



# Catalyzing Innovation

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## **USING A MULTI-LATERAL ORGANIZATION TO CATALYZE INSTITUTIONAL INNOVATION AT GLOBAL SCALE: EVIDENCE FROM THE WORK OF GLOBAL LAND TOOL NETWORK PARTNERS**

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**Abstract**

UN-Habitat, a multi-lateral organization, facilitated the Global Land Tool Network (GLTN) partners to develop pro poor land tools between 2006-2015 to fill the gap conventional land administration was not addressing. This paper describes for the first time the global institutional change model that was used to develop these tools. The framework is based on Checkland (1981) and Jackson (2003) soft systems approach for operational research to address complex and wicked problems; Ortiz (2013) on soft systems and capacity development; and Barry and Fourie (2002) and Augustinus and Barry (2006) who used the approach to analyze national land systems. UN-Habitat/GLTN targeted parts of the global land industry to catalyze change and address the tenure insecurity and land administration gaps of the poor. The change model was used for understanding socially unjust land tenure patterns and as a way to ameliorate problems through tool development and implementation for altering power relations.

**Key words**

Catalyzing global change, soft systems, land administration

## 1. INTRODUCTION

In 2006, the Global Land Tool Network (GLTN), facilitated by UN-Habitat, was launched by GLTN partners. Its purpose was to create pro poor land administration tools to fill the gap left by conventional land administration systems of the time. Innovative approaches and tools were needed to do this. Less than 30 percent of people in the developing world have registered land rights. The majority of people have insecure tenure and some form of land documents are likely to improve this situation. The 18 GLTN pro poor tools were intended to fill this gap and make it possible, in time, to bring the 70 percent of people into the national land administration systems (UN-Habitat/GLTN: 2016). The pro poor innovative tools were developed using a number of work streams, undertaken by GLTN partners, basket funded by Sweden and Norway, and later the Netherlands. GLTN targeted parts of the global land industry for change, to address the tenure insecurity and land administration gaps of the poor and women.

In the 1990s up to 2006, at the outset of the work, parts of the global land industry were grappling with a particularly ‘wicked’ problem and no solution was in sight. The problem was that conventional land information management systems based on unique polygons and cadastral parcels associated with land registration were not pro poor. Moving the land rights and information of the poor onto these systems was complex because of a range of issues related to among other things affordability, capacity of government institutions, length of time it could take, and also because the land tenure types of the poor do not always easily fit into Western notions of land tenure (Lemmen et al.: 2009; Enemark et al. 2014, UN Economic Commission for Africa: 1998). An innovation, which was accepted by parts of the global land industry, was needed, in the form of some kind of pro poor Geographic Information System (GIS). The Social Tenure Domain Model (STDm) ultimately became the soft systems change model ‘intellectual device’ used to tease out the problems and work out potential institutional innovations to improve the situation for the poor.

This paper focuses on the multi-lateral, UN-Habitat, and GLTN as a catalyst of institutional innovation. Section I of this paper introduces how UN-Habitat/GLTN

worked to change parts of the global land industry through using a soft systems change model to produce innovative land tools, which were ‘intellectual devices’ for encouraging change. It also outlines the scope of the paper and describes what aspects of the evidence had to be left out, given the large body of evidence involved, and the limited space in this paper. A few key definitions are also given. Section II outlines the research methodology, which is framed by a social anthropological approach.

Section III presents the key elements of the framework and soft systems change model used for operational research in organizations. The soft systems approach is about an integrated way of describing, explaining, predicting and then designing a response to a complex problem based on a number of world-views. Section IV describes how this framework was used by GLTN during its first decade. Given the large size of the body of evidence associated with this period of GLTN work, one work stream around STDM is used as a proxy to illustrate how the change model was employed within GLTN’s annual work programs and work streams. Key parts of the STDM work stream supply the evidence that demonstrates the soft systems approach in action. Section V presents the conclusions showing that under certain conditions a multi-lateral institution can be a catalyst for institutional innovation and that new technical approaches in the land industry should be connected to such social change models to reach the poor.

It is hoped that by documenting GLTN’s change model that this will increase the industry’s understanding of how to introduce pro poor innovations and change in the land industry at all levels to better address complex and wicked poverty and power related problems. The industry often has a ‘fix the system’ hard systems approach. The change model could also be used in international development work and by multi-lateral organizations more generally.

### **1.1. Scope of paper**

It must be stated at the outset that GLTN’s work was based on many best practice building blocks of the global land industry of the time such as approaches using participatory methods, stakeholders, (land) governance, inclusiveness, gender responsiveness, partnership, processes and not just products, many of which are also used

as part of soft system's approaches (Jackson: 2003, Ortiz: 2013)). However, GLTN added to this a focus on pro poor innovative tools for land administration linked to an organizational/institutional change model based on soft systems methodology (Checkland: 1981) to undertake change in complex contexts. GLTN's application of the change model was implicit rather than explicit. It emerged over time in an adapted and refined form as a key framework to develop many GLTN tools and innovations.

Due to space limitations this paper cannot cover all the evidence associated with GLTN's change model as evidenced over a ten-year period. The scope of the paper is therefore focused in a number of ways. Firstly, UN-Habitat was a critical catalyst of GLTN. The relationship between UN-Habitat and GLTN needs to be viewed from many sides. For UN-Habitat, GLTN was a program, one amongst many of its programs. For GLTN partners, GLTN was a global network composed of many different global organizations and UN-Habitat was only one partner and facilitator of this network, which took the form of the GLTN Secretariat based in UN-Habitat. This paper is only written from the GLTN Secretariat perspective, as the hinge between UN-Habitat and GLTN and the centre of the network. This means the paper is not about the multi-lateral UN-Habitat per se. Reference to UN-Habitat will be made where its specificities are important to the paper. As most of UN-Habitat's roles did not apply explicitly to tool development only some of those roles that applied to the early part of the story are described, and only as they pertain to the story of catalyzing of innovation. The complex multi-sided relationship between UN-Habitat and GLTN is not analyzed.

Secondly, this paper is about the change model used by GLTN between 2006-2015 to develop pro poor tools and is the first attempt to document this in a robust fashion. It is about the soft systems change model GLTN used as it was by the end of 2015. It does not describe the historical development of the GLTN change model, even though it traces the history of one work stream of GLTN, namely STDM, to demonstrate the change model in action. The same change model was used for many of the GLTN tools and is partially documented for a few of them, but the evidence is not linked to the soft systems framework in a comprehensive way as it is in this paper (Augustinus: 2018a,b). Thirdly, the paper focuses on the change model not tool development per se. Here tools are merely

intellectual devices to explore problems and bring about change to the way parts of the global land industry functioned.

Fourthly, the GLTN annual work programs over 10 years was composed of, and managed as, twenty or more different work streams, with the development of any particular tool over a number of years being one such work stream. This work is too extensive to be described here. The STDM work stream is therefore used as a proxy to illustrate how the change model was used across GLTN's annual work programs and multiple work streams. That is, the STDM work stream was an intellectual device to understand the problems associated with pro poor land information management better and to contribute to potential actions to improve the land rights of the poor. The history of the development of STDM as an 'intellectual device' is used to demonstrate how the GLTN soft systems approach to change worked in practice, and produced innovative pro poor tools. It is also the GLTN tool of choice here because STDM has a 25-year history starting even before GLTN, giving additional evidence of how the change model can work. Only a flavor will be given of the hundreds of activities associated with STDM's development to illustrate the operational activities associated with the change model, namely the 'champions', 'moments' 'intellectual devices', 'capacity building/development' and the other soft systems approach elements described in the framework below.

Finally, the paper focuses on the operational elements of soft systems change models and only summarizes the theoretical underpinnings of soft systems approaches to orient readers unfamiliar with the subject.

## **1.2 The soft systems framework**

GLTN's institutional change model, used to develop innovative pro poor tools, was based on soft systems approaches and organizational change models for managing complex contexts or what was termed 'wicked' problems (Jackson: 2003, Checkland: 1981). Soft systems approaches were developed for managers of private sector organizations, and were later adapted by Ortiz (2013) for NGOs working on social change and capacity building in complex contexts. Barry and Fourie (2002) and Augustinus and Barry (2006) adapted it to analyze national land administration systems in uncertain and conflict

contexts. As this paper will show, GLTN adapted it for changing parts of the global land industry.

The land industry conventionally uses a hard systems approach to bring about change and needs to also use a soft systems approach (Barry and Fourie: 2002; Augustinus and Barry: 2006). The hard systems approach to solutions fails in the face of “extreme complexity, multiple perceptions of reality and the need for radical change” (Jackson:2003:61). These are exactly the kind of situations that land administration tools have to address to support the land rights of the global poor. The work of Barry and Fourie (2002) and Augustinus and Barry (2006) also shows that this change model is applicable for the subject matter. Given GLTN’s goal of addressing the land tenure security of the global poor by developing pro poor gender responsive land tools, it was necessary to move away from the conventional hard systems thinking usually associated with land administration to a different type of change model, based instead on a soft systems approach. The author’s work with Barry had a major influence on which change model GLTN would use.

The GLTN change model, based on soft systems elements identified by Jackson (2003) and adapted by Ortiz (2013), used key activity types as part of its systematic methodology to catalyze change and innovation, such as: ‘champions’ to engage in and lead debates; ‘moments’ or events where shared meaning was created iteratively by diverse actors; ‘communicative interaction,’ where dialogue and re-negotiation between different parties takes place; and ‘capacity development’ to build relationships and share knowledge. Finally, there was the creation of specific ‘intellectual devices.’ These are ways to explore and understand complex situations and as part of the way to work out what are the problems and potential actions to improve the situation.

The paper will describe how these were used to bring change in parts of the global land industry, with the pro poor innovation, in the form of the work stream associated with the development of STDm, itself becoming the ‘intellectual device’ used to engage the global land industry and to empower vulnerable people to protect their land rights and change the local power relations.

### **1.3 Definitions**

Defining the term ‘institution.’ Soft systems approaches for organizations is here being applied to an institution, namely the global land industry, including that part of that institution which consisted of a multi-lateral organization (UN-Habitat) and a global network (GLTN). The network comprised diverse international partners within the global land industry, many of them very large global organizations. The soft systems approach was used to produce change within parts of this institution.

For the purpose of this paper, an institution is the formal and informal rules, norms, strategies and constraints used by humans to organize all form of repetitive and structured interactions, including those related to political, economic and social interactions. This definition is adapted from North (1991) and Ostrom (2005). North states that “(i)nstitutions are the humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights).” Ostrom argues that institutions are the rules, norms and strategies that humans use “..to organize all forms of repetitive and structured interactions.” (2005). The global land industry is an institution with its own rules, norms, strategies and constraints, both formal and informal, which shape its political, economic and social interactions.

Defining the term ‘wicked problem.’ “Wicked problems cannot be easily defined in a way that all stakeholders agree on how to solve the problem... They require iteration – every trial counts... They have no given alternative solutions- these must be discovered... There is no objective measure of success” (Buckingham: 1997 quoted in Barry and Fourie:2002).

## **2. RESEARCH METHODS**

Qualitative methods were used for gathering information based on the anthropological technique of participant observation and what Ortiz terms ‘action research’ (2013). The author was uniquely placed to participate, observe, and undertake action research during 2006-2015 as leader of the land unit in UN-Habitat, founder-leader of GLTN, and at the

center of the global network.

### **3. A SOFT SYSTEM APPROACH FRAMED THE GLTN CHANGE MODEL**

This section describes the soft systems approach on which the GLTN change model was based during its first decade. Checkland (1981) soft systems methodology (SSM) was the foundation. The soft systems approach is about an integrated way of describing, explaining, predicting and then designing a response to a complex problem based on a number of world-views. Jackson (2003) provides an overview of the different soft system change models, as used by managers in the private sector from the 1940s onwards. Other thinking used to support the GLTN change model was Ortiz (2013) work which made soft systems approaches relevant for the world of international development and links it to capacity building. Also, Barry and Fourie (2002) and Augustinus and Barry (2006) applied the thinking to land administration in uncertain, complex situations and to develop actions to address the so-called ‘wicked problems’ found in land.

The GLTN change model drew on all these approaches. It was further adapted and refined by GLTN to fit with the role of a multi-lateral, (UN-Habitat), a global network (GLTN), and the global land industry which together make up the ‘institution’ being analyzed, as well as the GLTN tool agenda.

#### **3.1 The framework**

Soft systems approaches avoid simple solutions to complexity, change and diversity, issues that are front and center when dealing with the land rights of the poor in developing countries. By way of introduction, soft systems methodology (SSM) “...seeks to work with different perceptions of reality, facilitating a systemic process of learning in which different viewpoints are examined and discussed in a manner that can lead to purposeful action in pursuit of improvement. Participants use a systemic methodology to learn what changes are feasible and desirable given the peculiarities of their problem situation” (Jackson: 2003:188).

Barry and Fourie (2002) based on SSM (Checkland: 1981) argue that an analysis using a static hierarchy of sub-systems in complex environments is not useful for land in

uncertain contexts. Instead sub-systems and other elements should be analysed from different perspectives. Augustinus and Barry argue that “soft systems theory assumes that the form of the interaction between sub-systems is likely to change over time.. (and) conceptual models of a particular system need to be constructed and analysed continually.. (A) system can have a number of representations depending on the frames of orientation of different observers. (This) is context-dependent and different observers will understand a system.. differently, depending on the context of a particular situation and the observer’s own thinking.. (W)hen analysing a particular situation, it is necessary to conceptualise the interrelationships between different systems..” (2006). The GLTN change model was built on the idea of multiple sub-systems operating within the global land industry each with their own perspectives and many-to-many relationships which changed over time.

At the level of the application of the SSM, Checkland’s SSM has seven steps namely: 1) Situation considered problematic 2) Problem situation expressed 3) Root definitions of relevant purposeful activity systems 4) Conceptual models of the relevant systems named in the root definitions 5) Comparison of models and the real world 6) Changes: systematically desirable culturally feasible 7) Action to improve the situation (1981). Ortiz’s adaptation of Checkland’s SSM (see Figure 1. below) accords with, and easily explains, the way GLTN came to use soft systems.



Figure 1. SSM activity types (adapted from Checkland and Poulter: 2006: 62 quoted in Ortiz: 2013).

Emanating from these general activity types found in SSM a number of specific activity types are described by Ortiz (2013). These were explicitly used by GLTN, some in an adapted form. These include: ‘champions or change agents’ to engage in and lead debates; ‘communicative interaction’ where dialogue and re-negotiation between different parties takes place and shared messages are created; ‘moments’ or events where shared meaning is created iteratively through a contested or uncontested “..re-patterning of conversational themes..” between increasingly diverse actors (Ortiz:2013:27); the creation of specific ‘intellectual devices’, for the conscious exploration and understanding of a situation and as part of the way to solve problems and; ‘capacity building’ as a catalytic activity to address problems associated with the uneven socially unjust nature of society and the need to support changes in power relations. These are described in more detail below.

Champions. Ortiz introduces the idea of both people and organizations being change agents who “..facilitate dialogue.. and challenge prejudices and develop common ground” (2013:202). He states that this can lead to transformational processes in organizations, or as in our case institutions. As this activity is commonly understood in the global land industry it will not be unpacked further.

Communicative interaction. Ortiz describes the concept of communicative interaction between people or between organizations as being “(h)ow organizational learning and change occurs through the shifting interacting dynamics of conversations and other forms of communicative interaction, and how organizational capacity emerges in these shifting dynamics..”. And that the patterns of communicative interaction are strengthened by engaging diverse participants who have “..multiple ways of knowing.. Diversity must be present as it alters patterns of communicative interaction” (2013: iv-v,144).

Also, Ortiz argues that power relationships condition these patterns of communicative interaction (2013:88).“New ideas can support creative conflict amongst closely connected interacting people, and as these actors enable and constrain each other, new patterns ..can emerge.”... (which can lead to) meaningful transformation..”. “The soft systems methodology approach supports these emergent shifts” (2013: 113, 185). Using this

systematic methodology of intentionally structured dialogue leads to the “maturing of assumptions”. These are changes in the patterns of communicative interaction between different participants that reflect learning going beyond everyday conversation (2013:184,202,209,211). Ortiz recommends the documentation of these mature assumptions (2013:212).

GLTN used communicative interaction extensively as central to its change model to produce pro poor innovative tools, using both verbal and written means. Ortiz argues that “(d)eveloping a document together.. keeps.. (institutional).. knowledge alive.. (Its ..relevance and contribution to.. (institutional).. learning.. (is about) the extent to which it remains... as a habitual reference” (2013:283). While Ortiz sees the document itself as less important than the communicative interaction, documented GLTN tools were different because they also became a source of reference to a much wider global readership looking to the international global industry for guidance on the complex and wicked land and poverty problems being experienced across the world.

Intellectual device. Checkland (1981) calls intellectual devices ‘tools.’ This aligns well with GLTN’s approach to tool development. Checkland and Poulter (2010) state that intellectual devices are used to “inform and structure discussion about a situation and how it might be improved.” Holwell cited in Checkland (2000) suggests that “you must use explicit intellectual devices consciously to explore, understand and act..” (1997). Intellectual devices in the form of tools were the most visible part of GLTN’s change model.

Ortiz only mentions in passing that “(e)xplicit intellectual devices are consciously used to explore, understand, and act in the situation in question” (2013:41) as communicative action and capacity building are the key elements for him. GLTN brought all of these together as it used the systematic methodology associated with soft systems, and its iterations of communicative interactions and capacity building together with an ‘intellectual device’, for innovative pro poor tool development to bring change.

Methodological moments. Ortiz describes “..methodological moments ..(as being part of) each process” (2013:54) and how key moments contribute to building up a bigger picture

over time. This paper will describe these ‘moments’ in terms of numerous meetings and events and conversations that were integral to the ‘intellectual device’ of STDM’s work stream. A key aspect of the GLTN meetings was having the right diverse audience in the room; with a carefully tailored program that could be used as an intellectual device to advance change through the development of innovative tools.

Capacity building. Writers on soft systems put learning front and center of their change model. Ortiz states that “shifts in patterns of communicative interaction that generate learning are fundamentally shifts in.. (institutional) ..behavior..”. He also argues that relationship building is core to capacity development and that close attention should be paid to the stories that emerge over time in institutions, and capacity building designed to respond to these stories (2013:284-6). He also reminds us that examining power relations is integral to capacity building (2013:42).

Ortiz also explains how he planned key workshops “..but left open much of the design for unknown future moments in which particular sub-themes would emerge. These themes did emerge and new workshops, meetings, information gathering, document reviews, and other actions followed.” (2013:84). An open-ended approach to iterative learning became a common feature, along with capacity development, of GLTN’s change model and its programming, based on a systematic methodology.

### **3.2 Soft systems as GLTN change model**

A soft systems approach was useful as a change model for GLTN for many reasons. Firstly, the land and poverty issues GLTN was trying to address are complex and wicked. Simple ‘fix the system’ solutions cannot be used. Secondly, GLTN from the outset wanted to see power related changes not just tools developed to solve problems. Thirdly, intellectual devices, also known in operational research as ‘tools’ to explore and understand situations, fitted well with GLTN’s focus on pro poor land tools. Fourthly, soft systems approaches aligned well in many ways with the approach used by UN-Habitat as a multi-lateral organization. It fitted with the way the United Nations works in terms of holding multiple events and meetings that became opportunities for ‘moments’ of communicative interaction. The United Nations is also perceived as a convening

platform to discuss and find “common ground”, which is part of the soft systems approach.

Fifthly, the global land industry consisted of many different organizations or ‘sub-systems’ with a variety of many-to-many political, economic and social interactions (formal and informal) within an ever-changing milieu. Land tenure issues need to be understood from the many different points of view of these different actors simultaneously, including from different partner perspectives, bottom up and top down, and from a political and technical perspective. Using a soft systems approach worked well as it is designed to accommodate all these diverse points of view and types of interactions over time.

Finally, GLTN’s basket funding rather than project funding was a better foundation for iterative communicative interaction and learning without a pre-defined fixed goal. This meant GLTN’s work program did not have to produce narrow outputs and outcomes but instead allowed a flow of activities over years using iterative learning and reflection. The GLTN soft systems change model underpinned partner choice for collaboration for undertaking different work streams for tool development, workshop design, annual work program design adapted as much as possible to global history, and the production of multi-reviewed reports many of which were both ‘intellectual devices’ and ultimately tools, among other things.

Adapted from Checkland (1981), Jackson (2003) and Ortiz (2013), Barry and Fourie (2002) and Augustinus and Barry (2006), the soft systems change model became the DNA of GLTN’s approach to change and innovation. Based on an increasingly systematic methodology a range of elements were used such as: 1) problem solving before clear goals are set 2) seeing problems and how to resolve them from a variety of points of view 3) the relationship between the different parts of the institution being crucial 4) inter-disciplinary and diverse actors 5) sufficient accommodation between different and sometimes conflicting world views and different viewpoints about purpose (in this case the tool) and the creation of temporary coalitions to support specific changes 6)

systematic learning processes where participants in the problem situation learn to understand each other's world views - which leads to innovation 7) a systematic methodology of iterative learning cycles, critical reflection and work programming based on work streams over multiple years 8) as many participants as possible 'owning' the work and the recommended changes because they are involved in using the change model to make the changes 9) debate comparing the emerging conceptual model (or tool-under-development) to reality 10) and values and meaning. All these aspects became part of the change model GLTN used to develop innovative pro poor land tools.

#### **4. THE STORY OF STDM AS AN INTELLECTUAL DEVICE FOR CHANGING PARTS OF THE GLOBAL LAND INDUSTRY**

GLTN's soft systems change model in operation is evidenced through the 'story', as Ortiz terms it, of the work stream of STDM as 'intellectual device' and its development as an innovative pro poor tool. The STDM work stream of GLTN is used as a proxy to illustrate how the change model was used within GLTN's work programs as a whole and across other work streams.

##### **4.1 Exploring the problem: Before GLTN**

In the 1990s, based on the author's experience, the complex and wicked problem that needed to be addressed related to the extension of cadastral land information management systems to cover the majority of people in a developing country, most of whom are poor, so as to improve their land rights and land management. As already indicated, for a range of reasons these systems could not accommodate the unregistered different types of social tenures held by the poor. STDM as it became known, became the intellectual device used to find ways to explore, understand and ameliorate this wicked problem.

In 1993 the first contested and uncontested conversations took place about a range of spatial identifiers and not just cadastral parcels, which could be used from community to national land administration level, and which accommodated what became known as the continuum of land rights. This was 13 years prior to the launch of GLTN. The author, a social anthropologist, was an academic in a land surveying department also participating

in the major changes that happened in South Africa at that time, with all the new thinking, challenges and opportunities of a country freed from apartheid. The author was also running a Masters program for mature surveyors from sub Saharan Africa. Key gaps were identified in the land tools needed to deliver land administration for the majority of the population and the poor. These gaps became the initial list of GLTN land tools and agenda when GLTN was started in 2006. STDM (as it ultimately became known) was one of those tools.

The Masters program and the author's engagement in the changes in South Africa at the time, working in a participatory fashion with the South African land industry, became 'moments' of 'communicative interaction' and debate (Fourie and van Gysen: 1995). It was also a key time in history when national power relations were being discussed and how technical tools, in the form of the national land registration system, were seen as either blocks to democracy or opportunities to empower people. This informed the thinking around some of the early conceptualization of STDM's spatial data with top down and bottom up (legal and social) perspectives and inter-operability being a key early parameter. The new South African government decided to opt to extend the conventional cadastral system to the majority of people, and resources were not made available for any kind of continuum of land rights approach (UN-Habitat/GLTN/IIRR: 2012) that might have used an STDM type approach. A range of spatial units and not just cadastral parcels remained an undeveloped academic idea.

In 1998 the United Nations Economic Commission for Africa asked the author to produce a background paper for an Expert Group Meeting on the cadastre and GIS/LIS and the creation of geo-information for decision-makers (UNECA: 1998). The paper explored, in great detail, the wicked problems Africa was experiencing in rolling out the cadastre and its linked land information systems. It challenged the use of unique parcels and polygons – the basic unit of analysis for cadastral systems, as the basic unit of data collection. It also proposed alternative options such as using the continuum of land rights perspective and a range of spatial units as identifiers. It laid out some of the key design features that became STDM.

The Surveyor Generals at the meeting strongly contested many of the alternative options, but they did not contest the problem identification. No systematic process was put in place to “re-pattern conversations” (Ortiz:2013) and take the thinking further after the UNECA meeting, though the findings were presented at a number of key follow up United Nations Africa-wide and global forums of surveyors.

In other words institutional change in terms of the global land industry did not start with the gap identification and the innovative tool idea for a pro poor GIS that could work inter-operably with national systems. The idea of STDM was shelved until the author joined UN-Habitat in 2003 and brought with her the early GLTN agenda, which included STDM. A long and systematic path of practical activities using a soft systems change model had to be undertaken by GLTN, using STDM as an intellectual device, before STDM the pro poor GIS was accepted by parts of the global land industry.

#### **4.2 UN-Habitat as facilitator of GLTN: Starting the work**

Without UN-Habitat there would have been no GLTN or STDM. Through GLTN UN-Habitat became a facilitator for institutional innovation and change at global scale. UN-Habitat had a history of engagement with land. The development and human rights framework associated with UN-Habitat’s urban land mandate started as early as 1976 with the Vancouver Declaration, further enriched by the Habitat Agenda and Istanbul Declaration of 1996. Aside from these major declarations, there are many other human rights frameworks associated with UN-Habitat, which underpinned GLTN’s pro poor and gender responsive approach. UN-Habitat also had a long history of promoting civil society. In regard to the values associated with the soft systems approach, this meant that a pro poor and gender responsive approach to tool development, working with partners and civil society, was already in the DNA of UN-Habitat. The GLTN approach was built on top of this.

UN-Habitat was quickly able to move to the start up phase of GLTN, including developing innovative tools, such as STDM, for a number of reasons. Its mandate and infrastructure meant that land was part of the agencies work program and it had staff

dedicated to this thematic area. So a champion organization and champion individuals were already in place. UN-Habitat partners and land champions, such as Shack Dwellers International and the International Federation of Surveyors among others, were already associated with UN-Habitat's land work. They, and others, became the core of partners that launched GLTN in 2006, with others joining them later.

Funding is critical to start ups. There were bilateral donors associated with UN-Habitat, some of which were interested in funding and championing UN-Habitat's land programs, namely Sweden and Norway. They made funding available for the idea of GLTN very quickly, also because Sweden had identified in its other programs that pro poor tools were a gap that needed to be filled. Sweden and Norway also insisted on, and funded, two meetings of diverse and inter-disciplinary global land partners to approve the GLTN agenda prior to moving to full funding. So all the key champions were in place to move a global agenda forward.

A game changer for GLTN is that Swedish Sida had experience with basket funding. From the outset they persuaded Norway and the GLTN Secretariat to use this approach rather than a project based approach, which Ortiz argues limits the soft systems approach. This meant that GLTN was able to use systematic methodology associated with soft systems over time, instead of being tied closely to the delivery of more narrow time bound project outputs and outcomes. Basket funding allowed the 'maturing of assumptions', 'iterative learning' and the development of technical and political agreements around innovative tools.

UN-Habitat's convening power made it possible to have a diverse range of GLTN partners including technical, grassroots and civil society, research and capacity development, multi-laterals and bi-laterals. It also facilitated an open door to local and central governments to pilot its innovative tools. In soft systems change models this kind of diversity is central to innovation.

Also, UN-Habitat had a program of annual global events which UN-Habitat partners, including land partners, usually attended, which GLTN could tap into easily. GLTN used

many of these ‘moments’ including when GLTN was launched at a side event at the World Urban Forum in Vancouver, Canada in 2006 very soon after it was conceived. Also, a major function of the United Nations system, and UN-Habitat, in the global order is to create a space for conversations between diverse parties, including ‘contested conversations’, in order to try and reach agreements – something central to the soft systems approach.

All of these aspects of UN-Habitat were key to using STDM as an intellectual device to change parts of the global land industry and included: 1) champion organization in terms of mandate and convening power, staff to champion the development of the innovative tool from the outset, flexible basket funding allowing systematic learning and exploration of the problem and way forward 2) values leading to the choice of a pro poor approach 3) ‘moments’ for ‘champions’ to come together, discuss, agree and move the agenda forward and 4) a culture of conversations and reaching agreements. While many of the building blocks were in place from UN-Habitat, what GLTN brought new to the table was a focus on developing innovative pro poor tools by using a systematic methodology associated with soft systems change models, using it to change aspects of the global land industry.

### **4.3 GLTN and STDM as intellectual device**

A number of ‘champion’ organizations and ‘champion’ individuals linked to those organizations were key to the history and work stream of STDM as ‘intellectual device’ and form part of the evidence described below. Due to limited space only a few can be named.

In terms of key ‘moments,’ the International Federation of Surveyors (FIG) as the leading global land administration organization for surveyors was in the critical path of global change. The cadastral system and land information management are at the heart of its identity. FIG was a UN-Habitat partner and the author had a decades old relationship with many of its leaders including leading academics.

A key 'moment' in the history of STDM was a speech-cum-debate at a FIG meeting in Accra, Ghana in 2006. This meeting included a plenary session that was a set of speeches consisting of a structured debate between Lemmen from ITC (now ITC/University of Twente) and the author about the issue. At that time Lemmen was starting his thinking about the Land Administration Domain Model (LADM) and trying to decide if it could accommodate the whole range of land tenure types found in the continuum of land rights. The author used all the thinking that she had done 9 years previously for the UNECA paper on GIS/LIS and argued that unique polygons or parcels were not sufficient on their own and that additional forms of spatial units had to be introduced into LIS/GIS systems also to accommodate a range of tenure types. This was a key debate for Lemmen, who became the creator of the LADM/STDM models. In soft systems terms, this was a key 'moment' for learning and reflection which ultimately led to innovation.

GLTN was launched by partners in 2006, three months after this debate, at the World Urban Forum in Vancouver, Canada. In 2007 the first partners meeting was held in Bergen in Norway. The early GLTN partners agreed to work on the 18 GLTN pro poor land tools that were missing that would make land administration capable of reaching the majority of people in the developing world. These 18 included what became the STDM innovation.

Another key 'moment' was a UN-Habitat Governing Council meeting in 2007 in Nairobi. At a small meeting of Enemark, FIG President, Paresi of ITC and the author representing the GLTN Secretariat, it was decided to develop STDM. It was agreed that FIG would give the brand, leadership and intellectual capacity to review; ITC would ask Lemmen to do the job as part of his PhD; and the GLTN Secretariat would secure the funds, including for Lemmen's PhD, and allocate staff time to supervise the work stream as an 'intellectual device'. The basis of the agreement was the joint vision that we would develop the pro poor GIS we had been discussing at events such as Ghana.

Ultimately STDM became a model, a software and a concept. Lemmen developed the LADM and the STDM in tandem. These were registered as an ISO standard in 2012 with

STDM as a sub-set of LADM (Lemmen, van Oosterom and Bennett: 2015). Lemmen also developed the early proto-type of the software. Gitau and Njogu, GLTN Secretariat programmers, developed the software further to pilot stage, and later to roll out. That Gitau and Njogu were land surveyors from Kenya and were able to see the software from both the cadastral and African land tenure system points of view helped to ensure that the original concept and parameters outlined in the UNECA background report were maintained. During this stage of development a Kenyan NGO, Pamoja Trust, linked to Shack Dwellers International, a GLTN civil society organization global partner, shared their GIS data from slums to improve the robustness of the software. It took at least 5 years, if not more, to get to software that could be shared with partners and taken to piloting at community level.

This was a pivotal moment as up to now STDM had only been used as an ‘intellectual device,’ for a limited number of technical people. The broader global land industry, civil society partners and local communities had not yet been involved. At this point the tool could have remained only a limited technical tool. In STDM’s second stage as ‘intellectual device’ iterative learning and reflection, working with diverse poor users and GLTN partners who supported these poor users, was used to refine the software and concept.

This was done under the leadership of the GLTN Secretariat staff who supervised this work stream, first Haile and then Antonio. Both land surveyors were from countries with many social tenures and poor people, which again meant they had multiple perspectives. STDM as ‘intellectual device’ was linked to the work of a range of GLTN partners. Capacity development opportunities with partners and communities were organized to create trust and build technical and community level knowledge, including through ‘contested and uncontested conversations’. STDM’s development was used as an ‘intellectual device’ to understand the issues from an even more diverse range of views including technical and community level, top down and bottom up. STDM was promoted not so much as a software, but as a concept for empowering communities to manage their own land information and use it to negotiate for the improvement of their land rights and

land management. Haile and then Antonio ensured that the work was done systematically and deliberately with iterative learning leading to a proven and useful innovation for the poor.

A key activity that enabled this was when Shack Dwellers International agreed to pilot STDM in one of the slum areas where they worked, and they chose Mbale, Uganda. Their interest was in standardizing data collected by slum communities, for it to be accepted by local governments, and to facilitate negotiation by communities with the local government. Their participatory enumeration questionnaire was re-negotiated with the GLTN Secretariat, to compliment community data collection also for STDM. By 2014 this work had been scaled up to the local Mbale municipality and then to a number of Uganda municipalities through partnership with Cities Alliance (Antonio, Gitau and Njogu: 2014).

This two-stage process to change using a soft systems approach, with STDM being used as an ‘intellectual device’, led to change in parts of the global land industry, including technical, civil society and local community parts of the institution. This was the ‘STDM concept’ coming into its own through the STDM software as ‘intellectual device.’

These are just a few of the deliberate and systematic change model activities that GLTN used to get parts of the global land industry to move its agenda and to develop a robust innovative pro poor GIS. After 2014 STDM’s use spread very quickly to other communities around the world through the GLTN partners who attended dedicated capacity development meetings and learned how to work together. It is being constantly evolved to fit the demands of partners for a range of different national and local contexts. Local communities are using it all over the world. It is being used for managing disaster relief after earth quakes; for giving informal settlement residents land certificates; for supporting people to return to their homes after conflict; by chiefs managing peri-urban extensions into their customary areas; and for monitoring the growth of land value in Congo, and even more (GLTN Evaluation Report: 2/2018; UN-Habitat/GLTN: 2018). STDM is now used by poor communities, and in some instances the local and central

governments that support them, for their own social land tenure types and to manage their land but at the same time it is also inter-operable with the national land administration systems.

The evidence presented demonstrates how STDM as an intellectual device was used to change parts of the global land industry. What is evidenced here is: 1) STDM was an ‘intellectual device’ that facilitated unpacking the wicked problems associated with extending cadastral information to the poor 2) champion academics and organizations were central to success 3) a chronology of moments where champions engaged in communicative interactions, discussion, debate, negotiations, learning and reflection, sharing knowledge and building capacity, and developed trust to move the agenda forward together 4) shared values and meaning leading to practical coalitions for the development of an innovative pro poor tool and its implementation 5) how the tool is used, also by NGOs and local communities, as an intellectual device to alter the power relations between the local level and the state 6) the use of the systematic methodology of the soft systems change model by the GLTN Secretariat to encourage and achieve change in parts of the global land industry.

## **5. CONCLUSION**

A number of conclusions can be drawn from the evidence about whether a soft systems approach is useful to change global institutions. The evidence shows that the soft systems approach used in operational research in organizations can be adapted and used as a change model by a multi-lateral organization linked to a global network; and that it can be adapted to change parts of a global institution such as the global land industry, where the linked multi-lateral and network implementing the change model are part of that global institution.

Conclusions can also be drawn about whether multi-laterals can catalyze institutional innovation using the soft systems approach from the evidence provided by the story of STDM’s work stream, which serves as a proxy for GLTN’s decade of annual work programs and over 20 work streams. The evidence shows that 1) Multilaterals can be important accelerators of change and innovation under certain conditions, such as when

linked to a global network 2) A multi-lateral organization and global network that are linked together can use soft system's change models to produce innovative pro poor tools 3) Soft systems approaches facilitate global programs linked to multilaterals and networks as applied here, to move away from ad hoc global interventions to a more systematic methodology that can be more effective and innovative. Some of these conclusions might have more general application across other sectors in international development, and other multi-laterals.

Evidence from the STDM story also demonstrates that, if pro poor technology is developed in a way that is not linked to a soft systems change model designed to change parts of the global land industry, – the industry might not run with the innovation. The pro poor GIS idea failed to get off the ground until it was linked to a soft systems approach.

To be effective pro poor innovation in the land industry should go beyond technical brilliance and innovation, to also address power relations. This is because land is about power. Pro poor technical tools need to be created in a way that their development becomes an 'intellectual device' used to get diverse partners and perspectives on board at multiple levels, from global to local. Partners, technical and local, taking 'ownership', was central to STDM's success. This is a lesson that can also be applied to the implementation of other innovative technical tools, including fit-for-purpose tools. In land a soft systems approach is needed rather than a hard systems 'fix the technical system approach' a lot of the time. Too much land administration work is done with a focus on the technical without taking into account the impact of power relations or the land governance aspects. The application of this soft systems approach, which has been proven to work for the land sector, could make land administration projects more effective as they attempt to scale for the majority of people, including the poor and women.

This paper described how global history moved from a focus in 1993 (and before) on conventional cadastral land information, to a pro poor GIS supported by the global land administration industry that covers a continuum of land rights and a range of spatial

identifiers and not just unique parcels. The different global level dialogues, debates and actions took place over decades around STDM resulted in major shifts in the social norms of the global land administration industry. Legitimate voices of the poor and people who had been previously marginalized by the global conventional land administration information system were brought into the conversation. The paper describes how STDM as a model, software and concept can, under certain conditions, strengthen local communities land rights and land management, be affordable for local communities and be used by them to input data rapidly. It is at the same time interoperable with conventional land administration systems. However, it should not be forgotten that this was possible because of the soft systems change model that was part of STDM's development when STDM was used as an intellectual device and not just a technical tool.

The change model and STDM, including its method of development, starting from 2007, became an 'intellectual device' that stirred other kinds of pro poor technical thinking in the global industry. Other pro poor GIS products were developed later, as well as the fit-for-purpose framework starting in 2014 (Enemark *et. al.*: 2014; UN-Habitat/GLTN: 2016), which included some of the champions associated with STDM.

Finally, STDM continues to be an intellectual device and the iterative change is ongoing. The dominant Land Administration Domain Model (LADM), developed for conventional land administration systems based on the cadastre, of which STDM is a sub-set, is under review by the international ISO standards body. It is also assessing whether LADM should instead be a sub-set of the STDM Model because STDM is broader and takes all tenures into account, whereas the LADM is focused on only a few tenure types (personal communication- Lemmen: 2018). This demonstrates that intellectual devices can take a life of their own and continue to catalyze innovation.

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