Critical, Emancipatory, and Pluralistic Research for Education:
A Review of Critical Systems Theory

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Qualitative research is inherently critical, interpretive, and multimethod in function, and Denzin and Lincoln (2005) argue that the current status of qualitative research sees the social sciences as a place for critical conversation. This highlights the task at hand for qualitative educational researchers, and their responsibility in bringing a critical view to methodology, promoting social justice, and engaging with systems of education by seeking to identify and address the problems within them.

While the problems in education are complex, the application of systems thinking for identifying and solving complex problems has largely been absent. Critical Systems Theory (CST) brings a systems-thinking lens to help educational researchers understand the complex nature of educational systems and problems, while incorporating critical perspectives in both methodology and broader research objectives such as emancipation and social justice.

CST is derived from both systems theory and critical social theory. In the mid-twentieth century, systems theory was established by a multidisciplinary group of researchers who believed that studies of science had become increasingly reductionist and the various disciplines isolated. The term *system* has been defined in various ways, but the core concept is one of relations between components, which together comprise a whole. Among the first to establish systems theory, Bertalanffy (1968) noted the existence of principles and laws that could be generalized across systems and their components regardless of the type of system or its relations to other systems. Ultimately, systems thinking entails identifying the

components that make up a system, understanding relations between them, and how these components impact the larger system, external systems, and supra-systems, and vice versa.

Systems theory continued to be of large influence in management sciences and research over the last half of the twentieth century, and underwent significant change, including the development of traditional "hard" (positivistic) and "soft" (interpretive) approaches to systems thinking. During the early 1980s, scholars called for a more critical, socially-aware approach to systems thinking and practice (Jackson, 1982; Mingers, 1980). This critical perspective was further developed based on the epistemological views of Habermas, influencing systems theory into the 1990s (Flood & Jackson, 1991; Jackson, 1991a, 1991b). Today, CST is defined by its core commitment to three ideas: critique, emancipation, and pluralism (Schecter, 1991).

While CST's history has largely been within the management and operational sciences, its principles and methodological tools offer significant insight to qualitative researchers in many disciplines within social science. This is particularly true for the field of education, where many researchers are focusing on critical, emancipatory research and employing multi-methods for the proper exploration of diverse topics in education. The following section details the development of systems thinking to embrace a critical approach and how the fusion of critical and systems theory resulted in critical systems theory, a theory that merges systems thinking with a critical lens and can provide practical methods to the qualitative researcher for understanding and changing systems with inequalities. We further detail the core commitments to critique, emancipation, and pluralism that form the foundation of CST. Finally, we describe a system of system methodologies to contribute to and guide the selection of critical research methods for qualitative researchers in education.

Development of Critical Systems Theory

Hard Systems Thinking

The early days of systems thinking represented a hard systems approach, reflecting a positivist epistemology, and the research methods focused on concepts such as prediction and control within the natural sciences. While this approach was revolutionary in understanding natural and engineering sciences, researchers in the social sciences faced challenges in applying systems thinking to understanding human systems. Checkland (1981) argued that hard systems thinking represented an inaccurate view of the reality of human systems because of its inability

to recognize the conflict and discord that exist in social systems, resulting in reductionist, inaccurate, and unsuitable approaches to solving social system problems.

Jackson (1985) further elaborated on the challenges of hard systems thinking for social systems, noting that the engineering and natural science focus of hard systems thinking presumes that system goals can be established from outside; while in truth, they originate from individuals and groups within social systems and often differ, causing conflict. As he points out, the hard systems approach strives to identify an "optimal" solution regardless of the differing opinions or values within the system. This assumption of hard systems meant that the success of social systems would either be based on a) total agreement on goals across the entire system, which is rather unlikely, or, more likely, b) objectives of the system determined by those in power and without the input of others.

Soft Systems Thinking

In understanding the challenges in applying hard systems methods for social systems work, researchers such as Checkland, Churchman, and Ackoff argued for more interpretive, soft systems approaches (Jackson, 1982). The ontology of soft systems thinking includes the cultural, psychological processes of human activity as well as the objective, hard systems approach. It views a social system as constructed by individuals and attempts to understand and interpret the viewpoints of those in the system rather than studying the system as if observed from an outsiders' perspective. In other words, soft systems thinking does not seek for "one optimal solution" and seeks to facilitate a dialogue between individuals and decision makers in order to reach agreement, even if temporary, about the nature and objectives of the system. Both ontological and epistemological distinctions exist between the two approaches, including what a human social system is ontologically, and how we can gain knowledge about it epistemologically.

Despite the move towards soft systems approaches in order to address the limitations of hard systems thinking, soft systems itself met with criticism. Jackson (1982) argued that because soft systems methods are typically used at an ideological rather than practical level and lack the understanding of social constraints, such as the unwillingness of those in power to fully participate in the required dialogue among stakeholders, meaningful change of the system is difficult. In addition, he explained how the overemphasis on "subjectivity" of soft systems approaches constrains soft systems practitioners' ability to intervene in situations of conflict or unequal power: "soft systems thinking either has to walk

away or fly in the face of its own philosophical principles and acquiesce in proposed changes emerging from limited debates characterized by distorted communication" (Jackson, 2001, p. 236).

A Need for Critical Systems Thinking

If an important characteristic of a human social system is that it has a shared culture to orient the actors that make up the system as soft systems thinking describes, then systems should strive to reconstruct meaning that is shared, not just develop "subjective" opinions or merely collect those opinions in a system. The need for a critical approach in systems thinking was identified for contexts such as where "there is little common interest shared between stakeholders, there is fundamental conflict, and the only consensus that can be achieved arises from the exercise of power" (Jackson, 2001, p. 237). Incorporating critical theory into systems analysis stressed the importance of recognizing issues of power, oppression, and emancipation in systems thinking and approaches.

Critical theory has become established as a significant movement in the social sciences and there has been a "distinct turn of the social sciences towards more… critical practices and theorizing" (Lincoln, Lynham, & Guba, 2011, p. 97). Critical theory seeks to "create change, to the benefit of those oppressed by power" (Lincoln, Lynham, & Guba, 2011, p. 102). Kincheloe, McLaren, and Steinberg (2011), offering a caveat due to its many different and evolving theories, describe critical theory:

> Critical research can be understood best in the context of the empowerment of individuals. Inquiry that aspires to the name 'critical' must be connected to an attempt to confront the injustice of a particular society or public sphere within the society. Research becomes a transformative endeavor unembarrassed by the label 'political' and unafraid to consummate a relationship with emancipatory consciousness. Whereas traditional researchers cling to the guardrail of neutrality, critical researchers frequently announce their partisanship in the struggle for a better world. (p. 164)

Emancipation is one of the three core commitments of CST. Denzin and Lincoln (2011) argue that a critical framework is key to implementing social justice methodologies, and CST clearly fits within critical theory and its focus by actively seeking to empower individuals and transform society's systems and their policies and processes that replicate oppression and injustice.

CST, by incorporating critical and systems theory, ensures an emancipatory and critical approach by the researcher to the system being examined. As Ulrich (2003) states, "Systems thinking without critique is blind with respect to its underpinning [system] boundary

judgements and their normative implications…" (p. 327). We argue that when researching a complex system, critical theory without systems thinking is likewise limited with respect to understanding the system, its components, boundaries and relations to one another. CST guides the critical researcher in how to understand complex systems where issues of power or oppression may exist. The critical and systemic thinking views are complementary and necessary.

Along with the issues of power and emancipation, which developed into the essential qualities of CST, the strengths and weaknesses of diverse systems approaches led to a focus on emancipation from the use of a single methodology. This approach attempts to emancipate the systems analyst and researcher in order to recognize the particular qualities of various methodologies and their efficacy in different contexts and for different purposes. Consequently, altogether, the commitment to critique, emancipation, and pluralism form the three core principles and philosophy of CST.

CST Philosophy and Principles

Critique

The development and epistemological heritage of CST has led to a philosophy and principles focused on commitment to three core concepts: critique, emancipation, and pluralism (Flood & Jackson, 1991; Schecter, 1991). The philosophical underpinnings of a critical systems approach were initially discussed by Churchman (1970). In his discussion of operations research and management science, he argued for the necessity of systems researchers to move away from the "rational operational" hard systems approaches of the natural sciences with their foundation of rationalism and empiricism. Churchman drew from Kant's belief that systemic judgment is necessary for understanding data and Hegel's view of additional systemic judgments. Churchman instead called for an "irrational systems approach," which recognizes that there can be no one "optimal," absolutely right judgment or solution to system problems. He further argued that these hard methodologies did not fit with the actual realities of operational research and its human components, especially considering the chaotic nature of social systems and the topics that dealt with social anxieties, such as issues regarding poverty, crime or pollution. He established a strong argument for critique in systems thinking by pointing to the need to view systems thinking critically as a system itself and that systems researchers should be open to a systems analysis of systems thinking.

This core concept of critique directs the systems researcher to criti-

cally consider every aspect of research, including methods, practice, and underlying theory. The researcher should be critical of choosing her methods and the underlying philosophies and theories they reflect. Furthermore, an effort is to be made to move away from the hidden assumptions and conceptual traps in planning research to ensure that researchers do not bring existing baggage of traditional approaches into the study, particularly in the area of underlying ethics and the meaning of understanding in regards to normative issues. The concept of critique is particularly crucial in considering issues of power and emancipation, as we discuss in the next core value.

Emancipation

A second core principle of CST is the commitment to emancipation, including concepts such as human emancipation and emancipation of system methodologies. Critical systems thinkers, including Jackson and Flood (1984, 1987), draw heavily on Habermas' epistemological theory of universal human participation in work and interaction and his theory of knowledge-constitutive interests. These ideas are deeply grounded in developing the criticism of the overemphasis on "subjectivity" in soft systems thinking discussed earlier. They draw from Habermas' notion of an ideal speech situation where communication is free from distortion, validity claims are respected, and the authentication of knowledge is produced by a process of enlightenment where the actors in communication attain self-understanding and recognize the account of their communication as acceptable.

Emancipatory values are especially important when considering social systems wherein inequality of power exists in relation to opportunity, authority, and control. This commitment to emancipatory values directs the systems researcher to recognize the barriers to human liberation: the unequal power relations and the conceptual traps that exist in real social systems that are often ignored. Critical systems researchers such as Jackson (1985) explicitly call for an "emancipatory systems approach," while Flood's (1990) "liberating systems theory" for liberation and critique also reflects this commitment to emancipation. Oliga's (1991) focus on "empowerment and transformation" of social systems, as well as Ulrich's (1987; 2003) critical systems discourse, mirror CST's commitment to working towards human emancipation and facilitating the development of full human potential through equal participation in systems.

Pluralism

Finally, CST underscores pluralism, calling for an emancipation of researchers from research methodologies, and emphasizes the em-

ployment of a varying, creative design by recognizing the value of a full range of methods. Schecter (1991) argues for a pluralistic systems approach over isolationist, imperialist, or pragmatic approaches to systems thinking. This approach refuses to subscribe to the "pragmatist" trend of putting together a toolkit of "proven" methods and also rejects the ways of "isolationists" who pick a single theory as exclusively acceptable (Flood & Jackson, 1991). Instead, it attempts to emancipate researchers from these approaches to using methods and strives to help position the researcher's personal perspectives and goals appropriately within the system. It also helps the researcher to obtain cross-cultural understanding with stakeholders within the system, so that she can support the environmental compatibility of the chosen methods.

Ulrich (2003, 2006) discussed how pluralism and complementarism of methodology are indispensable in CST. However, he also cautions against the misconceptions of methodological pluralism and argues for true pluralism that will be realized "by not subordinating emancipatory reflection and boundary critique to methodology choice" (2003, p. 340). The idea is to be aware of the prevailing notions of complementarism in those shallow, pluralistic approaches that tend to rely on a positivistic concept of methodology choice, which prohibits the researcher from engaging in boundary critique that enables her to understand what facts and norms are to be considered relevant in that particular system.

CST and Qualitative Research in Education

Systems thinking has a relatively young history of being applied to the work of educational systems (Banathy, 1996; Senge, 1994; Watson, Watson, & Reigeluth, 2008), and the discussion of its impact on qualitative research methodology outside of the field of management science has been minimal. However, critical systems science has in many ways been reflected in educational qualitative research. Like CST, qualitative research in education is heavily influenced by Habermasian social and epistemological theory and perspectives (Carspecken, 1996). Critical qualitative educational researchers apply comparable values of critical perspectives to research: a) some groups in society are privileged over others, b) when subordinates accept their social status it reproduces oppression, c) oppression has many forms, d) research is a form of social and cultural critique, and e) most research practices are often a part of the existing oppression, even though unknowingly (Carspecken, 1996).

Educational researchers, like critical system thinkers, often focus on understanding the problem situation and solving problems in educational systems. Lincoln et al. (2011) describe critical qualitative research as

"participatory research, which empowers the oppressed and supports social transformation and revolution" (p. 104) and note that it is "driven by the study of social structures, freedom and oppression, and power and control. Researchers believe that the knowledge that is produced can change existing oppressive structures and remove oppression through empowerment" (p. 103).

Torrance (2011) notes the need for other voices to be represented in the debate over quality and merit in science, "particularly in an applied, policy-oriented field such as education" (p. 577) and argues:

> Many recent discussions of quality in qualitative research revolve around issues of engagement, deliberation, ethical process, and responsiveness to participant agendas, along with the need to maintain a critical perspective on both the topic at hand and the power of particular forms of knowledge. It is these strengths of a qualitative approach that are needed to reinvigorate the research enterprise and reconnect it with democratic processes. (p. 578)

Undoubtedly, there are assumptions and goals shared by critical qualitative research and CST. With the blend of a critical research perspective and systems thinking in studying social systems, CST's philosophical framework and its methodologies can provide a range of useful strategies and guidance for educational qualitative researchers. Incorporating a critical systems view can be helpful in identifying stakeholders and their roles within the system and in facilitating collaboration between them in understanding and working to change the system. As Jackson (2001) describes, social scientists are often well grounded in theory but rarely provide explicit guidance on how systems or organizations can be changed, whereas systems scientists generally focus on practice but do not ground it in theory. These two different yet interconnected disciplines could be brought together to provide qualitative educational researchers with a framework for applying CST in research and practice, utilizing a system of system methodologies.

System of Systems Methodologies

The system of systems methodologies (SOSM) approach arises from the concern that different systems methodologies have different strengths and weaknesses, making them suitable for application in different circumstances. Through the application of SOSM, the researcher is guided to recognize the type of problem context being examined and is informed as to what systems approaches might be suitable to apply to the problem. Critical systems researchers including Midgley (1997) and Jackson (1990) warn, however, that the SOSM should not be a rulebook to be followed systematically, but instead should be regarded as a practice that is use-

ful for critical reflection on methodology choice that offers direction to researchers' thinking in systems research and practice.

While SOSM has been described with a number of different terms, Flood and Jackson's (1991) SOSM is the most widely accepted. They examine various problem contexts and systems approaches, each informed by diverse theoretical influences and phenomenological perspectives. They categorize systems problem contexts into two categories: *System*, which refers to the views on complexity of the problem situation, and *Participant,* referring to the views of the relations between participants in the problem situation.

The *Participant* category has three different states, grouped by the relations of participants. Relations between participants can be (a) unitary: participants have shared interests, values, common agreement on ends and means, and there is participatory decision making, (b) pluralist: participants have compatible interests, there is some divergence in values and means but with the possibility of compromise, and some are excluded from decision making process, and (c) coercive: participants lack common interests, have conflicting values, there is disagreement on ends and means without the possibility of compromise, and some are coerced to accept decisions.

The *Systems* category includes only two states. It can be simple or complex. Simple systems are easy to understand and have a small number of elements and interactions between them. They have well defined laws, highly organized interaction, and do not evolve over time. Complex systems are systems that are difficult to understand and have a large number of elements and complicated interactions between them; interactions between elements are loose, the system evolves over time, and the attributes of the elements are not predetermined (Flood & Jackson, 1991).

The SOSM is arrived at by cross-referencing the two categories and groups problem contexts into six types: simple-unitary, complex-unitary, simple-pluralist, complex-pluralist, simple-coercive, and complex-coercive. Simple-unitary methodologies assume that the problem solver or researcher can determine the goals of a system and address those problems through implementing different operational conditions, which are often quantitative or highly structured. Methods such as systems engineering, systems analysis or operational research for machines or highly structured teams are examples. Complex-unitary methodologies deal with problems that are generally agreeable across the system and view systems as if they were organisms. They include methods such as general systems theory, socio-technical systems thinking, and viable system diagnosis. Simple-pluralist methodologies assume systems can

be properly understood and dealt with as machine-type approaches when disagreement is resolved. They therefore focus on dissolving the conflict through methods such as group formation, stakeholder analysis, assumption rating, dialectical debate, and synthesis. Complex-pluralist methodologies use methods that are designed to tackle contexts in which participants lack shared goals but compromise is achievable. Examples of methods include interactive planning and soft systems methodology. Finally simple-coercive and complex-coercive methodologies consider systems where participants have different goals and values and use whatever power they have to impose their favored views upon others (Flood & Jackson, 1991).

Several appropriate approaches have arisen out of a concern for knowledge-powers issues, such as action research methodologies, critical systems heuristics, and community operational research. The coercive problem contexts in systems are the most relevant to educational qualitative researchers, and especially those working with critical inquiry methods. It can inform research regarding power and knowledge issues within educational systems. In the following section, we discuss some critical systems methodologies that are applied in systems research and practice that may be of particular interest to educational qualitative researchers.

Community operational research. Community operational research will be of interest to educational researchers who work with at-risk, disadvantaged, or marginalized students. This method has been a response to arguments by Rosenhead (1986) and Keys (1987) that the classical operational research traditions are largely unsuitable for use in the community context. They argued that community organizations are usually smaller, lack resources, do not have a clear administrative hierarchy, are untrusting of expert opinion or technical solutions, and often possess participative decision-making processes (Jackson, 1987). Community operational research serves groups such as trade unions, tenant unions, non-profits, women's and other smaller and underrepresented social groups, as opposed to the traditional clientele of systems research, such as businesses, the military, and government populations (Rosenhead, 1986). When using this method, Schecter (1991) emphasizes setting explicit goals for social justice and liberation, supporting those who are directly concerned with problematic situations, and being relevant to the task of transforming oppressive social systems. In addition, Rosenhead (1986) highlights decentralization, liberation, non-optimizing, bottom-up problem formulation, and acceptance of conflict and uncertainty throughout the community operational research process.

Critical systems heuristics. Established by Ulrich (1983), critical systems heuristics (CSH) is one of the most widely discussed methodologies in the field of CST. CSH is a tool that aims to systematically expose the assumptions of decision makers and planners in order to reveal whose interests are being served. By encouraging critical thinking about the value judgments that underlie planning decisions, it seeks to help those not included in the design process (Ulrich, 1983).

Understanding systems requires boundary judgments about the scope and design of the system and what is included or excluded. Therefore, it is important to understand which groups of people and kinds of information have been considered related or important to the decision and which have been considered unrelated and therefore excluded or marginalized. Boundary critique makes boundary judgments explicit by applying twelve concepts that can help reveal the current state of the system (what it is) and the just or desired state of the system (what it should be). The twelve concepts are about people and their roles in the decision making process. Ulrich (1993) groups four social roles, three of them involved in decision-making (client, decision-maker, and designer) and a fourth (witnesses, affected but not involved). Each group has three questions to consider. The first question is about who occupies and ought to occupy what role: who is or ought to be the client, decision maker, expert, or witness. The second is about those roles' contribution to what is considered an improvement. The third question considers issues of conflict with other social actors. How these conflicts are handled contributes to the establishment of what is considered as "improvement," and answering these questions helps reveal the hidden boundary judgments so stakeholders can be empowered (Ulrich, 1993).

Action research. There is a strong complementary relation between action research and CST, both being highly committed to unraveling practical problems that will assist in larger progressive social change (Levin, 1994; Flood, 1998). Both disciplines seek emancipation through theory and knowledge construction based on a critical dialogue between participants and researchers.

There are several strands of emancipatory systems approaches that focus on understanding systems of knowledge-power dynamics with a purpose of bringing social justice to the system. Cooperative inquiry methodology, also known as collaborative inquiry, was first proposed by Heron (2000) in the 1970s and expanded in the 80s. Its main notion is to research with rather than on the people as co-researchers to develop communities with an eye towards future participation (Flood, 1998). Together, researchers and participants design, manage, and draw con-

clusions from the inquiry and go through the experience that is being explored. Heron (2000) describes the four phases of reflection and action in cooperative inquiry as: a) co-researchers share knowledge, ideas, and goals; problematize power; and come to consensus on actions, b) record their process and outcomes; c) immerse themselves in their experience; and d) continue the cycle of action and reflection until questions are answered in practice.

Another example of an emancipatory systems methodology in the action research family is self-reliant participatory action research (Flood, 1998), which aims to raise awareness of the capacity to transform the relations of knowledge and consciously "shift patterns of power that are buttressed by forms of knowledge creation" (p. 85). The process involves challenging top-down forms of knowledge relations by engaging in socioeconomic activities that help to transform relations of traditional knowledge relationship and production. The ultimate goal of self-reliant participatory action research is to defend "multiple and cherished ways of life" (p. 85-86), and in doing so, resist homogenization (Flood, 1998). Fals-Borda (1996) argues for a systematic way of returning knowledge to the community so its members can maintain ownership and suggests four techniques of self-reliant participatory action research: a) collective research; b) critical rediscovery of history through collective memory in defense of the interests of the oppressed; c) valuing and applying folk culture, such as art, music, drama, myths, story-telling; and d) production and diffusion of new knowledge within the concept of knowledge ownership. Rahman (1991) also discusses the Friere's notion of "conci-entization" (Friere, 1986), which he defines as a process of empowering self-awareness through collective self-inquiry and reflection taking forms of dialogues, investigations, and knowledge generation.

Conclusion

Ulrich (2003) argues "Critique without systems thinking is boundless, and ultimately empty, in that its object and context of valid application remain arbitrary" (p. 327). Both critical theory and systems theory are concerned with critically understanding and changing complex systems. CST, by incorporating critical and systems theory, brings a vision and approach uniquely suited to researching complex social systems that are found in education, while also seeking to change them.

Carspecken (1996) emphasizes the need for systems analysis in critical qualitative research in order to acquire a holistic understanding of human experiences and their relationship to larger cultural and communicative systems. Torrance (2011) also identifies the tension

between policy and research, complexity, and action in his analysis of qualitative research and its relation to and impact on government and public policy, noting:

> The issue is how to reconcile the (research) need to investigate and comprehend complexity with the (policy) urge to simplify and act. To invert Marx, policy makers seek to change the world, but first they need to try to understand it, while involving others in both processes. (p. 577)

Torrance is pointing out the challenge of understanding complexity while also creating knowledge that can have practical application to solving problems, a strength of systems theory. Likewise, critical theory strengthens systems theory as CST arose as a critique of systems theory and its lack of focus on how issues of power impact a system.

Qualitative research is in an historical moment where the social sciences and the humanities have made a turn to a critical social justice oriented stance, and now must "achieve presence and voice at the policy table" (Lincoln & Denzin, 2011, p. 718). In our discussion of CST methodologies, a reoccurring theme was the researcher's collaboration with stakeholders in the system. When researching to shape change in systems, there is a need for "designing studies with collaborating sponsors and participants, including policy makers and those 'on the receiving end' of policy" (Torrance, 2011, p. 577).

The field of education embodies CST's concepts of critique, emancipation and pluralism in its research and practice. Qualitative educational researchers will find CST highly relevant and useful as they seek a stronger voice in changing systems of education and shaping policy. CST's core philosophies and the system of systems methodologies incorporate critical, reflective practice while also focusing on applied research. Future explorations of how CST can be incorporated into educational systems analysis, educational systemic change or reform theories, educational policy, and knowledge construction are needed to further this discussion.

References

Banathy, B. H. (1996). *Designing social systems in a changing world*. New York: Plenum Press.

Bertalanffy, L. V. (1968). *General systems theory*. New York: George Braziller.

Carspecken, P. (1996). *Critical ethnography in educational research: A theoretical and practical guide*. New York: Routledge.

Checkland, P. (1981). *Systems thinking, systems practice*. Chichester, UK: Wiley.

Churchman, C.W. (1970). Operations research as a profession. *Management Science, 17*(2), 37-53.

Denzin, N. K. & Lincoln, Y. S. (2005). Introduction: The discipline and practice

of qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *The SAGE handbook of qualitative research* (3rd ed., pp 1-32). Thousand Oaks, CA: Sage.

Denzin, N. K., & Lincoln, Y. S. (2011). Preface. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (4th ed., pp. ix-xvi). Los Angeles: Sage.

Fals-Borda, O. (1996). Power/Knowledge and emancipation. *Systems Practice 9*(2), 177–81.

Freire, P. (1986). *Pedagogy of the oppressed*. New York: Continuum.

Flood, R. L. (1990). Liberating systems theory: Toward critical systems thinking. *Human Relations, 43*(1), 49-75.

Flood, R. L., (1998). Action research and the management and systems sciences. *Systemic Practice and Action Research, 11*, 79-101.

Flood, R. L., & Jackson, M. C. (1991). *Creative problem solving - Total systems intervention.* New York: John Wiley & Sons.

Habermas, J. (1984). *The theory of communicative action: Reason and the rationalization of society* (T. McCarthy, Trans.). Boston: Beacon Press.

Habermas, J. (1987). *The theory of communicative action: Lifeworld and system: A critique of functional reason* (T. McCarthy, Trans.). Boston: Beacon Press.

Heron, J., & Reason, P. (2000) The practice of co-operative inquiry: research 'with' rather than 'on' people. In H. Bradbury & P. Reason (Eds.)*, Handbook of action research,* London, UK: Sage.

Jackson, M. C. (1982). The nature of soft systems thinking: The work of Churchman, Ackoff and Checkland. *Journal of Applied Systems Analysis, 9*, 17-29.

Jackson, M. C. (1985). Social systems theory and practice: The need for a critical approach. *International Journal of General Systems, 10*, 136-151.

Jackson, M. C. (1987) Community operational research: purposes, theory and practice. *Dragon, 2,* 47-73.

Jackson, M. C. (1990). Beyond a system of systems methodologies. *Journal of the Operational Research Society, 41,* 657-668.

Jackson, M. C. (1991a). The origins and nature of critical systems thinking. *Systems Practice, 4*, 31-149.

Jackson, M. C. (1991b). Post-modernism and contemporary systems thinking. In R. C. Flood & M. C. Jackson (Eds.), *Critical systems thinking* (pp. 287–302). New York: John Wiley & Sons.

Jackson, M. C. (2001). Critical systems thinking and practice. *European Journal of Operational Research, 128,* 233-244.

Keys, P. (1987). Management and management support in community service agencies. *Dragon, 2*, 19-45.

Kincheloe, J. L., McLaren, P., & Steinberg, S. R. (2011). Critical pedagogy, and qualitative research: Moving to the bricolage. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (4th ed., pp. 163-178). Los Angeles: Sage.

Levin, M. (1994). Action research and critical systems thinking: Two icons carved out of the same log?. *Systemic Practice and Action Research, 7*(1), 25-41.

Lincoln, Y. S. & Denzin, N. K. (2011). Epilogue: Toward a "refunctioned eth-

nography". In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (4th ed., pp 715-718). Thousand Oaks, CA: Sage.

Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2011). Paradigmatic controversies, contradictions, and emerging confluences, revisited. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (4th ed., pp. 97-128). Los Angeles: Sage.

Midgley, G. (1997). Mixing methods: Developing systemic intervention. In J. Mingers & A. Gill (Eds.), *Multimethodology: The theory and practice of combining management science methodologies. New York:* John Wiley & Sons.

Mingers, J. (1980). Towards an appropriate social theory for applied systems thinking: critical theory and soft systems methodology. *Journal of Applied Systems Analysis, 7*, 41-49.

Oliga, J. C. (1991). Power-ideology matrix in social systems control. In R. L. Flood & M. C. Jackson (Eds.), *Critical systems thinking: directed readings* (pp. 269-286). Chichester, UK: John Wiley & Sons.

Rahman, M. A. (1991). The theoretical Standpoint of PAR. In O. Fals-Borda & M. A. Rahman (Eds.), *Action and knowledge: Breaking the monopoly with participatory action research* (pp. 13-24). New York: Apex.

Rosenhead, J. (1986) Custom and practice. *Journal of Operational Research Society. 37,* 335-343.

Schecter, D. (1991). Critical systems thinking in the 1980s: A connective summary. In R. L. Flood & M. C. Jackson (Eds.), *Critical systems thinking: Directed readings* (pp. 2134-236). Chichester, UK: John Wiley & Sons.

Senge, P. M. (1994). *The fifth discipline: The art and practice of the learning organization*. New York: Doubleday.

Torrance, H. (2011). Qualitative research, science, and government: Evidence, criteria, policy, and politics. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (4th ed., pp. 569-580). Los Angeles: Sage.

Ulrich, W. (1983). *Critical heuristics of social planning a new approach to practical philosophy*. Bern, Switzerland: P. Haupt.

Ulrich, W. (1987). Critical heuristics of social systems design. *European Journal of Operational Research 31*(3), 276-283.

Ulrich, W. (1993) Some difficulties of ecological thinking, considered from a critical systems perspective: A plea for critical holism. *Systems Practice, 6,* 583-611.

Ulrich, W. (2003). Beyond methodology choice: Critical systems thinking as critically systemic discourse. *Journal of the Operational Research Society, 54*, 325-342.

Ulrich, W. (2006). Rethinking critically reflective research practice: Beyond Popper's critical rationalism. *Journal of Research Practice, 2*(2), Retrieved April, 8, 2010, from http://jrp.icaap.org/index.php/jrp/article/view/64/63

Watson, S. L., Watson, W. R., & Reigeluth, C. M. (2008). Systems design for change in education and training. In J. M. Spector, M. D. Merrill, J. J. G. van Merrienboer, & M. P. Driscoll (Eds.), *Handbook of research on educational communications and technology* (3rd ed.). London, UK: Routledge.