Is there Life after Tenure Mapping?

Peter Poole
Local Earth Observation

abstract

Tenure maps are made with the intent of producing legally-acceptable evidence of prior land use and occupancy to be used in national or global negotiations. Two strategies for organizing tenure mapping projects are in play. One builds local capacities in gathering traditional knowledge via interviews and sketch maps but out-sources the computerised aspects of map-making to official cartographic agencies. The other uses the community requirement for a tenure map as a context to initiate a graduated training process aimed at competence in and control of the entire mapping process. Community based teams learn to use GPS to produce geographically accurate field maps. A simple computer + printer set-up - has enabled some indigenous associations to set up their own mapping units. Official reaction varies from denial to criminalisation, but the most serious problem is sustainability: tenure maps are one-shot affairs; they get things going but cannot keep them going. What can community mapping teams do next and who will support it? To this point, community mapping has followed the development parable about teaching fishing instead off giving fish. But what if there are no fish?

Tenure Mapping

Amongst the many current manifestations of community mapping, the focus of this article is upon mapping projects, initiated and controlled by indigenous communities and their associations, in which the production of geographically accurate "tenure maps" forms context for a graduated process of capacity building – with the ultimate objective of enabling communities and associations to control the entire map-making process and to produce maps that rival official cartography and are accepted legal tender.

"Tenure mapping" refers to a distinct genre of cartography that seems to have its roots in the cartographic evidence assembled in the early 1970's by Inuit and Cree in Quebec in preparing to negotiate recognition of their ancestral territories. This method was soon adopted by the Inuit throughout the Canadian Arctic and is now a mandatory element of over 50 territorial negotiations under way in British Columbia. The distinctive attributes of tenure maps include: restoration of indigenous place names – signifying ownership; symbolization of hunting and gathering "biographies" – signifying utilization; placing some spiritual and ancient sites – as evidence of occupation since "time immemorial".

Localising map-making:

Although the data contained in the Inuit Land Use and Occupancy Project of 1976 were all contributed by Inuit, the final conversion of reams of sketch maps to a set of scaled and printed maps was done by external experts. Some contemporary tenure mapping projects also rely upon outside agencies to take care of the cartographic technicalities. However, a different approach, worked out in the course of tenure mapping projects in the Guiana Shield, has proved to precipitated significant after effects, beyond the production of a tenure map

In that approach, the tenure map-making process was used as context for on-the-job training. This was coupled to an effort to maximize the localization of mapmaking technology by for example selecting robust manual methods, such as tracing, over digitizing. Since accurate tenure maps can be produced without GIS, this was not an imperative: some used it; some didn't. With these objectives in view, a complementary two-phase map-making methodology evolved.

> In the first, *field data mapping***,** community-based teams gather the essential raw data, combining the results of interviews and sketch-mapping exercises with community members with direct field observations. These data are "geo-referenced" using global positioning system (GPS) units and placed upon geographically accurate "*no-name*" field maps, developed specifically for the project and showing only rivers, contours, latitude and longitude.
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> The second, complementary, *computerized map-making* phase uses various combinations of computers, scanners, printers, and either geographic information system (GIS) or graphics software. Some tenure-mapping projects have prompted the establishment of community mapping units within indigenous associations or support NGO's, where this equipment is housed, and shared.

Several of such mapping units have emerged from tenure mapping projects in the Guyana Shield. In Guyana, the Akawaio-Arecuna Upper Mazaruni tenure mapping project led to a mapping unit operated by the Amerindian Peoples Association. In Venezuela, the Ye'kuana-Sanema Caura River tenure mapping project led to the Kuyujani mapping unit. In Suriname, although there are no community or association mapping units yet, the teams trained in the Saramaka and Marowijne tenure mapping projects continue to train others in the first and more significant phase: the gathering of community and field data

Tangible and Intangible Results of Tenure Mapping

Within communities, this capacity-building approach to tenure mapping produces more than just a tenure map. The two most tangible results are: the nucleus of a traditional knowledge data base of the territory, community-based field mapping teams qualified to expand that data base. And there are intangible results that should not be underestimated. One is the capability to make maps as accurately as the official cartography. The other that the community and the mapping teams are the *authors* of the map – a stance that in some countries is likely to aggravate the mapping establishment: surveyors and officials.

Official, and surveying industry, reactions to community mapping are a testament to its effectiveness. In Malaysia, the Sarawak government criminalised community mapping after the Iban community of Rumah Nor used GPS mapping to win a case against Borneo Paper and Pulp. The Guyana Lands Directorate, although in possession of a new set of national topographic maps, elected to used a series of old and inaccurate maps to unilaterally delineate Amerindian territories. When the Amerindian Peoples Association mapping unit used the new topographic maps as the cartographic reference for identifying

these inaccuracies, the Directorate dismissed these, essentially their own maps, as inaccurate. In the Philippines, where community mapping and demarcation is very active, the surveying industry lobby persuaded the government to raise the bar for accuracy in demarcating ancestral domaines, already at a one metre accuracy, to "surveyor accuracy" of 2-3cm. This might back-fire. The first of the mapping support NGO's that had already qualified at the one metre bar has since acquired surveyor accuracy and is now positioned to substantially undercut the surveying industry.

Transition from Tenure Mapping to Stewardship

Tenure maps are usually produced with this specific intent: to act as legal evidence of prior occupation and resource use in negotiated increased security of tenure. *However, the maps – as well as the traditional knowledge and local information they contain also conservation have the potential to be put to other purposes, including biodiversity.*

This longer-term potential first becomes visible during the 4-6 weeks that it takes to train community-based mapping teams – in a community setting. A discourse weaves through the information-gathering process that reflects an intense local curiosity; about alternative ways to generate income from traditional resources about the motivations and agendas of those with an evident interest in their territory: conservationists, forestry and fisheries experts, most recently, traders in carbon sequestration and other environmental services.

Both community leaders and the mappers themselves are inspired by the realization that they have acquired skills that could be put to work immediately, in reinforcing traditional resource practice, exploring new options and most of all in dealing directly with those external groups, agencies, industry, conservationists, with an interest in their lands.

The local generation of map-making capacities provides a launch pad for community-based field-mapping teams to diversify their information-gathering skills into other environmental disciplines, forestry, fisheries, impact assessment. Traditional ecological knowledge, gathered while tenure mapping, qualifies as the nucleus of a unique local data base that in turn informs the development of a local stewardship agenda that challenges those of rival resource interest, whether form the resource industry or the conservation community; it levels the field and enables the communities to become players.

A Problem of Sustainability

However there are serious obstacles to communities putting these skills to work. The tendency in such projects is for the tenure map to be taken into distant and long-term negotiations, and for the human rights NGO's and donors that supported the mapping tenure mapping to focus on those negotiations – leaving the communities, once central to the map-making action, marginalized.

Some associations do go on to train other community teams in tenure mapping, but this is only sustainable as long as there are other territories to map. In Guyana, the Amerindian Peoples Association mapping unit has by now mapped almost all Amerindian Territories.

By their nature tenure negotiations minimize the possibility of active community participation in dealing with threats to the territory that instigated the tenure mapping in the first place. *Tenure mapping gets people going but cannot keep them going.*

Those communities that have tried to perpetuate the momentum generated by tenure mapping, by seeking support for resource and biodiversity conservation projects, are likely to encounter a funding gap. The human rights-oriented donors that support tenure mapping as part of a land rights campaign are often uncomfortable about supporting environmental conservation projects – especially when "technical". Environmental donors rarely support indigenous community projects, unless they are embedded in "community-based-conservation" projects managed by conservation NGO's. There are in fact large disparities between the funds granted to conservation and indigenous groups. Although 27% of the Amazon is regarded as indigenous territories, they receive for their projects less than 1% of the funds granted for large-scale conservation programmes.

There also seems to a double standard in allocating funding, whereby global NGO's receive amounts on the 100's of millions for conservation programmes, whereas various sorts of small-grants programmes are considered appropriate for indigenous communities projects. However welcome, such single-project funding works against sustainability. On the other hand, it should be said that, community projects are invariably small-scale and indigenous communities have yet to organize themselves to ask: to reach the point where they can present collective proposals for programmes of equivalent scope and duration.

If successful, a funding strategy aimed at rectifying such discrepancies is likely to make inroads into the funds that would otherwise be allocated to global conservation NGO's. Moreover, and particularly in the Amazon and Andes, indigenous proposals for stewardship are bound to apply to high biodiversity areas that have already been targeted as potential protected areas. This is perhaps another unintended effect of tenure mapping: that efforts address the sustainability problem will bring indigenous communities into contact with the global conservation organizations; a contact that could prove negative or positive. Although such contacts so often have a negative outcome, there is scope for positive collaboration, based upon a division of complementary responsibilities

Comparative Advantages of Local Communities in Conservation Practice.

Most of the "science" in science-based conservation is focused upon the biodiversity inventory, assessment and long-term monitoring that informs the planning and management of protected areas and endangered species. Much of this calls for specialized analysis that can only be conducted by universities and zoological and botanical gardens.

However, the gathering of the raw data needed by such institutes, as well as for on-the-ground conservation - the monitoring, management and enforcement of protected areas and species regimes - calls for different and more practical talents and capacities, and herein lies a theoretical comparative advantage for community-based groups that have learned to gather and map geographically accurate environmental data. These acquired capacities enable communities to capitalize upon their other advantages: signified by

intimate familiarity with their territory, as well as a large store of knowledge on the attributes of their traditional assets.

These information skills in turn qualify community mapping teams to assume a broad spectrum of responsibilities in on-the-ground conservation: border demarcation and monitoring; investigating and dealing with illegal hunting and trade; biodiversity inventory and change detection, area management. The localized capacity to collect geocoded local data is pivotal in stewardship, not only in the form of protected area and species conservation but also in dealing with other external resource interests. In that sense, there are ground for collaborative between scientists and communities.

Indigenous Rights and Conservation

So far, this paper has not taken into account the crucial issue of who owns and controls the resource: to what degree are indigenous land rights respected, and what degree of control over territorial resources does this respect signify? This omission is deliberate. A well-orchestrated and documented international effort, by indigenous groups and support NGO's, is already underway within the International Union for the Conservation of Nature (IUCN) to promote "rights-based conservation". The purpose here was to focus upon "competence-based conservation" – not as an alternative to securing land rights but as something that can be done whether tenure is secured or not. This concentrates the focus upon acquiring such competence, upon the practicalities and applications of community mapping, so as to identify areas of potential interaction between community mapping groups and geomatics experts, some examples of which are summarized below.

Localising Geomatic Technology for Community Applications

The theme linking the three examples summarized below is *localization* – of training, of technology and of access to global geographic data bases. However, although some indigenous mapping and environmental information groups have acquired quite sophisticated geomatic capacities, the general view is that the most widespread need at the present is for capacity-building in basic tenure and resource mapping. In many cases, this no longer requires trainers based in Europe of North America. In several countries indigenous and NGO mapping groups are fully capable of delivering community training in basic mapping.

Technical Linkages between Community Mapping Groups and Geomatics Experts.

<u>Basic Community Mapping Units</u>

The technology required for field mapping is relatively cheap and manageable in extreme conditions. The basic equipment required for computerized map-making is more sensitive requiring climate control and a steady energy supply. Absent utilities, the costs of mapping units has fallen from $15K to $6-8K over the last decade. Early basic mapping units comprised a computer, monitor, wide-bed printer, roll-up digitizing pad (or occasional access to a wide-bed scanner). Medium format (48cm) printers have proved an effective alternative, for a sixth of the cost of wide-bed plotters.

GPS + Palm Computers combinations

Cybertracker www.cybertracker.org was developed to enable San trackers to conduct wildlife censuses. There is no language, only images of animals as the legend. There is scope for adapting such legends for tenure mapping, thus enabling elders without the operational language to operate GPS-based field mapping and thus to directly participate in tenure mapping. This methodology could also be adapted to a wide range of resource inventory and monitoring applications. Although Cybertracker has been around for some years, and is being put to use elsewhere in Africa, its full potential for community mapping has not yet been realized.

Image Maps

Satellite-derived and rectified image maps, such as the NaturalVue 2000 <earthsat.com> global series (15m ground resolution) could well displace no-name maps as background for community mapping. This would also reduce the costs for basic mapping units by dispensing with the need for ownership or access wide-bed scanners and digitizing tables.

In community discourse, image maps are accessible and recognisable to most community members; not just the minority who have learned to read topographic maps. They are also far richer in landscape data than topographic maps and devoid of boundaries and names, colonial or otherwise. Image maps may also short-circuit those official policies designed to restrict or deny access to topographic maps, as well as making it difficult for officials to dismiss community maps based on such globally-recognised sources as “inaccurate”.