# The University System: Examining Community Engagement through the Lens of Open Systems Theory

According to Katz and Kahn (1978), an open system is defined as having identifiable repeated organizational processes that import energy from the environment, transform inputted energy into products, export the product into the environment, and re-energize the system from resources in the environment. An open system engages in mutual information exchange with other systems in its environment and relies on these transactions for its equilibrium. The environments are what support the organizations and shape how they are composed. In open systems theory, community engagement is consistent with this model in that the open systems perspective "stresses the reciprocal ties that bind and relate the organization with those elements and flows that surround and penetrate it" (Scott & Davis 2007, p. 106). Community engagement has challenged the dominant epistemology guiding the understanding of the ways higher education relates to the social world, and what is considered as legitimate knowledge. Within higher education, community engagement is recognized as "the collaboration between institutions of higher education and their larger communities (local, regional/state, national, global) for the mutually beneficial exchange of knowledge and resources in a context of partnership and reciprocity" (Carnegie Foundation 2008). One of the motives for community engagement in higher education can be supported by open systems theory through the flow of information. By examining community engagement through the lens of open systems theory from which many similarities exist, increased contributions to understanding the theoretical frameworks of community engagement can be considered. Through the lens of open systems, this manuscript will investigate community engagement, partnership-working, and buffering and bridging. The final focus will be exploring boundary spanning through open systems theory.

Key Words: *Open Systems Theory, Community engagement, Boundary spanning*

The University System: Examining Community Engagement through the Lens of Open Systems Theory

The traditional role of knowledge construction within higher education has been thought to be hierarchical, university-based, homogenous, expert-led, and discipline-specific (Gibbons, Limoges, Nowotny, Schwartzmann, Scott, & Trow, 1994). Gibbons and colleagues suggest that there is a second mode of knowledge production and research.This emerging model is constructed within the context that knowledge can be applied, problem-centered, heterogeneous, trans-disciplinary, hybrid, demand-driven, and network-embedded. This latter model suggests that the construction of knowledge need not be directed by one entity, but can be driven by both or multiple collaborators.

The generation and co-construction of knowledge lends itself to theoretical perspectives of systems theories. A system is commonly defined as a group of interacting units or elements that have a common purpose (Emery, 1967). L. von Bertalanffy (1950) accredited the survival of living organisms by their ability to import material from its environment, transform to fit the needs of their own system, and then export the outputs back into the environment, thus gaining the essential energy required for survival and evolution. This was the basic concept for his introduction of opened and closed systems theories.

Systems theory is concerned with problems of relationships, of structures, and of interdependence, rather than with the constant attributes of an object (Katz & Kahn, 1966). Organizations can be thought of in many ways and defined based on common or divergent features, much like theoretical systems. Organizations can be formed by how we think of a phenomenon, framed by specific membership, or within a production for a formal output. The common features of organizations are defined objectives, trained/knowledgeable workers, resources acquired, goods produced, and working accommodation with neighbors (Scott, 2003). How an organization is structured and engages relationships impacts the system it exists within.

Scott and Davis (2007) have noted three different perspectives on definitions of organizational structures in regards to systems theories: rational, natural, and opens systems. The rational perspectives are motivated by the pursuit of obtaining or meeting specific goals. Rational systems theorists find that attention to clear goals and formalization drive their organizations because it is needed for rational behavior to take place within limits imposed by the organization. Natural system perspectives recognize that organizations are composed of social groups, whose

goals may conflict against the overall goals of the organization. Natural systems perceive the greatest resources of an organization are its human capital, and representing their interests and capabilities. The organizational structure of open systems theory is one that acknowledges activities of groups of participants, who may have different intentions, but are situated within their larger environment.

Open systems theory can provide a perspective for higher education institutions. An open system engages in mutual information exchange with other systems in its environment and relies on these transactions for its equilibrium, such as the ways in which universities interact with their external environments and communities. For the purpose of deriving knowledge and inputs, community can be defined in many ways, geographically, socially, issue-driven, and internationally (Beere, 2009). This reciprocal nature of knowledge obtainment, construction, and sharing between universities and communities are the same foundational features of community engagement. Community engagement requires collaborative, reciprocal processes that recognize, and respect the value of knowledge, perspective, and resources shared among partners, versus collaboration exemplifying a closed system theory which presents universities and communities interacting in a one directional, "expert," model in which university resources are extended to serve community individuals, groups, organizations and the public in general (Benson, Harkavy & Puckett, 2000). Through examining the lens of open systems theory, some information will be provided regarding the community engagement in higher education, funneling into understanding boundaries across and between university and environmental systems, and then the strategies of buffering and bridging between these systems.

## Defining Open Systems

According to Katz and Kahn (1978), an open system is defined as having identifiable repeated organizational processes that import energy from the environment, transform inputted energy into products, export the product into the environment, and re-energize the system from resources in the environment. An open system engages in mutual information exchange with other systems in its environment and relies on these transactions for its equilibrium. The environments are what support the organizations and shape how they are composed. The connections with external elements can be more critical than those that exist among the internal components (Scott & Davis, 2007). This is because at times the divisions between organization and environment are constantly changing and evolving.

Katz and Kahn (1978) recognized organizations as open social systems with specialized and interdependent subsystems. These open system organizations had processes of communication, feedback, and maintenance between the subsystems. Katz and Kahn speculated that there were 4 types of sub-systems for these processes; adaptive/boundary, maintenance, production, and managerial. The functions of the adaptive subsystem are designed to insure that the organization can meet the changing needs of the environment. The maintenance subsystem is responsible for maintaining the stability and internal personnel of the organization. The production subsystem focuses on the activities of converting inputs into outputs and the services that are provided from the organization. The managerial subsystem coordinates the functions of the other subsystems, settles conflicts, and relates the overall organization to the environment. The managerial subsystem crosses all subsystems of the organization to encourage all the subsystems to obtain a goal and sustain high level functioning.

The open system theory suggests that an organization is an entity that obtains inputs from the environment, transforms them, and releases them as outputs, collaborating with reciprocal effects on the organization along with the environment in which the organization functions (Scott, 2003). The organization becomes situated within its environment. Katz and Kahn (1978) argued that the closed system model does not take into account how organizations are reciprocally dependent on the external environments, that open systems accepts that organizations are contingent upon their environment and the environments are furthermore contingent on organization. This is a difference in open and closed systems of organizations. Open systems interact with other systems or the external environment. Whereas closed systems refer to systems having relatively little interaction with other systems or in the external environments.

## Universities through the Lens of Open Systems Theory

According to systems theory, the university is informed like any other open system by constraints, such as financial, structural, and physical resources (Scott, 2003). These constraints provide the constants of the environmental framework within which the system must operate. A system wants to maintain a general state of balance among all external and internal operating forces. Colleges and universities want to be able to strive during periods of financial duress, fluxes in the educational periphery, changes in policies or accreditations, and competition of external communities.

It could be suggested that the university's output/product is knowledge. Students come to universities to learn tasks, knowledge, and skills, and that faculty participate in research to discover "new" knowledge to produce, both for external and internal environments. "The open systems perspective stresses the importance of cultural-cognitive elements in the construction of organizations. Nothing is more portable than ideas" (Scott & Davis, 2007, p. 31). However the university did not "create" this knowledge, it was initially derived from the environment, but was obtained as an input, packaged and modified to the desire of the learner, or adapted by the researcher, and then released as an output back into the external environment.

Within organizational systems, there are subsystems that form and interact. Yet it is in the recognition of the function of hierarchical overall systems which separates open systems from other organizational systems. Trish (1983) identifies that hierarchy within environments exist through the formation of group or "clusters." The clustered environment is characterized when goals are not randomly distributed but hang together in defined ways. Thus, examples of clustering that emerge in universities are academic departments or fields of study. The perspective of open systems theory is that while these subsystems exist within the organization, that the differentiating factor is that these subsystems are situated within an understanding of the larger, external environment. Universities have departments, programs, fields of study, and administrative groups, but that those subsystems are responsible to scan the external environment for how they process, and work within the communities.

Open systems are capable of self-maintenance on the basis of throughput of resources from the environment (Scott & Davis, 2007, p.95). Universities are dependent upon the external environment to function also. If a mission of an academy is instruction, research, and service, then the university seeks those components from their external environment. One example from the external environment includes potential students, the focus of instruction and whose tuition and government-supported funding assist in the function of the institution. When universities engage in research, it is within the world's context of knowing and understanding, so faculty must interact with that world (the one that exists outside of the university). The university is dependent upon these resources, people, and knowledge transfer from the external environment. The same should hold true for participating in service within the external environment.

**Community Engagement through the Lens of Open Systems Theory**

Community engagement has challenged the dominant epistemology guiding the understanding of the ways higher education relates to the social world, and what is considered as legitimate knowledge. When Boyer (1991, 1996) addressed the purpose of scholarship, a new paradigm for institutional scholarship of communal knowledge sharing was introduced. A paradigm that involved faculty engagement within the community to not only be part of the curriculum, but to also be recognized and rewarded in the university. Boyer suggests four functions of the academic profession. The scholarship of discovery is participating in basic research, which Boyer states still holds to be the main ingredient of academia. The next idea was the scholarship of integration, when connections are made across disciplines to tie in one's research into the "larger picture". The scholarship of application is when theory and practice come together and the engagement is scholarly. The scholarship of teaching is reintegrating into the process as a whole by sharing new knowledge with students to create engaged students. Boyer's proposed functions for a reconsideration of scholarship have had tremendous effects on teaching, service, and research.

Community engagement within higher education is recognized as "the collaboration between institutions of higher education and their larger communities (local, regional/state, national, global) for the mutually beneficial exchange of knowledge and resources in a context of partnership and reciprocity" (Carnegie Foundation, 2006). In open systems theory, community engagement is consistent with this model in that the open systems perspective reinforces the reciprocal ties that bind and relate the organization with the connective attributes that surround and penetrate it (Scott, 2003). By examining community engagement through the lens of open systems theory from which many similarities exist, increased contributions to understanding the theoretical frameworks of community engagement can be considered.

One of the motives for community engagement in higher education can be supported by open systems theory through the flow of information. Within the institution, academic conferences, associations, field networks, and scholarly publications are the areas of information sharing. Participating in community engagement can open up new avenues for information transfer also.  The external environment, or community, can be viewed as the ultimate source of materials, resources, and information (Scott & Davis, 2007). Community engagement can also provide a new perspective, or lens, on the way the information is processed. There is also a call for community engagement to be a function of the university, such as with the Carnegie

Classification of Institutions of Higher Education with the elective of Community Engagement, which states that "teaching, learning and scholarship engage faculty, students, and community in mutually beneficial and respectful collaboration. Their interactions address community-identified needs, deepen students' civic and academic learning, enhance community well-being, and enrich the scholarship of the institution" (http://classifications.carnegiefoundation.org). Open systems depend upon links to the external environment for knowledge flows and for legitimacy for their very existence (Meyer & Rowan, 1977). For institutions that possess or are seeking this classification, it becomes pertinent that open and reciprocal information and communication are occurring between the academy and community to be able to obtain the information needed for curriculum, to dialogue "needs," and forward scholarship.

One of the structures of open systems is that they possess inputs and outputs (Katz & Kahn, 1996). Inputs for the university are staff, students, curriculum, and physical and financial resources. The outputs of the university are when students graduate and re-enter the external communities, when new research is presented to the public, or contributions to service. The contributions to community engagement are that if embedded in the system that the "inputs" are exposed to, the system could produce a civically engaged "output."

Open systems theory emphasizes process over structure (Scott & Davis, 2007). The ways in which higher education recognize their own systems that exist make up the structures for community engagement. "At a time when community has attained the fluidity of convenience as we belong to multiple communities that are global, disciplinary, transcendent, and increasingly, electronic, other administrators, faculty, staff, students, and trustees long for the certainty of belonging to a physical community even as they want it to be international in its connections" (Sandmann & Platter, 2009 p. 15). The multiple connections available through engagement grant access to multiple forms of communities.

From an open system perspective, there is a close connection between the condition of the environment and the characteristics of the systems within it (Emery, 1967). Issues of urban communities shape a university being recognized as an institution within an urban context. The concerns of the university may focus in fields that are directly related to the communities they are embedded in, and then dependent upon the external environments for their foundational, contextual, or philosophical knowledge.

Systems have boundaries that define and impose structure around and through them (Scott, 2003). In universities, boundaries are imposed to establish clear lines of distinct processes, such as within departments or between colleges. A strategy for community engagement is to create opportunities for universities and the external environment to permeate the boundaries, recognizing the unique significance of each whole, to share knowledge and resources.

## Organizational Boundaries through the Lens of Open Systems Theory

Many theorists have produced working understandings and definitions of organizational boundaries, especially within the literature on open systems theory (Kahn, 1974). While open systems theory focuses on the value of transactional relationships and a flow of information, there are still boundaries that exist to build the structure that makes organizations unique of one another. The ways that organizational boundaries are defined have been related to the people that exist within bounded organizations, the activities they are engaged in, or the roles they hold in organizations.

Scott (2003) suggest that open systems theory has organizational boundaries from external demands, but it separates itself from other organizational theories by making of equal importance the transactions that span, permeate, and re-define the existing boundaries. They suggest that there is a notion of collectivity, which relates to the idea of boundaries that exists within organizations. The criteria for the existence of a collectivity within social organizations are "a delimited social structure, that is, a bounded network of social relations, and a normative order and cultural-cognitive framework applicable to the participants linked by the network" (p. 152). All collectivities, such as informal groups, communities, organizations, and entire societies, possess boundaries that distinguish them from other systems.

Laumann, Marsden, and Prensky (1983) have defined boundaries based on the people that exist within them, and distinguished amongst the characteristics of the actors, their relations, and their activities. The connection or role of individuals as "members or non-members" is one way in which the characteristics of the actors create boundaries. However, these separations can create divisions, as these types of boundaries could be barriers to the transactional quality related to open systems. Laumann et al. suggest that another approach is that the establishment of boundaries focuses on the social relations of the people involved. This could be assessed by the frequency of the interactions, the strength in the interactions, and the roles each actor is playing

within them. A third approach is the activity performed in, through, and outside of each actor's bounded space. This approach emphasizes the behaviors over the people involved, and what activities create or sustain behavior.

Sandmann and Weerts (2008) wrote that Arthur Levine found that "organizations possess unique personalities that are shaped by a distinctive set of norms, values, and goals…, and that boundary establishment is one of the tools through which organizations guard against external forces that may violate these commonly held norms, values and goals" (p. 183). Referencing another theorist, Sandmann and Weerts, noted that Erikson "described boundaries as a symbolic set of parentheses which control an organization's social space in order to retain a limited range of activities and a given pattern of constancy and stability within the larger environment" (p. 183). Through the understanding of Levine and Erikson, Sandmann and Weerts came to define the term boundary as "organizationally defined limits or bounds" (p. 183) when looking to investigate a conceptual framework for an engagement model.

The definitions and the indicators for what creates a boundary will guide the types of internal-external relationships that organizations are engaged in (Scott & Davis, 2007).  In defining organizational boundaries, it is of equal importance to identify terms such as community and stakeholder. Jongbloed, Enders, and Salerno (2007) define stakeholders as any group or individual who can affect or is affected by the achievement of the organization's objectives.  In this way, stakeholders represent notions of relationships, environments, expectations and responsibilities. Stakeholders of a university could include research communities, alumni, businesses social agencies, and the government.

The definitions of boundaries may also be interrelated to the defining of stakeholders when issues like identifying who the more crucial stakeholders are or competing stakeholder wants (Boyle, Ross, & Stephens, 2001). In universities, the government is an important stakeholder and possesses influence over policies and financial resources. Agencies, such as government funders, may be external to the university, but have the ability to exert pressure to change policies having a significant effect on the organization, and the composition of these stakeholders are unique to particular times, tasks, or issues (English, 2006). When universities involve stakeholders in key decisions, they gain understanding of current and emerging issues, achieve balance interests, and improve performance.

Open systems without boundaries can cease to be definable, separate entities. While open flow of resources and communities is a part of open systems theory, universities would not be the unique organizations that they are without limits and boundaries. The need for defining organizational boundaries is to assist in the maintenance of the demands made from external stakeholders (Scott, 2003). Organizations, such as the university, can use strategies to purposely interact and invite external engagement, or compose boundaries to limit or close off such transactions. These practices are known as buffering and bridging strategies.

## Buffering and Bridging through the Lens of Open Systems Theory

Within a university, buffering strategies focus on protecting the core missions of instruction and research from external demands. The university has created a culture that not only possesses a physical space that can be shut off from the external environment, but has an internal culture of its own language, values, and rituals. A component of the culture of academic organizations is the pursuit of pure knowledge, and without buffering, the external environment could place restrictions such as time, definitions, or contextual understanding that would impose limits on such pursuits. External demands could pressure what is recognized as value or quality, such as the notion of tenure, which is distinct to the university and a way to motivate what is considered as quality within the university.

Universities create and impose buffering techniques to control for input variance. Coding is the "classification of inputs before they are inserted in the technical core" (Scott & Davis, 2007). An example of coding used as a buffering strategy within universities would be admissions of student applicants. Universities have requirements of certain standardized measure (SAT scores, GPAs) to control for uniformed quality. Buffering strategies are not singularly meant to be inclusive or territorial, but that there is a need for strategically deciding to participate with external demands in limited ways. "Periods of buffering can help organizations incubate particular ideas and ignore negative feedback from their environments that can derail their decision-making" (Honig, 2003 p. 23). DiMaggio and Powell (1983) suggest that you can demonstrate that the external demands are being symbolically adopted without having to change the dynamic of the organization, such as the university meeting the credentialing of external agents while being able to develop a curriculum independently without external influence.

Where as buffering strategies are purposefully in place to limit the interaction between the organization and the external environment, bridging strategies are focused on how to increase

that interaction. "Bridging activities involve organizations' selective engagement of environmental demands to inform and enhance implementation of their goals and strategies" (Honig, 2003 p. 23). Another bridging strategy is bringing in outsiders to provide to the organization. Scott and Davis (2007) present this as cooptation, "the incorporation of representatives of external groups into the decision-making or advisory structure of an organization" (p. 235). The bridging of external agents into the university may take the form of the Board of Regents, an alumni association, or donors. These groups are brought in to discuss the socialization of what the mission and values of the academic community could be. Bridging between these groups could assist in creating universal definitions, terms, and understanding of compliance between the internal and external environments.

### Boundary Spanning through the Lens of Open Systems Theory

Organizations make the most of both bridging and buffering strategies by expanding their organizational roles and practices to control for both. Boundary spanning organizations are created that borrow resources from the core and put them to work in activities that respond to environmental demands. Boundary spanning research recognizes organizational leaders that move seamlessly through different roles within and between organizations (Cross, Davenport, & Cantrell, 2003). In the creation of authentic partnerships composed of multiple stakeholders who recognize the social, cultural, and educational perspectives of the involved members, leaders within the institutions must emerge and be able to fluidly cross between the boundaries of university and community understanding (Friedman & Podolny, 1992). Researchers have begun to identify these networkers as "boundary spanners" (Adams, 2013; Miller, 2008; Sanmann & Fear, 2001).

Institutions have maintained their historical roles as gatekeepers and disseminators of knowledge (Sandmann & Weerts, 2008), which can be viewed as a type of buffering. From the role of boundary spanning, there is a desire to create direction, alignment, and commitment throughout partnerships. Boundaries spanners can work together across differences that may traditionally divide them (Goldring & Sims, 2005). Miller (2008) found many emerging themes that depict people working within boundary spanning, such as having diverse connections, possessing exceptional interpersonal capabilities, and can move freely and flexibly between and within organizations. Spanning boundaries provides increased resource access, but also the opportunities for new learning and development.

Organizations are thought of as "social structures created by individuals to support the collaborative pursuit of specified goals" (Scott & Davis, 2007 p. 11). A desire to bring people together across traditional boundaries and effectiveness in convincing others to work together for a common goal and to build lasting working relationships is an important aspect of boundary spanning. Singleton, Hirsh, and Burack (1999) found that integrative systems are those that penetrate the boundaries within an organization. As colleges and universities develop in more complex ways, their relationships to society and to their larger external communities can benefit from the multi-layered, integrative approach, which underscores the connections rather than the divisions in their institutions.

Similar to open systems theory, boundary spanning seeks critical information is gathered, feedback obtained, and perceptions are received from the community or university environments, through their stakeholder networks, and then information is interpreted and translated back into the partnership (Adams, 2013). Universities benefit from the ability to cross boundaries and break through the historical stagnation of higher education into active partnerships that provide new opportunities for knowledge sharing within communities (Sandmann & Weerts, 2008).

Miller (2008) suggests that boundary spanning has the ability to unite unlikely groups around a common goal. Like many of the common themes within the field of community engagement, boundary spanning understands the sensitivities of using a common language within their partnership or relationship development stages. Also, boundary spanners are capable of bringing a sense of trust into partnerships (Goldring & Sims, 2005; Miller, 2008), as already recognized members of the community. Increasing cross-organizational exchanges through boundary spanning will decrease the hierarchical structuring of partnerships that could be potentially harmful to relationship building.

Weerts and Sandmann (2010) addressed how social closeness affected the roles of boundary spanning to external departments referencing the work of Friedman and Podolny (1992):

> Friedman and Podolny explained that some spanners serving as portals to outsiders who influence the organization as less affective in representing their common interests. Conversely, those spanners seen as more aligned with organizational interests were perceived as less willing to be influenced by the other side (p. 8).

There can be conflicts that arise when the values and expectations of the boundary spanners influence the roles they play in community engagement, and this is where buffering systems assist to decrease how conflicts can impact whole systems. In buffering, a tactic to restrict external demands is forecasting. Forecasting is "attempting to predict variance in supply and demand" (Scott & Davis, 2007, p. 128). Community engagement is gaining momentum in the academic world. By taking into account the movement, progression, and fluctuations of how the academy is perceiving community engagement, universities are preparing for shifts that can occur within their organizations.

Open systems theory recognizes that organizations are inextricably connected to their environments, but there exist boundaries that can be challenging to transpose (Scott, 2003). These boundaries exist as a filtering system for the transfer of information, resources, and energy. Organizations depend on mechanisms to separate and refine these environmental factors as they adapt to changing systems. Individuals who are able to collect, interpret, communicate and share information are key players in both open systems communication and community engagement. Boundary spanners are able to be both respectful and representative to organizational collaborators, and thus are able to move more fluidly through the separate bounded systems.

## Conclusion

The university situated within its external environment is a living and constantly changing organism. Through utilizing the interdependence of the relationships between universities and community by examining the facets of community engagement through the lens of open systems theory, recognition is attributed to the importance of these relationships. Understanding the boundaries across and between the university and the community has many similarities to open systems theory traversing between the organizational context and the environmental systems. Open systems theory provides a practical framework for community engagement due to the reciprocal and collaborative nature. Through better understanding of relational theories, researchers and practioners of community engagement can recognize the bridges and buffers in place to protect identity while opening communication transfer. An attribute of open systems theory is the recognition of phase cycles (von Bertalanffy, 1950), in which there are no ridged beginnings and endings, but cyclic transformations. As higher

education experiences the ebb and flow of new knowledge construction and evolving changes, open systems theory will continue to adapt within these complex living systems.