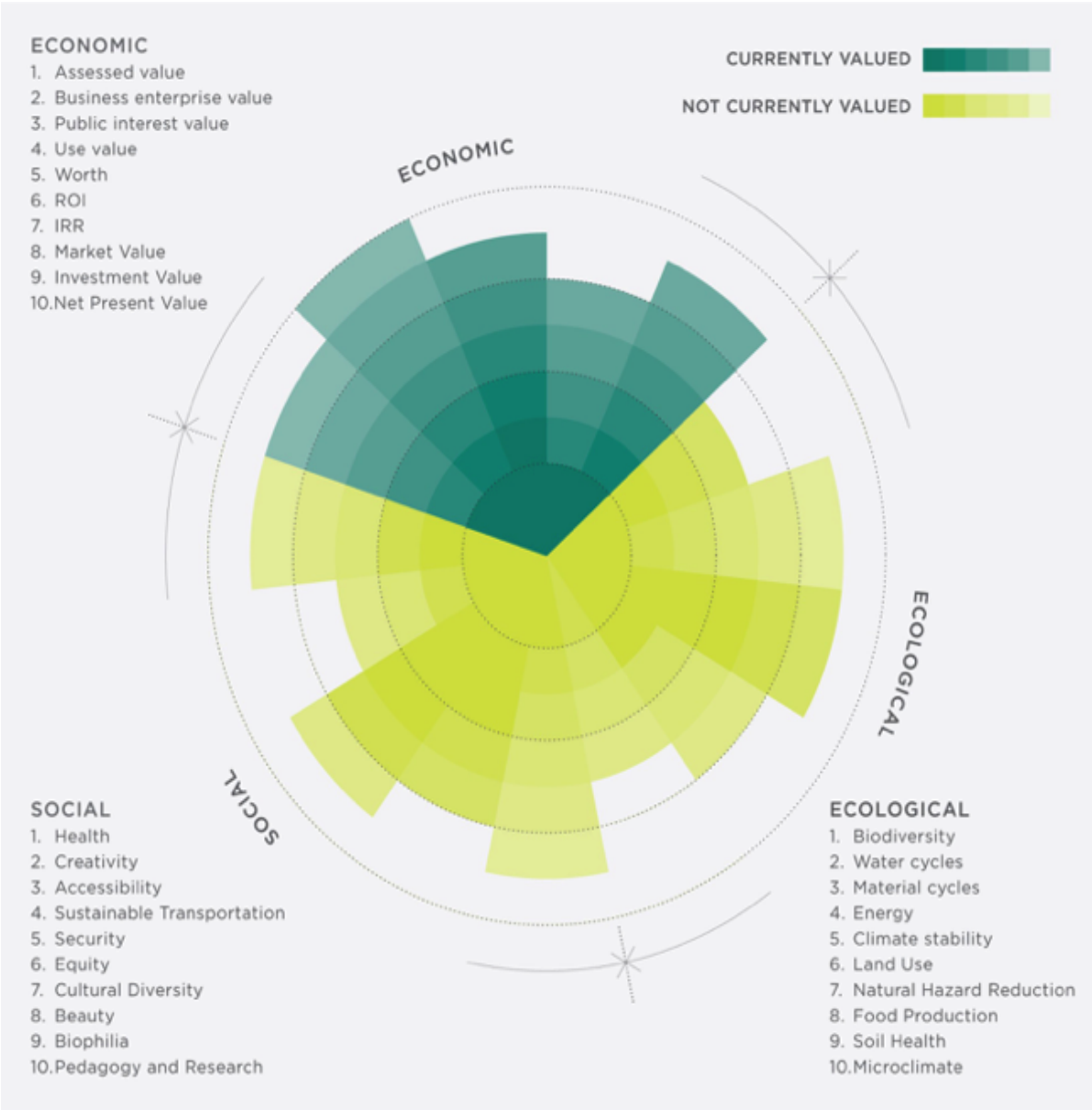

Figure3. *Value in the current development model excludes social and ecological issues (Twill, Cowan, Graves, Chappelle and Miller 2013.)*

Architecture and design can begin to integrate models like Doppelt's by expanding the stakeholders of the design process and acknowledging the indirect benefits and impacts of development requires a new social ecological ethics for architecture. The term *social ecological* is used in contrast to the other approaches to sustainability that focus solely on environmental benefits. As Cole (2015), Du Plessis (2012), and others have pointed out, the sustainability movement has focused on simplistic assessments and strategies that benefit ecosystems, while ignoring the complexity of living systems and social impacts. In addition, the movement has not aggressively challenged the fatal flaw of the current economic system: Infinite growth cannot happen on a finite planet. According to the Living Planet Report, the focus of development in the future is to provide benefits to society as measured by increased human health while providing those benefits within the carrying capacity of our planet. Therefore the development of the future must be social ecologically beneficial to both society and to the ecology of the planet. Social ecological development should strive to add value to social

and ecological systems that in the triple bottom line model of sustainability (Figure 3) are ignored in favor of economic value (Twill et al., 2013). Development should strive "to create a future where people can live in mutually supportive symbiosis with their social and biophysical environment (their whole eco-logical system)—supporting their mutual evolution" (Du Plessis, 2012).

Changes To The Ethics Of Architecture

Expanding stakeholder consideration and engagement requires a number of changes to the ethics of practice. It is necessary to redefine stakeholders in design and construction in a way that moves beyond those responsible for creating the built environment. Enacting these changes means engaging with stakeholders in a way that builds the capacity of the direct development team—architects and designers, clients, contractors, and government—to value the project's relationships to indirect stakeholders and its direct and indirect impacts within the nested interdependency model of sustainability. Direct stakeholders receive benefits because they are a part of a project. For example, a building owner may be able to achieve increased profitability in their business. But every development includes multiple indirect impacts and benefits beyond just the project's direct development. Understanding the interconnected and interdependent social and environmental aspects of a project requires that the design team expands stakeholders to include indirect stakeholders.

Indirect stakeholders can be separated in both space and time from a project. A building project may use resources or create greenhouse gas emissions that have an impact on communities far away from the project site in geographic space. Development could also affect people in a future time. There is no longer a clean line between the internal and external stakeholders. Internal stakeholders are part of the global and local social ecological system in which they operate and have a vested interest in its well-being. Most individual actors in the construction industry also have a vested interest in the well-being of future generations through their own progeny (Duplessis & Cole, 2011). Expanding the stakeholders and therefore the community of a development project means that care must be taken not only to benefit the direct client of a project, but also to consider broader social ecological stakeholders as "clients" as well.

Aspects Of A Social Ecological Ethic For Architecture

A social ecological ethic for architecture is based upon the acceptance of three conditions in the new world: complexity, change, and impermanence. This acceptance creates a foundation to build key goals for an ethic for architecture: to create an inclusive design process, to ground this process in the specifics of place, to proceed with caution and care, and to build capacity for coevolution of social and ecological systems over time.

The early 20th-century English jurist John Fletcher Moulton distinguished "three great domains of human action": positive laws, free choice, and manners, by which he meant ethics. Positive laws are "laws binding upon us which must be obeyed," which essentially means laws that are enforceable with punishment. At the other end of the scale lies free choice, which is the area of "spontaneity, originality and energy" (Doppelt, 2010). Changes to the free choices of the design process illustrate aspects of a social ecological ethic.

First, design needs to include additional analysis of the benefits for and impact from decisions to the life-supporting ecological systems as outlined in the Living Planet Report. Engagement tools and outreach must reach out to communities of people not directly connected to the development project. As David Orr states: "the process of design and construction is an opportunity for a community to deliberate over the ideas and ideals it wishes to express and how these are rendered into architectural form. What do we want our buildings to say about us?" (Orr, 2004).

Second, the design process must move away from the abstraction that is a symptom of the modern worldview and engage the specific place of the project. The complexity of systems in space and time creates a desire to simplify or "abstract" systems to make them easier to understand. When the world and its problems are abstracted, homogenized solutions that work against cultural and ecological diversity are easier to create and it becomes easier to overlook the fine grain of social and ecological details for the "big picture." (Orr, 2004). However, as Wendell Berry points out (1991): "No one can make ecological good sense for the planet. Everyone can make ecological good

sense locally, if the affection, the scale, the knowledge, the tools, and the skills are right." Instead of abstraction, architecture should focus on the immediate elements and systems at the scale of the building and neighborhood. In fact, of the nine planetary life-supporting systems, seven of them are aggregated processes from the local and regional scale (WWF, 2016).

Third, given the complexity of all systems and our inescapable ignorance, design should embrace humility and precaution. This requires a social ecological ethic for architecture to adopt the "precautionary principle," which states: "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically" (Wingspread Statement, 1998). Caution should also lead to working at a smaller scale—the neighborhood, the farm, the factory—before generalizing to systems at a larger scale. Focusing on the building and neighborhood allows consideration and care to be integrated into development. One way to avoid—or at least minimize—the risk that new "solutions" will result in catastrophic and widespread unintended consequences is to limit the scale of experimentation. At the local and regional scale, feedback is faster and ecological limits are more immediately identifiable (Wahl, 2016).

Fourth, the design process should help to build the capacity for social and ecological stakeholders to coevolve and integrate over time. Many forces serve to disconnect modern stakeholders from a place and its systems. The process of design can be used to build the eco-literacy of stakeholders to their social and ecological place. This has been outlined by multiple authors in the last ten years (Orr, 2004; Cole &Du Plessis, 2011; Mang &Reed, 2015; Regenesis, 2016).

Regenerative Design Embraces a Social Ecological Ethic

For over 20 years architectural practice has confused incremental "greening" for truly sustainable design. This has focused design on reducing negative impacts, a common symptom of the environmental movement. But this is not enough. As Ray Cole states, simple mitigation "is insufficient for an ecologically sustainable future and is an insufficient aspiration to motivate design professionals and their clients" (Cole, 2015). Regenerative design has the potential to provide a richer and deeper model for reframing architectural practice through a social ecological ethic. Green design practice has followed a very mechanistic process of dissecting important ecological and social criteria and then trying to re-integrate them back into design. This arises from the desire to take everything as a single system and make it whole, which is quite different from merely preserving the natural life that exists. It means creating life both in manmade things and in natural things (Alexander, 2002). Regenerative design has the potential to reframe architectural practice through two of the practice's greatest strengths: the ability to integrate multiple and complex factors into one design, while also creating inspiration and meaning for a building's community.

Changing the ethic of architecture is inherently tied to the changing perspective of sustainability within broader society. John Robinson and Ray Cole (2014) have discussed this transition from sustainability in its traditional perspective to the evolving theory of regenerative sustainability. According to Robinson and Cole, the distinctions between so-called green approaches and regenerative approaches to building design are evidenced in very practical ways. Green design is largely understood in terms of building form and technical systems that support a higher level of environmental performance through incremental change. By contrast, regenerative approaches place considerable emphasis on predesign and engage a broader range of participants. This integrates regenerative design practice in the research, precaution, and capacity building that encompasses the social ecological ethic. Rather than simply considering design, construction, and ongoing management processes as the input of expert knowledge, design becomes an educational vehicle for the design team, the client, and community stakeholders (Robinson &Cole, 2014).

John Tillman Lyle, one of the pioneers of regenerative thinking, outlined the difference between green design and regenerative design in his book *Regenerative Design for Sustainable Development*. He created two diagrams to show the difference between a mechanistic approach and an alternative model for a regenerative system (Figure 4) based upon his understanding of the patterns of living systems. A regenerative system provides for continuous replacement for the sources that support the functional processes of development. Energy, water, and other materials used in operation are replaced primarily by incoming solar radiation.

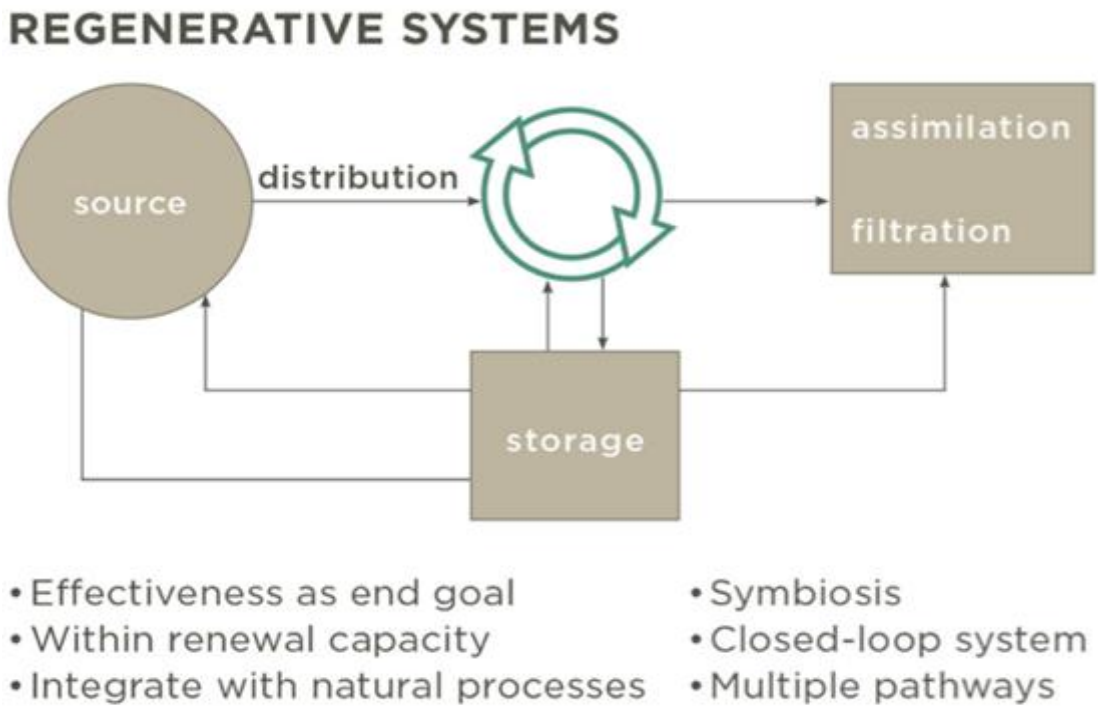

Figure4. *Regenerative system state (Lyle, 1994)*

In Lyle's view (1994), regenerative systems have the following characteristics:

- Integration with natural processes and by extension with social processes
- Minimum use of fossil fuels and manmade chemicals except for back-up applications
- Minimum use of nonrenewable resources except for future reuse or recycling
- Use of renewable resources within their capacities for renewal
- Composition and volume of waste within the capacity of the environment to assimilate without damage

From a regenerative perspective, any project, no matter how modest, can generate beneficial impacts that ripple out and contribute to making a healthier world (Regenesis, 2016). According to Regenesis members Pamela Mang and Bill Reed, it is not the building that is regenerated in the same sense as the self-healing and self-organizing attributes of a living system. It is about the way that the act of building can be a catalyst for positive change within and can add value to the unique place in which it is situated (Mang&Reed, 2015). Within a regenerative practice of architecture, the ethical implications of design cannot be ignored or held separate between the designer and client. As outlined by Alexander (2002), the design process is a vehicle to research and explore a shared vision for the potential to create and enhance life not only in living systems but also in manufactured systems. A fundamental social ecological goal for the design process is to create a vision for the coevolution of the people of a development with the social and ecological systems of the place. Partnering for coevolution requires a whole-system reorientation that connects human activities with the evolution of natural systems. Architectural practice needs to include the creation of processes and systems to support integration of human and environmental health in the design of buildings and neighborhoods. In addition, regenerative design expands the consideration of time beyond the completion of the project. Designing for evolution doesn't mean designing evolution. Evolution is an emergent process—one that arises out of multiple interactions among living beings and their environments. Design does not predict specific outcomes of evolution, but it can create evolution-friendly conditions that influence the trajectory and speed of change (Regenesis, 2016). This change in mindset and ethics offers potential to develop architecture that benefits all life.

Challenges For The Future Of Architectural Practice

A number of challenges exist to regenerative architectural practice. If architectural design is seen as a catalyst for systemic change on a

project site, how are the boundaries of those systems defined? Projects can quickly become lost in the distillation of the entire ocean of living complexity. How much of the system change occurs because of the physical characteristics of the building design or because of the building's influence on other systems? With the majority of the world's population living in cities, how feasible is it to apply the regenerative approach in an urban context (Clegg, 2012)?

Research and pilot projects are needed to develop the next generation of assessment systems. An example of such research is the work of the International Living Future Institute to pilot and develop the Living Community Challenge and extend the goals of the Living Building Challenge on a community scale. Pilots like the plan for UniverCity for Simon Fraser University in Burnaby, British Columbia (Figure 5) not only influenced a set of metrics to move regenerative design toward quantitative values, but also provided examples and patterns of the qualities of a regenerative design:

1. Design within the carrying capacity of the site based upon solar and water renewal.
2. Assess and design the "waste" of systems to replicate the quantity and quality of the natural systems. (For example, waste water from the design was shaped to integrate with the stream courses downslope of the project site.)
3. Create and merge architecture and urban design with built and natural systems to provide infrastructure with systems like living machines and constructed wetlands. Such integration has the potential to blur the lines between human systems and ecosystems and "re-wild" the urban environment.

The translation of this pilot and others into the Living Community Challenge assessment system must not be seen as a set of objective criteria. Designs such as UniverCity must be created and built, but must also be reviewed for the emergence of social-ecological value over time. A process of feedback is needed to learn from regenerative design and help reframe the practice of architecture in having a role in designing a built environment that creates real value for all stakeholders. Practitioners must take care to not just review projects for their ability to solve technical problems, because design is not just a problem-solving process. Design also plays the role of creating meaning and making things for human delight. A reframing of the practice of architecture based upon a social ecological ethic should learn by designing and continue to renew and inform the ethics of practice.

Figure5. *UniverCity as a model of a Living Community (McLennan &Graves, 2013)*

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