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Grounded Theory and Autopoietic Social Systems: Are They Methodologically Compatible?

Abstract

The paper offers a secondary analysis from a grounded theory doctoral study that reconsiders its “grounded systemic design” (Mitchell, 2005, 2007). While theorists across multiple disciplines fiercely debate the ontological implications of Niklas Luhmann’s autopoietic systems theory (Deflem 1998; Graber and Teubner 1998; King and Thornhill 2003; Mingers 2002; Neves 2001; O’Byrne 2003; Verschraegen 2002, for example), few investigators have yet to adopt his core constructs empirically (see Gregory, Gibson and Robinson 2005 for an exception). Glaser’s (1992, 2005) repeated concerns for grounded theorists to elucidate a “theoretical code” has provided an additional entry point into this project of integrating grounded theory with Luhmann’s abstract conceptual thinking about how global society operates. The author argues that this integration of methodology and systems thinking provides an evolution of grounded theory - rather than its ongoing “erosion” as Greckhamer and Koro-Ljungberg (2005) have feared - and a transportable set of methodological and analytical constructs is presented as a basis for further grounded study.

Keywords

Autopoietic theory; Grounded systemic theory; Theoretical codes; Transdisciplinarity

This paper presents a secondary, transdisciplinary analysis from a grounded theory doctoral study focusing upon the methodological nexus between the inductive methods articulated by Barney Glaser and Anselm Strauss (1967), and Niklas Luhmann’s autopoietic systems theory (1982, 1997). The rationale for re-theorizing the research emerged subsequent to the initial cross-national policy study concerning the United Nations Convention on the Rights of the Child originally framed by the “sociology of human rights” (Mitchell 2005, 2007; see also O’Byrne 2003; Turner 1993; Verschraegen 2002). Results from the study have also published within the “transdisciplinary” discourse (Mitchell 2007; see also Nicolescu 2002; Russell 2000; Somerville and Rapport 2000). Transdisciplinary research generally creates its own criteria and standards due to its unique, emergent qualities. In both the present and earlier analyses it was found that theory - implicitly or explicitly expressed - is deeply implicated in how, when and where the human rights of young people are politically and institutionally respected.

Somerville and Rapport (2000) emphasize how transdisciplinary approaches to scholarship are in sharp contrast with multi- or even interdisciplinary methodologies, and are fundamentally associated with critique. In describing peace research and education, for example, they cite Eckhardt (1974) who spoke of “‘breaking through disciplinary barriers, disobeying the rules of disciplinary etiquette.’ In contrast to disciplinarity... transcendence is heretical. It is a generic rebel pushing beyond orthodoxy...the term connotes transformation”. In this regard, they further contend that “Michel Foucault, not Aristotle or Plato...is the paradigmatic figure of transdisciplinary studies” (cited in Somerville and Rapport 2000: 6-7). Thus, the paper aims to transcend, transform, and ultimately contribute new insights within the discourse of grounded theory in a tradition fully in accord with the project and aims of theory development highlighted by qualitative theorists Denzin and Lincoln (2003):

The constructivist paradigm assumes a relativist ontology (there are multiple realities), a subjectivist epistemology (knower and respondent cocreate understandings), and a naturalistic (in the natural world) set of methodological procedures. Findings are usually presented in terms of the criteria of *grounded theory* or pattern theories. (p. 35, emphasis added)

As Mirchandani (2005: 86) contends, after decades of cross-disciplinary rumination on post-modernism it is time to move “from the epistemological to the empirical”. To that end, the interpretive, contingent nature of both Luhmann and grounded theory offers a common foundation.

In their astute analysis of the distinctions between the originators of grounded theory, Schreiber and Stern (2001: 142) identify Glaser’s approach towards the congruence of theory with data a “fit, workability, relevance and modifiability” of emergent theories. In contrast, Corbin and Strauss (1990) outline a set of evaluative criteria with a decidedly more positivist tenor. As Glaser points out, “one source of staying open to emerging TC’s [theoretical codes] is the GT does not have an epistemology with an attached theoretical perspective that provides one set of TCs to the exclusion of all others” (Glaser 2005: 17). Following on with both Glaser’s recent thinking and his earlier criteria, and after reflecting on the study’s “grounded systemic theoretical approach” (Mitchell 2005: 325, 2007), it became apparent that few social scientists have applied Luhmann’s radical constructivist thinking from any tradition, paradigm or perspective (for exceptions see Gregory 2003; Gregory, Gibson and Robinson 2005). Nevertheless, some important speculation has begun regarding its relevance for grounded theorists.

Glaser (2005: 105) reflects upon how it might be that autopoietic (literally self-replicating) systems thinking may be methodologically linked and effectively utilized. As always, however, he cautions investigators to avoid forcing data into pre-conceived frameworks described as “pet theoretical codes” rather than allowing theories to naturally emerge. Citing Gibson he elaborates further:

The similarity between GT and systems theory is evident...knowing is contingent, emergent and reduces complexity... knowledge is instead verified through comparison and goodness of fit. Like Luhmann’s theory chain of connections, or related distinctions, Glaser’s theoretical coding families emerge as connections between categories and properties. Both theories insist they have no pre-set directional objective ontological state. (cited in Glaser 2005: 119)

This final comment regarding ontological perspective was also one that this author considered repeatedly throughout the investigation and with regard to its

emergent, inductive methodology - particularly after reviewing contentious literature from both discourses. Notwithstanding his tentative imprimatur, Glaser cautions one further: "This TC [theoretical code] is complex and burdensome to understand and to use...in sum, self organizing or self-regenerating systems is [sic] a worthy abstract model to place on the list with other TCs...[but] it is more advisable to have no TC rather than to force it" (Glaser: *ibidem*). Hence, the central thesis of this paper considers how grounded theory offers a systematic approach for social scientists to methodologically integrate autopoietic systems thinking. The paper moves now to explore these potentials in the following sections.

Social Systems and Autopoietic Theory

Doubtless one of the 20th century's most important sociologists was Germany's Niklas Luhmann - deceased in 1998 - who considered the central role of the discipline "is to clarify the original insights of the Enlightenment [and] to refine the methodological means by which these are obtained" (cited in King and Thornhill 2003: 133). Also central to unlocking such refinements during the author's study were Verschraegen's (2002) arguments that Luhmann's analysis of human rights is very much part of sociology's concern. Though not as well-known in the Anglo-American academy as in most European settings, Luhmann's approach to conceptualizing the social sciences has thus far precluded a great deal of empirical study since "theory was his passion" (Hornung 1999). Perhaps this outcome conforms more closely to "world society" as he came to elucidate the notion. Luhmann contends that "world society" can no longer simply be limited by national identities such as English, French, Arab or American since all states form part of a much larger, constantly integrating communicative whole that relate to one another strategically, politically and economically (King and Schütz 1994: 267). Luhmann acknowledged that "society" is the most difficult concept sociology has inherited from its past, but he rejected his doctoral supervisor Talcott Parsons' earlier notion of a system of societies by declaring that global society represents one system in and of itself (Luhmann 1997: 67). Clearly then, in its present constellation world society and human rights are very much a topical concern, and Luhmann's (1965) early work supports this contention.

His central concept of autopoiesis is a word formed from two Greek words "auto" meaning self, and "poiesis" meaning creation or production, and was coined by Chilean neuro-biologists Maturana and Varela (1980) to describe living systems. Adopted by Luhmann (1982, 1990: 72-73, 1997) to explain sociological systems theory, a system is said to be "autopoietic" when its inherent components interact to continually reproduce the same components, as well as the inter-relationships between themselves, as forms of systemic communication aimed primarily at stabilizing and sustaining its own boundaries (see also Glaser 2005: 26; King and Thornhill 2003). Within Luhmann's approach, exchanges of information are possible, but take place only as meaningful communication between systems, and thus, the interference of any one system in the autonomous operation of another is precluded (Deflem 1998). In order to begin to understand Luhmann, we must go beyond social constructionist and even linguistic accounts of social reality "while at the same time retaining the notion of the phenomenal nature of society and the possibility that many versions of social reality may exist alongside of each other at any one time" (King and Schütz 1994: 267).

Mingers (2002: 279-280) notes further that employing autopoiesis to describe world society has “radical implications” since a closed autopoietic system does not transform inputs into outputs, as earlier systems theorists had claimed, but “instead it transforms *itself into itself*” (emphasis in original). This does not mean that society or its constituent systems are isolated since they continually adopt resources from their environment to accomplish reproduction through “structural coupling” and “perturbation”. Structural coupling is the central explanatory construct given by Maturana and Varela (1980) within autopoietic theory to describe ongoing interactions with the environment and interactivity among systems that result in, or create conditions favourable to, systemic change. Within Luhmann’s sociological theory, structural coupling between co-evolving systems denotes both coordination and co-evolution claim King and Thornhill (2003). Perturbation on the other hand literally denotes interference from an “irritation”, and according to Luhmann’s description, systemic changes depend upon such irritants being triggered from the outside world. His adoption of Spencer Brown’s (1969) laws of form also proved pivotal for analytically integrating grounded and autopoietic thinking within a single investigation, and to make new meaning from the study’s thematic findings. His code for the legal system, for example, was legal/illegal; for politics, those in power/out of power; for education, knowledge/no knowledge, or pass/failure (see also King and Thornhill 2003: 25).

In fact, Luhmann’s method of conceptually re-deploying theoretical and epistemological constructs from diverse, transdisciplinary fields proved integral to the design of the author’s study. His notion of systemic binary coding offered numerous analytical entry points, and is argued herein to offer similar potential to other grounded theorists interested in adopting autopoietic thinking. Furthermore, this construct of binary coding provides guidance for understanding whole systems without which their self-referential operations could neither function nor be fully explained. While any systemic program may change and evolve, its code remains quite constant observes Mingers (2002: 288).

Citing one of Luhmann’s (1965) earliest discussions, Verschraegen (2002: 262) observes how “sociological systems theory phrases the issue of human rights neither as an ethical question of finding fundamental principles...nor as a question of consolidating and implementing human rights law”. While no fan of Luhmann O’Byrne (2003: 43) similarly observes time spent debating “metatheoretical questions concerning the foundations of human rights in natural law...is time wasted”. Nevertheless, an explosion of monitoring, research and theorizing young people’s human rights within and across disciplines has occurred over recent decades with surprisingly few investigators traveling to United Nations sites for data collection. Due to initial comparisons of data with the theoretical literature, the author chose not to frame findings on the existence of any universalized expressions of childhood or human rights in law or the social sciences, but simply upon how one might obtain new knowledge. In addition, adoption of inductive, grounded methods proved workable in avoiding the sharper critics of Luhmann’s ontology as anti-humanist while implicitly addressing Glaser’s (2005: 119) contention that social autopoiesis may be too “complex and burdensome to understand and use”. Before presenting and discussing the study’s thematic findings, the following section notes how and where “Glaserian” grounded theory was taken up, and key arguments in the discourse about the various “right” ways to conduct grounded theory research.

Methodologically Integrating Grounded and Autopoietic Theories

Adopting inductive methods during fieldwork were first described by Glaser and Strauss (1967) to lead to the “discovery of grounded theory”, a process by which data are coded, and through theoretical sampling, guide further data collection, coding, literature reviews and integration into a theoretical statement. The study was guided by the constant comparative analysis that Hallberg (2006) contends is common to all grounded theory research. Theoretical sampling took place utilizing Glaser’s ‘all is data’ invitation with policy documents, human rights and theoretical literature, in-depth interviewing, memoing, and a number of participant observations during UN human rights sessions in 2002-2004 being obtained and analyzed until theoretical saturation occurred. Applying Luhmannian constructs during the final stages of grounded coding and analysis - post core category - also fit congruently with Glaser’s criteria for judging grounded theories (see Schreiber and Stern 2001: 138; also Mitchell 2003a, b, 2005, 2007).

Initially, Glaser and Strauss (1967: 31) agreed that grounded theory studies can be presented either as “a well-codified set of propositions” or in a theoretical discussion “using conceptual categories and their properties” - a standpoint which suits the empirical claims of this paper. Most, though certainly not all, contemporary grounded theorists note how Glaser and Strauss began their work as colleagues who eventually came to disagree sharply on the canons of grounded theory (see particularly Corbin and Strauss, 1990; Glaser 1978, 1992, and 2005 for the contours of this debate). Glaser (1978, 1992) repeatedly set out to ‘correct’ errors he felt his former colleague Strauss had introduced into the methodology; authors such as Schreiber and Stern (2001) and Hallberg (2006) have closely followed the extent of these frequently heated exchanges. In a review of grounded theory educational research, Babchuk (1997) contends that Glaser’s stance is “more deeply committed to principles ...described as the qualitative paradigm” while Strauss leaned more towards the prescriptive, detailed methods in keeping with the “canons of good science.” In a rather convoluted analysis, Greckhamer and Koro-Ljungberg (2005: 729) decry “the erosion of...grounded theory” noting that “much of the current popularization of grounded theory is based upon power, privilege and authority”. However, they do not identify any potential sites where these prerequisites may be found.

Kathy Charmaz (2000) took the dichotomized nature of grounded theory debate in the 1980s and 1990s into a new dimension described as constructivist grounded theory. Nevertheless, Glaser (2002) cautions novice investigators not to let constructivist thinking “remodel grounded theory in manifest and subtle ways” (see also Glaser 2005; Schreiber and Stern 2001 for discussion). Hallberg (2006: 146) contends her views are “an approach between positivism and post-modernism. Constructivism assumes that there are multiple social realities simultaneously rather than the one and only “real reality”...She asserts that in qualitative research we have to enter the world we are studying”.

Similar to a number of grounded theorists, Krentz, Chew and Arthur (2005: 120) apparently seek to avoid these debates entirely by observing when investigators utilize grounded methods “sampling decisions are guided by the emergence of the grounded theory”. The researcher systematically and “simultaneously collects, codes and analyses the data...moving from one participant to the next while developing categories and building theory”. Greckhamer and Koro-Ljungberg (2005: 729) choose to overlook the epistemological debate as well. They do note that “grounded theory has enjoyed a prominent position in the realm of qualitative analyses methods [sic]

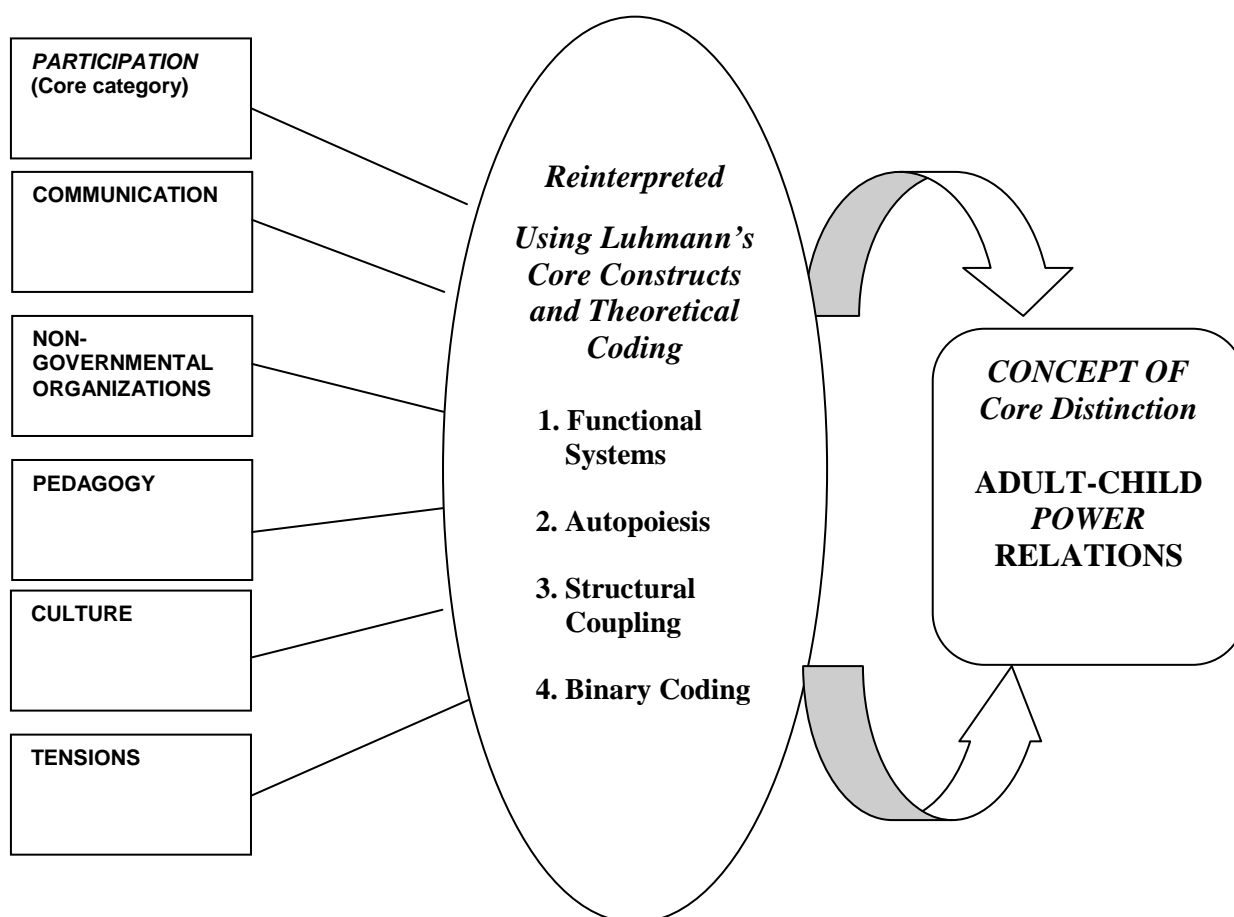
since its original inception by Glaser and Strauss (1967) and has since then been developed further”.

However, Wolcott (1994: 181) robustly criticizes all grounded theory approaches while arguing for qualitative studies to be profoundly “anticomparativist” and for novice researchers never to engage in the potentially mindless activity of simply cataloguing similarities and differences. He states his preference for case study methods, and in contrast to the “much touted ‘constant comparative method’ suggested by Glaser and Strauss, for comparison only to the count of one.” A further shortcoming within many studies is noted by Strauss and Corbin (1998b: 171-172) who contend that many grounded researchers simply do not aim to develop theory at all yet still claim to use the approach based upon constant comparison of data while overlooking better-suited alternatives. Theories, they maintain, are not discovered from pre-existing realities but are always interpretations offered from a given ontological and epistemological perspective. As such, these perspectives are always provisional though “researchers are not gods, but men and women living in certain eras...subject to current ideas and ideologies.” Like Glaser, Strauss and Corbin (1998b: 169-170) argue theories are always traceable to the data through which they arise, and “within the interactive context of data collecting and analyzing in which the analyst is also a significant interactant...grounded theories are very fluid” (see also Corbin and Strauss 1990).

Thus, within the author’s study attempts were made by the author to integrate and develop a common set of grounded procedures that drew deeply from both of the originators’ and others’ theoretical literature, but admittedly, have been primarily influenced by Glaser’s concerns. While also attempting to avoid as much of the contentious contradiction as possible, the most salient critical concerns were taken forward within the study’s design, its sampling strategies and integrated epistemology. Hence, as Glaser contends, comparative literature and policy documents were repeatedly accessed after fieldwork had begun to re-interpret coded and thematic findings. Indeed, this process of returning to the comparative literature again and again led directly to the “discovery” of Luhmannian systems analysis. This re-interpretation of human rights communications transmitted from UN policy sites to local legislative and practice arenas helped create new theoretical and applied meaning. Thus, the “grounded systems theoretical approach” argued for by the author (Mitchell 2005, 2007) integrates grounded theory coding with Luhmann’s core constructs while developing an epistemological clarity argued as lacking within many grounded studies (see Babchuk 1997; Silverman 2001 for such critiques).

Findings and Discussion from the Study

Figure 1 – Grounded Systemic Theoretical Model



By integrating grounded theory with Luhmann's binary coding the study's *core distinction* was revealed in contrast to its *core category* since each theme has the *same* underlying theoretical code - that of power/less power. This analysis expands upon a similar integration found in the social science literature described as "a grounded systems approach" (Gregory, Gibson, and Robinson 2005: 1860-1861; see also Mitchell 2005: 325).

As noted previously, by re-deploying concepts from Maturana and Varela (1980) Luhmann argued that autopoietic theorists see transformation, evolution and systemic change to involve matters of "structural coupling" and "perturbation". Since Luhmann was foremost a legal sociologist, the former is sociologically defined as "the point at which general social expectations intersect with legal expectations" (in King, 1994: 393). This analytical dimension was useful to make greater meaning of thematic categories as they emerged from participants' and investigator's observations. It became evident that new human rights structural and societal expectations are being shaped into new jurisprudence, and then autopoietically replicated, for example, when they are "reconstructed within the legal system as law. From that moment the two systems are structurally coupled by synchronisation and coevolution" observes King (1994: 394). This process appears similar to that noted

by Charmaz (2006) where it is assumed “that action and meaning are dialectical; meaning shapes action and action affects meaning” (cited in Hallberg, 2006: 146). These two systemic activities were observed frequently during fieldwork with regard to child and youth human rights education, and from the study's 50 key informant interviews conducted at UN sites in New York, Geneva, and numerous cities and towns across Canada and Scotland.

Through open and selective coding of interview data six thematic categories emerged along with a core category. As shown in Figure 1, the key importance of UN human rights *communications*; the growing influence of *non-governmental organizations* in education and monitoring of human rights; local and national *pedagogies* for all learning levels; *cultural* peculiarities with regard to both human rights and childhood; and the resultant *tensions* with others' rights were repeated themes in all forms of data. In addition, the core category of rights-based *participation* of young people in new relationships in education, politics, research and related discourses was readily observable across disciplines and cultures.

While cognizant of Glaser's argument that axial coding is “entirely unnecessary” (see Schreiber and Stern 2001: 149) the author took the additional step of binary coding to allow emergence of a theoretical code. It should be re-emphasized that epistemological arguments for the evolution of grounded theory (Greckhamer and Koro-Ljungberg 2005) may well be found within such transdisciplinary approaches that take into account sociological thinkers such as Luhmann, quantum physicists such as Nicolescu (2002), feminist scholars such as Russell (2000), or medical scientists such as Koizumi (2002) - each of whom have contributed theoretically and methodologically to this emergent, non-modernist perspective.

Once new theoretical constructs have been uncovered in the data and are built into an explanatory framework, the research moves beyond conceptual ordering to legitimate theoretical development contend Strauss and Corbin (1998b). They further emphasize that grounded theorists must take responsibility for their interpretive roles, and that building theory allows the demarcation of a well-developed set of thematic categories systematically and empirically inter-related that forms a theoretical framework. They do not believe it sufficient to simply report the viewpoints of people or organizations studied, but contend that “researchers assume the further responsibility of interpreting what is observed, heard, or read” (Strauss and Corbin 1998b: 160-161). In the original study, by integrating Luhmann's systemic coding during the final stages of grounded theoretical coding, the analysis facilitated “discovery” of a *core distinction* from its six themes. This key Luhmannian construct facilitated, and indeed completed, the integration of the two approaches and included Spencer Brown's (1969) contention that “*a form without another side dissolves...and as such it cannot be observed....This capacity for observation and for being observed is a necessary precondition for the existence of any society consisting of communications*” (Luhmann 2000 cited in King and Thornhill 2003: 14, emphasis in original).

Regarding this author's main argument for integration of systems thinking to guide theoretical coding of grounded themes, it is useful to highlight again that grounded theory coding is distinct from Luhmann's binary codes. Identification of the binary code of *those with power/those with less power* within each thematic category as the core distinction helped to clarify how it is that various systems like education, domestic and international law, and politics differentiate themselves through self-referential human rights communications. In the author's study as is the case for all grounded theory research, during fieldwork and data analysis the form taken by each thematic category was accurately observed and repeatedly described by informants

until theoretical saturation occurred. However, the core distinction, which also allows for systemic replication argued by Luhmann as a prerequisite for functional differentiation, remained hidden until theoretical coding was applied.

Attempting to circumscribe disagreements among various camps espousing grounded theory as a full-on methodology, as a set of procedures, or simply as a method, this author has re-configured some common ground amongst and between Glaser and Strauss (1967) and later developments by Strauss and Corbin (1998a, b), Charmaz (2000), and Glaser himself (1992, 2002, 2005) by using autopoiesis as a “theoretical code”. This has been identified as a “grounded systemic approach” (Mitchell 2005; also Gregory, Gibson and Robinson 2005) and includes the following core constructs.

- *Constant comparative method* of analyzing data, relevant literature and policy documents, during *theoretical sampling* as well as during all stages of in-depth interviewing, participant observations, interview coding and at all levels of analysis
- *Open, selective and (axial or) theoretical coding* of data (see also Hallberg 2006: 143 and his “fundamental characteristics”). While Glaser strenuously argues against *axial* coding, researchers may nonetheless utilize this approach to illuminate *theoretical codes* and allow a more gradual emergence of themes while avoiding forcing data into preconceived frameworks - an ongoing concern of Glaser’s (2005: 119)
- Relying on an inductive design, the author stopped short of developing a “theoretical matrix” argued for by Strauss and Corbin (1998a), and Glaser’s *theoretical coding* was applied by deploying Luhmannian constructs of *autopoietic social systems, structural coupling and perturbation*
- In addition to the grounded theory *core category*, the integration allowed a binary code - which operationally closes all systems - to emerge as the *core distinction* (see Figure 1).

Conclusions

It is useful to re-emphasize the aims of the study as well as this paper’s main argument were to discover emerging grounded theory within a substantive field of study - the international human rights legal and educational policy arenas (Mitchell 2003a, b, 2005, 2007). As Hallberg (2006: 143) observes “the constant comparative method...can be seen as the ‘core category’ of grounded theory... [and] both Glaser and Strauss talk about guidelines rather than about fixed and constant rules” which may then be adopted in a “flexible and creative way”. Using Luhmann’s closed systems criteria during selective and/or theoretical coding allows for this kind of creativity through a comparison of the core category to its core distinction, as well as for the fullest integration of two significantly different approaches to social science. For their part, Strauss and Corbin (1998a: 161) claim that selective coding is the final integration of theory within grounded studies, but similar to Glaser, they argue that validating any grounded theory is not about testing in the quantitative sense since theory emerging from data emerges as well from interpretation (see also Charmaz 2000). They contend that when theoretical integration occurs “it represents an abstract rendition of that raw data” (Strauss and Corbin 1998a: 159). Luhmann (1986) himself contends that seen from a deductive point of view his theoretical formulations “are rather fruitless” though he also believed “they have a heuristic value

because they stimulate and define the search for other possibilities” (cited in King and Thornhill 2003: 209). Critiquing Luhmann’s approach, Lechner (2000: 129) asks: “what makes world society a system?” and furthermore “how does the world, as a system, produce its own structures?”

Utilizing a secondary analysis from a 2001-2005 doctoral study (Mitchell 2003a, b, 2005, 2007), this paper argues that its “grounded systemic theoretical approach” (Mitchell 2005: 325) provides some heuristic value in answering these questions with a set of transportable constructs. Particularly in light of complaints about Luhmann’s inaccessibility, his notion of how systemic autopoiesis occurs offers a useful interpretive construct during grounded theoretical coding. It may be further argued that due to his conceptualization of “world society” Luhmann’s core constructs and systemic characteristics could potentially be applicable for innumerable grounded theory investigations occurring within local or international healthcare, educational and political arenas.

It is readily apprehended that within Niklas Luhmann’s sociological writings we have a systems theory that makes sense of both the historical and the continuing evolution of society. His theory provides both a means to analyse specific events as well as their inter-relationships. Luhmann (1997) argues that we can no longer dispute the emergence of a complex, radicalized global system and innumerable subsystems as we watch events unfold simultaneously in Buenos Aires, Baghdad, Boston, Brisbane and Bangkok on our electronic news screens. As a ceaseless feature within modern (and post-modern) society, social systems evolve in response to this complexity through both differentiation and functional specification. Based upon the study’s human rights findings, this differentiation contrasts with previously stratified forms of power wielded within tribal, ecclesiastical, feudal or monarchical societies wherein “rights as a protected sphere of individual action are unthinkable” (Luhmann 1965, translated in Graber and Teubner 1998: 64). Graber and Teubner (1998) argue further that through Luhmann’s sociological gaze we see “human rights” as individual entitlements have actually come about only through differentiated communicative systems.

King and Thornhill (2003: 44-45) note how law autopoietically serves world society through two interconnected but discrete processes: the first by new legislation within the political system and the second through reconstructing these statutes within the courts as issues of legality/illegality. In the study, this interconnectedness was readily observed through structural coupling among law, politics and education, but was most clearly observable within its thematic categories – particularly the core category (Mitchell 2005, 2007). Luhmann’s (1982) autopoietic thinking represents a new epistemology for investigating various structural or post-structural aspects of society, although admittedly, has been presented here in a rudimentary discussion. As highlighted, Luhmann’s binary codes are distinct from grounded theory procedures of open, selective, and theoretical coding adopted to discover substantive themes and their underlying conceptual properties.

Re-interpreting grounded research problems as systemic problems, and grounded research themes as systemic events allows for empirical application of Luhmann’s autopoietic social systems theory to be brought into any number of discourses. In describing the conceptual gaps for social scientists who have attempted to re-interpret Luhmann, King (1994: 394) notes that “a system is structurally coupled to its environment when it uses events in the environment as perturbations”. An example of this process is illustrated by recalling how anti-pollution measures have entered the law and ongoing scientific and technical developments. While initially outside the legal system, these measures have nonetheless facilitated

development of new regulations across most of the industrialized world. In this illustration, perturbation may be understood as a process of irritation that instigates social change while structural coupling manifests between and among clearly differentiated systems. Interpreting and applying Luhmann's core thinking allows appreciation of how "in different locations different systems are likely to enter characteristic structural couplings" (King and Thornhill 2003: 210).

In apparent support of this paper and its underlying grounded systemic approach, Glaser (2005: 12) maintains that while the substantive categories within grounded theory studies have recognizable conceptual properties and patterns, "theoretical codes" such as autopoiesis "denote abstract models, which are usually implicit in the theory, but unconsciously used, and which are seldom explicitly mentioned". While he also argues that such theoretical codes are analytically unnecessary, "a grounded theory is best when they are used" and appears "more plausible, more relevant and more enhanced when integrated and modeled by an emergent theoretical code" (Glaser *ibidem*: 14).

In light of the paper's thesis, this emergence hinged upon integrating theoretical coding with Luhmann's binary coding and the resultant theoretical code which is "seldom explicitly mentioned" within grounded theory studies was then "discovered" (Glaser 2005: 12). This integration of Luhmannian and Glaserian coding also facilitated a departure from a previous "grounded systems" social science investigation found within the reference literature (Gregory 2003; Gibson, Gregory and Robinson 2005). In contrast, after theoretically coding thematic categories this author found a new code identified as a core distinction *emerging as the same from within all themes* rather than being related to other themes in the fashion of the study's core category. This position is also wholly quite congruent with Luhmannian practices of re-deploying others' conceptual properties and his argument that systems autopoietically replicate through use of the same binary code (for further discussion see Glaser 2005: 26-27, 118-119 and comments on using autopoiesis as a theoretical code).

Within a transdisciplinary integration of grounded and autopoietic theories such as this, empirical application of social autopoiesis also represents a congruence in "fit" and "workability" for a grounded systemic approach that is posited for future application and modifiability. While numerous grounded theorists fail to fully explicate how it is that constant comparative analysis actually works, adapting Luhmann's approach to show how distinctions occur from first- and second-order observations appears as a reasonable methodological stance to take.

To Luhmann (and likely to many grounded theorists) any theory could just simply be a selective construction, but his particular construction has remained so internally closed to date that ordinary criticism has had little bearing (Lechner 2000). While Lechner castigates Luhmann for not advancing much beyond the description of functional differentiation, this author argues that such a perceived shortcoming allowed the utility of an inductive, grounded theory methodology to enter into theoretical play.

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