

How significant rural change happens

One implication of the overlap and inter-penetration of sub-systems and their particular control parameters is that a significant change in one of them has potential consequences for others and may set off a chain of knock-on effects which reverberate through the system in the form of second, third and subsequent order feedback effects. Negative feedback loops dampen the longer-run impact of the change while positive feedback loops increase it.

As time passes community systems evolve through myriad day-by-day actions and interactions in the five fields some confined within the community and some involving outsiders. Some of these are '*habitus* actions' and some are 'agency actions'. In most places at most times most inter/actions are routine and reproduce the system but as time passes new actions, events and/or patterns of collective behaviour may trigger a change process reverberating through the community system's sub-systems. The impact of these reverberations on the overall control parameter pattern and trajectory of the community depends on the magnitude of the changes generated from within or outside and the operation of feedback loops among the sub-systems/control parameters.

One source of potential change lies in internal or nearby material system processes: volcanos and earthquakes, unusual weather, people and livestock epidemics, new roads, urbanisation etc have secondary and subsequent knock-on effects on people and the operation of the functional social systems. Considering the people system population growth or decline over the years and changes in demographic structures, for example large youth and/or male migration, can also set off change processes in the social systems. Structures are also subject to transformation as a result of human agency, for example charismatic leadership and/or collective agency. Changes may also originate in any of the functional sub-systems or externally.

During periods when complex social systems do not really change any changes in control parameters and/or context are dealt with through a complex set of feedback processes that lead to the system reproducing itself in much the same way. For community systems on stable trajectories for some while there are a number of ways in which change may be triggered. One is a huge and sudden event or intervention from outside such as an imperial conquest, the imposition of military socialism, the provision of large pieces of land to investors, a pandemic, or the discovery of oil. At the other extreme myriad cumulative small changes in one or more of the control parameters over a long period may, in complexity social science language, push the community further 'from equilibrium' until it reaches a 'tipping point' and is ready to be sent in a new direction by a relatively small new event or intervention. In between these two extremes meso changes to one or more control parameters may lead to relatively rapid moves towards disequilibrium and change, for example green revolution changes combined with irrigation potential and increasing market demand or rapid urban expansion eating away at the borders of an adjacent rural *kebele*.

Thinking in this dynamic and non-linear way has led us to re-consider the concept of 'outcomes' and draw a distinction between *real outcomes*, whose identification in a longer-term historical process requires some theoretical work and argumentation, and *measured outcomes* which emerge from fieldwork data made using questions about what is happening 'now' or was happening five years ago whose answers may or may not coincide with a real outcome. In our study of the trajectories of whole communities over twenty years or so we have been faced with a stream of large numbers of real outcomes of different kinds, for example a bad harvest, a new kebele cabinet, a decline in the birth rate. This stream of inter-acting outcomes serially affected the community places, people and the five different fields of action, in a process through which, as time passed, 'outcomes' became contributing 'causes' in processes leading to later outcomes.

Most of our data refer to 1995, 2003 and 2013 giving us snapshots of outcomes in the control parameter areas in these three years. We have used these snapshots together with the patchy

reports we have of happenings in the years in between to create narratives of continuity and change between 1995 and 2013 and identify important causes of significant changes.

There are five real and very significant potential outcomes of interest in 2013 relating to the trajectories of the communities since 1995. *First* the community may have undergone some changes during the period leading up to the outcomes but the overall pattern and trajectory remained roughly the same (Outcome 1); *second* the overall pattern may have changed in some way but the trajectory remained roughly the same (Outcome 2); *third* the overall pattern had changed so much that it was clear that the direction of the community was bound to change but not clear in what way (Outcome 3); *fourth*, there had been a transformation to a new state with a new overall pattern and trajectory (Outcome 4); *fifth* the system has ceased to exist in any recognisable form (Outcome 5). We have used the control parameter framework to identify the larger consequences or outcomes for the Stage 3 community trajectories of the complex outcome-cause-outcome...etc streams they experienced between the early 1990s and 2015.

A comparison of dominating control parameter configurations in 1995 (3 communities), 2003 and 2013 allowed us to identify forces for change and continuity, including development interventions, in the Stage 3 communities and this analysis could be extended to all twenty WIDE communities (Table 1).

Table 1: Forces affecting control parameters 1991-2013

Control parameter areas	Potential parameters identified as important for the communities studied	Forces for continuity/change to control parameters in each community 1991-2013
1. Place	Terrain, settlement, climate, ecology	
	Connections with wider world	
2. People	Current human resources, aspirations, personal relationships	
3. Lives	Human re/pro/duction infrastructures & institutions	
4. Livelihoods	Farming system	
	Livelihood diversification	
	Economic institutions	
5. Social relations	Community fault-lines	
	Organised collective agency	
6. Cultural ideas	Customary cultural repertoire	
	Modern cultural repertoires	
7. Politics	Political settlement	
	Government-society relations	
	Opposition party organisation	
8. External aspects of intersecting functional systems	Economic – e.g. international coffee prices	
	Lives – e.g. contraceptive provision, food aid systems	
	Social – e.g. diasporas	
	Cultural imports –e.g. religious, political, modernisation ideologies	
	Political – e.g. EPRDF party	
9. Encompassing meso systems	State of meso system: economy, society, culture, politics	
10. Encompassing macro systems	State of country system: economy, society, culture, politics	