

Enhancing emancipatory systems methodologies within a pluralistic critical systems framework for sustainable development

Yiheyes Taddele Maru & Keith Woodford

School of Natural and Rural Systems Management
University of Queensland, Gatton College, QLD 4345
y.maru@mailbox.uq.edu.au, woodford@uqg.uq.edu.au

Abstract

Our interest lies in applying the principles of pluralistic critical systems thinking and practice (CST/P) to human activity systems in developing countries where issues of natural resource sustainability constrain the feasible set of long-term strategies. The concept of sustainable development provides an expanded domain for the application of CST/P. The fundamental values underpinning sustainable development are that both intragenerational and intergenerational equity are important. As a consequence, key stakeholders are often excluded from power-sharing within the current social systems. Addressing these issues requires a renewed focus on emancipatory commitment and methodologies. To date, Ulrich's critical systems heuristics, is the only critical systems methodology that offers practicable tools for emancipation. A case study analysis in Tigray, Northern Ethiopia provides insights in relation to the application of critical system heuristics, and highlights the need to extend the use of critical systems heuristics beyond planning situations to include questioning of already existing institutions.

Introduction

Our interest in pluralistic critical systems arises from ongoing research into issues of sustainable development in Tigray State in the northern Ethiopian highlands. The research, through developing an initial set of indicators, aims at triggering community-based monitoring for sustainable livelihoods at the village level. It also aims at gaining insights about possible core indicators of sustainable development for the region.

The purpose of this paper is to draw attention to a need for increased commitment to the development of emancipatory systems methodologies. Such development can enhance the use of a pluralistic critical systems framework for sustainable development interventions.

The paper is organized in four sections. The first section provides the contextual background. This background is important because our approach is essentially inductive, with insights arising from case study analysis. The second section deals with the weakening commitment to emancipation that has occurred within critical systems thinking. The weakening has occurred despite the notion of emancipation being central to the emergence of critical systems thinking. The third section elaborates how the concept of sustainable development may provide an expanded domain for pluralistic critical systems frameworks with a renewed emphasis on emancipatory systems methodologies. The fourth section introduces two areas of application for *critical systems heuristics*. The first application refers to the Tigrayan

approach to reflection and evaluation known as *gem-gam*. It does this by elaborating how *gem-gam* may lend itself to accommodate tools of *critical systems heuristics*. The second application relates to extending the use of *critical systems heuristics* beyond plans to include the questioning of already existing institutions.

The contextual background

Livelihood in Tigray is mainly rural and strongly dependent on surrounding natural resources. Of the 3.5 million population of Tigray, 84% live in rural areas practicing rain fed ox-plow agriculture (Central Statistics Office 1995). Ox-plow technology is a farming system that took root in Northern Ethiopia more than two thousand years ago (McCann 1995: 5). Wooden implements for the ox plow, timber for construction of houses, and more importantly fuelwood, are entirely derived from surrounding biomass.

The livelihood situation has become progressively precarious for the majority of the rural people since the late 19th century (Gebru 1991: 75-76). Hoben (1995) argues that the dominant narrative in relation to these trends is deficient in its failure to recognise the importance of sociopolitical factors. Instead, it overemphasises rapid population growth, environmental degradation, backward agricultural technology, low awareness, and unwillingness of rural people to embrace change. Gebru (1991) in his analysis of history of Ethiopian peasantry asserts that “ ... *in the northern high lands of Ethiopia demography alone is not to blame for the ecological degradation. Heavy taxation, official venality by unscrupulous state functionaries imposed a serious drainage on the productive capacity of the population, decades of interspersed fighting and plundering ravaged much of the country side reducing some parts of it to mere waste lands...*” (Gebru 1991: 91-92)

Indeed Gebru (1991) identifies coercion as a mark of the monarchical state structure that increasingly had become centralised since the late 19th century. The domination manifested itself along lines of ethnicity, culture, class, gender and religion. Although the monarchy was replaced in 1974, repression continued under the new military government. In 1991 a transitional government led by a coalition of rebel movements from different part of the country replaced the military regime. Subsequently, Ethiopia has instituted a federal government of nine decentralised states, including Tigray. The Tigray Peoples’ Liberation Front (TPLF) played a key role in these events and has now become a political party that leads Tigray State. The federal and state governments have also lifted impositions by the previous governments such as high tax, production quotas, rigid below-market prices, forced collectivisation and resettlement.

These sociopolitical changes have brought a relief from domination along ethnic lines and repression of the peasants. However, there is a need for continuous non-violent emancipatory engagement for at least four reasons. The first is that the recent sociopolitical changes have led to a reduction but not an exhaustion of coercive relationships. Indeed exhaustion is only an ideal. Some of the coercive relationships are informally institutionalised such that they need continuous emancipatory effort. For instance Ethiopian society still remains patriarchal. The second reason is the danger of what Chambers called a *revolutionary flip* where those who represent the dominated start to marginalise those alleged as dominating (Chambers 1997: 34). The

third is a possible reciprocal danger, where those who fought for and with the oppressed are resurrected after the attainment of power as a new class that cares less for those it represented (Young 1997). The fourth is related to rehabilitation and development efforts in place now that the civil war is over. From an emancipatory point of view, rehabilitation and development have their own premises, promises and implications that need critical engagement.

The TPLF is of interest to this paper because of its prominent influence on the sociopolitical organisation, institutions and livelihood activities of the people of the case study in Tigray. This influence started during the military regime in areas controlled by the TPLF. Organisationally, TPLF introduced a decentralised structure of governance known locally as *Baito*. The TPLF has also organised mass associations of the youth, women and farmers. Community members are organised for collective action and reflection in teams of twenty adults (known locally as *Gujile*). The collective actions include massive land terracing and tree planting programs held every year, and the construction of schools, clinics and earth dams for irrigation.

Another influence of interest to this paper is a process of reflection and evaluation locally known as *gem-gam*. *Gem-gam* is institutionalised into these local organisations. It was developed by the TPLF as a stringent means of accountability and transparency. It has its origins in different sources but mainly Maoism and Tigrayan elderly evaluation tradition (Young 1997). It is introduced in this paper as a process potentially capable of accommodating emancipatory engagement.

Establishing the weakening attention to emancipatory commitment

Critical systems thinking can be traced back to two separate origins in the early 1980's. Both the origins and subsequent developments are important to the purpose of this paper. One seminal influence is Ulrich's (1983) attempt to find a critical and practicable solution to the problem of *how we can rationally identify and justify the normative content inevitable in all plans*. The second seminal influence is that initiated by Mingers and Jackson (Spaul 1997). Mingers (1980), using critical theory started questioning the theoretical underpinning of systems thinking. Jackson (1982) then exposed the limitations of both hard and soft systems thinking in dealing with problem situations mainly characterised by coercion.

Common to both of these origins of CST is the awareness that there are no systems approaches for critical inquiry and intervention into problem situations characterised by asymmetry of power, and resources. Ulrich developed *critical systems heuristics* that are intended to provide both those involved in social planning and those citizens affected by the plans with heuristic support for reflection and criticism of underlying value assumptions and value implications.

Jackson and Key (1984) developed a typology of systems methodologies that identified a gap in critical/emancipatory systems methodologies. In their typology they recognised *critical systems heuristics* as the only critical systems methodology. However, they also assigned it as only applicable to simple coercive problem situations, leaving complex coercive situations unrepresented. Subsequently a call for further development of emancipatory methodologies was made (Jackson 1991). Although some authors including Ulrich have questioned whether *critical systems*

heuristics is limited to simple coercive situations (Ulrich 1993; Gregory 1996: 47), Ulrich has himself (Flood & Ulrich 1991:203; Ulrich 1993) called for more emancipatory systems methodologies to be developed. Ulrich has contrasted the limited development of critical systems methodologies compared to hard and soft systems methodologies, which are well developed, and extensively in use.

The quest for emancipation, fundamental to the inception of CST, became its central commitment. According to Schechter (1991) the commitment to emancipation “*is a commitment to human beings and their potential for full development via free and equal participation in community with others. It is also a commitment to recognising the barriers to human emancipation - unequal power relations and the conceptual traps, which perpetuate them - and incorporating this understanding into systems thinking*” (Schechter 1991:212).

On occasions, knowledge and hence systems methodologies can be suppressed by other dominant systems and thus require liberation (Flood 1991: 314). Indeed Oliga (1991) associates the slow emergence of CST with its suppression by dominating hard and soft systems thinking. He also asserts a probable slow future development of CST for “*... the cure it offers (the unmasking of ideological bias) is the very disease dreaded by the patient*” (Oliga 1991: 271).

In addition to emancipation, CST is committed to critical awareness and to pluralism. Commitment to critical awareness is a never-ending attempt to uncover hidden assumptions and conceptual traps of paradigms, methodologies, plans and practices together with the conditions that give rise to them (Schechter 1991: 213). The commitment to pluralism is a result of the critical awareness that all systems approaches are partial and therefore have their own limitations and legitimacies (Flood and Ulrich 1991). Thus, the commitment is to have a pluralistic framework that resists a claim for a sole legitimacy of a particular systems approach (including an emancipatory methodology) and instead allows the application and development of multiple systems methodologies and their philosophical underpinning (Flood & Jackson 1991: 323; Schechter 1991: 214).

A tendency to fragmentation within management science seems to have given additional resolve to the CST commitment to pluralism. Pluralism has been used to justify diversity of systems-based approaches in management science, as a mark of competence and effectiveness in dealing with complex problem situations. The commitment to pluralism has subsequently received a greater amount of attention than that given to emancipation. Pluralism has taken a centre stage in CST in that a lot of effort has been devoted to find sound philosophical underpinnings and theoretically informed ways of implementation. A notable example is Total Systems Intervention (TSI) developed by Flood and Jackson (1991). It was developed to pragmatise without compromising the main principles and commitments of critical systems thinking (ibid 1991: 321).

Criticisms leveled at the justification for the complementarism of TSI triggered adjustments that further took away the focus from emancipatory commitment. Flood and Jackson (1991) justify the need to complement the hard, soft and critical systems methodologies in TSI due to the limitation of each to serve the three key human

cognitive interests theorised by Habermas. These interests according to Habermas (1972) are the *technical, the practical and emancipatory interests*. Jackson and Flood have subsequently abandoned using Habermas's theory of cognitive interest in response to critiques. However, the search to underpin pluralism continues, using a wide range of theories and also influenced by postmodern thinking (Mingers & Gill 1997).

Criticism leveled at the philosophical underpinning of TSI seems to have also created tension between commitments to emancipation and pluralism that have further weakened attention at the former. These critiques question the possibility of employing alternative and, indeed contradicting epistemologies at the same time, unless the methodologies are considered as if they are mere heuristic devices with no paradigmatic roots (Tsoukas 1993). This is particularly relevant to the critical systems methodology in relation to other systems methodologies that serve or at best are indifferent to coercive relations. It also raises the question of to what extent TSI and an inquirer can remain radical (emancipatory) while the clientele in management are largely those serving and maintaining the status quo (Brocklesby 1993).

Another related critique raises problems of complementarity in such a way as to consequently lead to a de-emphasised allegiance to emancipatory commitment. This critique is along the lines of the paradigm incommensurability debate. It poses Burrell & Morgan's (1979) thesis about the impossibility of synthesis of paradigms. This thesis implies that there is no room to complement because paradigms are alternatives. Creating a space for complementarity through the identification of a limitation of a paradigm using the criteria of another paradigm is simply unacceptable. This critique, together with the influence of postmodern thoughts, may have contributed to the shift from earlier commitment of CST to complementarity to current pluralism. The reason for such a shift is implied in Jackson's current position on pluralism in systems practice (Jackson 1997). The reason is the fact that complementing is integrating incompatible paradigms from a standpoint that can not be achieved without something being lost. A more neutral position is to implement methodologies from different paradigms simultaneously at every stage of an intervention (pluralism). This, Jackson (1997) argues, can be achieved by managing paradigm diversity, rather than by complementarity based on allocating different systems methodologies to their respective tasks from a standpoint at the very start. Such justification of pluralism neither declares a metaparadigmatic position nor allegiance to any systems paradigm including to critical systems thinking, thus having no commitment to developing emancipatory systems methodology.

The effort made to promote pluralism is commendable. However, it seems to have been born at the expense of less attention to emancipatory commitment. Indeed pluralism seems to be protected even at the expense of ceding commitment to emancipation, the central reason why CST emerged and was committed to provide methodical solutions. As Jackson (1997: 359) notes, the commitments to emancipation and to critical awareness have been used only to buttress pluralism. It has been a while since Jackson and Key (1984) identified the need to develop emancipatory methodologies that are appropriate for complex coercive problem situations. However, this methodological gap has never been adequately filled.

Indeed, what Oliga predicted for a slow development of CST seems to be particularly well reflected in development of methodologies that embody its emancipatory intent.

Therefore, critical systems thinking needs renewed attention to be given to its emancipatory commitment for the following three reasons. The first reason is to adequately address the coercive problem situations, which it identified as a limitation of hard and soft systems approaches. Otherwise the fundamental reason for an epistemological break from soft and hard systems is threatened. The second reason is the high level of challenge associated with developing and utilising emancipatory systems methodologies. Emancipatory systems methodologies are risky and therefore less supported, probably because they question dominant and established views. The challenge contrasts to those other systems methodologies, which are already well developed, and extensively in use. Within critical systems thinking, the challenge to emancipatory commitment also contrasts with that to pluralism. While pluralism implies diversity, and is thus concordant with postmodernism, emancipation, with its old connotation, is considered as grand narrative that is out of tune with the spirit of the times. However, emancipatory systems methodologies are required to counter multiple and localised forms of domination. The third reason is that well-developed emancipatory systems methodologies are needed to have a genuine pluralistic CST framework

Sustainable development as an expanded domain for pluralistic systems frameworks

The concept of sustainable development provides an expanded domain to pluralistic application of various strands of systems thinking. This is because sustainable development is concerned with both the natural and human systems. Conceptually it argues for the possibility of complementary improvement of both the natural resource base and the human condition. This expanded domain contrasts to the relatively restricted domain of organisation and business management in which many of the systems approaches have been developed.

Sustainable development requires the critical application of the systems approaches. One of the fundamental reasons for the emergence of the concept of sustainable development is the potentially undesirable effects of human interventions, be they social, economic or technological in nature. By being critical of assumptions and possible implications, undesirable effects can be recognised and thereby either prevented or reduced.

In addition to being critical in the application of systems methodologies, inquiry into issues of sustainable development requires a radical systems methodology for emancipatory purposes. This is because redressing inequality is one of the major principles of sustainable development. Inequality in sustainable development goes beyond the classical view of coercive relations between classes. It includes gender, wealth, authority, expertise and generation-related inequities. Beyond differences in material conditions, it is also concerned with the liberation of suppressed knowledge systems. This leads to power relations, which constrain the improvement of the conditions of those affected, becoming one of the central issues of sustainable development.

The principles of sustainable development are particularly relevant to situations where there are significant differences in material conditions, and asymmetry of power and access to decision making processes among citizens. This is because such differences institutionalise coercion and inequality, thereby harbouring conflict and instability, and hindering improvement.

Sustainable development not only addresses inequalities within the current generation, but is also about improving the livelihood conditions of the present generation without compromising the potential for future generations (World Commission on Environment and Development 1987). In Tigray, where agriculture and associated natural resources provide the livelihood basis for more than 80% of the population, and where most people live a subsistence lifestyle, efforts for sustainable development have to complement improvements in equity with an increase in agricultural productivity and the maintenance of the resource bases.

Applying *critical systems heuristics*

Sustainable development as discussed in the previous section provides an expanded domain for employing multiple systems approaches. This expanded domain is a result of the concerns of sustainable development manifested in its guiding principles: productivity, equity and sustainability. These guiding principles require engaging systems methodologies for efficiency and effectiveness together with those for emancipation. This section extends on the need for such a pluralistic approach to be critical and contain an emancipatory systems methodology.

Applied inquiries or interventions to promote sustainable development have what Ulrich (1993) calls a normative content that requires self-reflection. By normative content Ulrich means all the value judgements that inevitably flow into practical propositions such as recommendations for action.

Critical systems thinking allows a critical employment of systems methodologies in two related ways. The first is by being critical of the normative content (assumptions and implications) of any systems methodology (Flood & Ulrich 1991; Flood & Jackson 1991). The second is by reflecting on the normative content of a proposed intervention.

Ulrich's (1983) *critical systems heuristics* provides tools for laying open the normative contents of applied inquiries or proposed interventions, and a practicable dialogical engagement between planners and concerned citizens. These tools are the concept of *boundary judgement* and the *polemical employment of boundary judgments* respectively (Ulrich 1993). Boundary judgment is a concept that represents inevitable *a priori* assumptions that enter into applied inquiries and the *a posteriori* implications when they get implemented. While boundary judgments are crucial elements of the systems concept that need critical attention, they are often ignored as if they are objectively given. Boundary judgements are much more than the physical boundaries of a system. They include temporal and social boundaries which all contribute to the normative content of the inquiry or intervention.

The concept of boundary judgments provides a tool for tracing the normative social and ecological implications of a system design. Ulrich worked out 12 categories of

boundary judgments that inevitably are contained within any systems design. He organised them into four groups of three categories each to address four key issues of critically normative design (Ulrich 1993:596)

1. *The design's value basis*: what are (ought to be) the sources of motivation that provide the necessary sense of direction and purposefulness? What purposes are served? Whose purpose are they? And what is (ought to be) the decisive measure of success?
2. *The design's basis of power*: what are (ought to be) the sources of control built into the design, i.e., who controls the necessary means and resources? Where does the necessary decision authority reside? What is (ought to be) the environment to that decision power, i.e. beyond its control?
3. *The design's basis of knowledge*: What are (ought to be) the sources of expertise that contribute the necessary information, practical experience and know-how, organisational design skills? What is the role played by expertise?
4. *The design's basis of legitimisation*: what are (ought to be) the sources of legitimacy vis-a-vis those affected but not involved? Is there any sense of self-reflection and responsibility built into the design? Who argues the case of those who cannot speak for themselves, including nature and those not born?

The first three groups relate to the roles and concerns of *those involved* (having a say) in the planning process, whereas the fourth group refers to *those affected* but not involved (Ulrich 1993: 596).

The concept of boundary judgment is a tool for self-reflection, but Ulrich (1993) argues that self-reflection is not guaranteed if it is entirely dependent on the good will of planners. Ulrich (1983: 25) indicates that even if planners were willing to undertake self-reflection the task involved in laying open the normative contents of plans are sufficiently difficult that there is a need to have other heuristic support. Moreover, self reflection of a planner removed from the constraints of experience and action, and without involving those who will be affected by the plan, lacks democratic legitimacy. For that to happen, reflection has to engage planners and affected citizens in equal position competency, so that a reasonable dialogue can then occur to lay open the boundary judgment of the plan at hand. A heuristic support for such engagement is the *polemical employment of boundary judgments* which Ulrich (1983: 301-310) has derived from Kant's (1787: B767) concept of the "polemical employment of reason".

The polemical employment of boundary judgments is an argument that is directed to refute dogmatically or cynically asserted validity claims about boundary judgments (Ulrich 1993). Those affected (not just those involved in planning) can advance alternative boundary judgments with respect to the context of application of any inquiry or proposition. This is because boundary judgments are personal value judgements that do not entail any theoretical validity claim and hence do not require a theoretical justification. Therefore, when it comes to bounding a context to be considered (boundary judgments), Ulrich (1983) contends that ordinary citizens are no more lay people than planners are.

The polemical employment of boundary judgments secures practicable inter-subjective argumentation on normative validity claims of a plan because it meets two divergent requirements. These requirements are a *democratic participation* by all

those concerned regardless of their power, expertise and argumentative skills, and of a *cogent argumentation* on the part of everybody who participates (Ulrich 1993). This is achieved by focusing the debate on boundary judgments of the plan to which the concerned are no less expert than the involved. This creates what Ulrich (1993) calls *symmetry of critical competence* among the involved and the affected so that the later can bring in their personal concerns without being convicted of lacking rationality or cogency. The symmetry of critical competence, although it does not guarantee consensus, it implies any mutual understanding and legitimisation of a plan is by the informed consent of the affected.

The practical discourse using the polemical employment of boundary judgment has to have what Ulrich (1983: 313) calls a *stopping rule*. The rule is a criterion for deciding when the debate ought to stop and action should begin. This rule has to be contained in an institution associated with the participatory decision making process.

Gem-gam, a local institution for discursive engagement

At this juncture we introduce *gem-gam*, an existing institution that may support a discursive engagement among planners and concerned citizens through the polemical employment of boundary judgments. *Gem-gam* was developed by the TPLF during the civil war (1975-1991) as a means to ensure accountability and democratic decision-making in the TPLF army (Young 1997). Prior to 1991 it was introduced to mass associations (Farmers, women and the Youth) and to the community through the Baito system in those areas controlled by the TPLF. This institution was subsequently introduced into all state bureaucracies in 1992.

Gem-gam is a mass meeting for reflection on objectives and means, for the purpose of achieving a high level of agreement on collective action. It is also a process of evaluating these collective actions and the performance of individuals, groups and organisations to ensure accountability. In its extreme evaluative form, *gem-gam* assumes what is locally called *tsiriet*, literally meaning "cleansing". Cleansing usually starts from within the TPLF and runs its course through the mass associations and baitos. It is directed against corruption and any attitudes and tendencies that threaten the collective actions. Nobody including the leadership is immune to cleansing. It is believed that it creates transparency, closeness and renews the commitment, and sense of responsibility for collective action. Nevertheless, *gem-gam* does suffer some limitations and threats that would require change to make it a truly democratic decision making process. The limitations include the lengthy time it takes and the lack of consistency. The threats are possible orchestration and manipulation by those who lead the process (Young 1997).

Gem-gam has faced another challenge since it was introduced to all government structures in 1992. This challenge is a resistance by some experts and bureaucrats. The resistance is directed against *gem-gam's* distinguishing feature that permits evaluation and criticism of superiors by subordinates, teachers by students, and experts by concerned ordinary citizens (Young 1997). Although it needs more work to be an efficient and a fully democratic process, it remains a powerful means already in place for ensuring accountability. The tools of *critical systems heuristics* can enhance the critical competence of ordinary citizens in the case study in their engagement in *gem-gam*. This enhanced competency can make experts and

bureaucrats accountable to reflect on the boundary judgments of their plans and deter the tendency to technicalise or bureaucratise participatory decision making.

The need for critical dialogue beyond plans

Critical systems heuristics provide tools for both experts and citizens alike to be critical of the normative contents of plans. However, there are areas beyond planning that need emancipatory engagement. From our case study in Tigray, areas that need emancipatory engagement include already existing institutions and different explanations given to perturbations. Institutions here are defined broadly as the set of rules, norms, and belief systems in a community that enable, constrain and enforce rights and duties. Perturbations are disturbances and pressures on the natural resource and livelihood systems of a community. Existing societal institutions and interpretations of perturbations strongly influence the behaviour and livelihood conditions of individual members of the community. Certain institutions such as land tenure and dominant explanations of some perturbations such as famine may guide planning and therefore, are accessible to the tools of critical systems heuristics. However, there are other institutions such as patriarchal relationship, and explanations given to perturbations such as drought, unquestioningly accepted by the community as if they are predetermined that may need further methodological developments for critical engagement.

Conclusion

The concept of sustainable development provides an expanded domain for inquiries or interventions using pluralistic systems methodologies. It also requires the critical application of such pluralistic frameworks. By critical it means laying open and reflecting upon the normative content of the inquiries or proposed interventions. The aim of a critical effort is not to seek objective justification of the normative contents, rather to reach a critical solution by entering a dialogue with those who would be affected by the inquiry or intervention. Boundary judgment and the polemical employment of boundary judgments are tools for critical reflection through discursive engagement. It is necessary to have institutions that enable citizens to use these tools for discursive engagement about plans. In Tigray, gem-gam is such an institution that has the potential to accommodate the tools for critical reflection. Whereas critical systems heuristics can provide emancipatory engagement on planning, there are other areas such as existing institutions that also need such engagement. Therefore, a renewed attention has to be given to the emancipatory commitment of critical systems thinking to develop emancipatory methodologies that enable citizens to engage on issues beyond plans.

References

Brocklesby, J. (1993). *The New Operational Research and Management Science: integrating hard, soft and critical systems perspectives*, Victoria University of Wellington, Wellington.

Burrell, G. and Morgan, G. (1979). *Sociological paradigms and organisational analysis*, Heinemann, London.

Chambers, R. (1997). Paradigm shifts and the practice of participatory research and development. In Nelson, N. and Wright, N. (eds), *Power and Participatory*

Development: theory and practice, Int. Tech. Pub., London , pp. 30-42.

Ethiopian Central Statistical Authority (1995). *The 1994 Population and Housing Census of Ethiopia: Result for Tigray Region*, Central Statistical Authority, Addis Ababa.

Flood, R.L. (1991). Redefining management and systems sciences. In Flood, R.L. and Jackson, M.C. (eds), *Critical Systems Thinking: directed readings*, John Wiley & Sons, Chichester, pp. 303-320.

Flood, R.L. and Jackson, M.C. (1991). Total Systems Intervention: a practical face to critical systems thinking. In Flood, R.L. and Jackson, M.C. (eds), *Critical Systems Thinking: directed readings*, John Wiley & Sons, Chichester, pp. 321-338.

Gebru, T. (1991). *Ethiopia: power and protest*, Cambridge University Press, Cambridge.

Gregory, W. (1996). Dealing with diversity. In Flood, R.L. and Romm, N.R.A. (eds), *Critical Systems Thinking: current research and practice*, Plenum Press, New York, 35-59.

Habermas, J. (1972). *Knowledge and Human Interests*, Heinemann, London.

Hoben, A. (1995). Paradigms and Politics: the cultural construction of environmental policy in Ethiopia, *World Development* 23 (6), 1007-1021.

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. (1984). Towards a System of Systems Methodologies, *Journal of the Operational Research Society* 35, 473-486.

Jackson, M.C. (1991). Social systems theory and practice: the need for a critical approach. In Flood, R.L. and Jackson, M. C. (eds), *Critical systems thinking: directed readings*, John Wiley & Sons, Chichester, pp. 287-302.

Jackson, M.C. (1997). Pluralism in systems thinking and practice. In Mingers, J. and Gill, A. (eds), *Multimethodology: the theory and practice of combining management science methodologies*, John Wiley & Sons, Chichester, pp. 347-378.

McCann, J.C. (1995). *People of the plow: an agricultural history of Ethiopia, 1800-1990*, The University of Wisconsin Press, Madison.

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

Mingers, J. (1997). Towards critical pluralism. In Mingers, J. and Gill, A. (eds), *Multimethodology: the theory and practice of combining management science*

methodologies, John Wiley & Sons, Chichester, pp. 407-440.

Oliga, J.C. (1991). Power-Ideology Matrix in Social Systems Control. In Flood, R.L. and Jackson, M. C. (eds), *Critical systems thinking: directed readings*, John Wiley & Sons, Chichester, pp. 269-286.

Schechter, D. (1991). Critical Systems Thinking in the 1980s: a connective summary. In Flood, R.L. and Jackson, M. C. (eds), *Critical systems thinking: directed readings*, John Wiley & Sons, Chichester, pp. 213-226.

Spaul, M. (1997). Multimethodology and Critical Theory: an intersection of interests? In Mingers, J. and Gill, A. (eds), *Multimethodology: the theory and practice of combining management science methodologies*, John Wiley & Sons, Chichester, pp. 323-347.

Tsoukas, H. (1993). "By Their Fruits Ye Shall Know Them": a reply to Jackson, Green, and Midgley, *Systems Practice* 6 (3), 311-317.

Ulrich, W. (1983). *Critical Heuristics of Social Planning: a new approach to practical philosophy*, Haupt, Bern.

Ulrich, W. (1991). Critical Heuristics of Social Systems Design. In Flood, R.L. and Jackson, M. C. (eds), *Critical systems thinking: directed readings*, John Wiley & Sons, Chichester, pp. 103-116.

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

Mingers, J. and Gill, A. (eds) (1997). *Multimethodology: the theory and practice of combining management science methodologies*, John Wiley & Sons, Chichester.

World Commission on Environment and Development (1987). *Our Common Future*, Oxford University Press, Oxford.

Young, J. (1997). Development and change in post-revolutionary Tigray, *The Journal of Modern African Studies* 35, 81-99.