

Significance of Local Spatial Knowledge in Community Mapping and PGIS

M.K. McCall
CIGA, UNAM
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The key component in community mapping is the inclusion of local spatial knowledge. The essence of the method is not the tools for drawing maps, or using the GPS and GIS, but the enhanced possibilities for acquiring and sharing local spatial knowledge. The idea that local spatial knowledge is a vital resource – not only for the community themselves, but for various legitimate outsiders is made by number of researchers and practitioners. The purpose of the paper is to highlight what are the special unique characteristics of local spatial knowledge (LSK) and what might be different from standard scientific knowledge.

Local Knowledge and Scientific Knowledge

Distinctive Characteristics of Local Knowledge:

This includes spatial and a-spatial knowledge, and it covers both specifically indigenous knowledge and more general local knowledge. It is still often referred to as indigenous technical knowledge (ITK) following Warren (1991).

- **Localness** of the local knowledge – derivation from a close and long relationship between people and a specific land / resource area gives LSK & ITK its contextual focus.

- **Ownership** by the local community, although not homogeneously, integrates ITK and LSK with social priorities
- Taxonomies and **classification in ITK** are usually assumed to be more based on functionality / purposiveness than in western science, (see e.g. Barrera-Bassols and Zinck (2000) in relation to LSK of soil taxonomies).
- LSK and ITK are more **holistic** because of the **purposiveness** - thus an emphasis on holistic, combinatorial qualities of products or events. For instance, Western researchers sometimes interpret local land users' LSK and find a 'confusion between soil types and landscape types', but this is not unique to ethno-taxonomies. Although this holism is seen in opposition to reductionist epistemology, western science does not exclude holistic approaches.

Common to Local Knowledge & Scientific Knowledge:

- Openness & dynamism - Interest and ability to incorporate new knowledge from other (outside) sources, notwithstanding that they may contradict held beliefs, - as in

paradigm shifts in science. (Agrawal (1995); Brouwers 1998)

- Drive to experiment – to explore the possibilities of altering the underlying conditions,
- The imperative for taxonomies, as the building blocks of some kind of explanations.
- Identification of specific conditions under which more general ‘laws’ or explanations will hold, - i.e. the basis of deductive science, and the essential mechanism in eliciting expert knowledge.
- Distribution of knowledge amongst experts within community – e.g. ‘controlling’ ITK may be arrogated by male elders/ castes; similarly with closed scientific ‘academies’.
- Relation to culture – although LSK and ITK are often devalued as “culturally-embedded, mixing the sacred and profane, encoded in ritual, etc.”, there is a parallel in growth-driven, individualistic, and materialistic wealth-worshipping cultures as the context bed for ‘western’ scientific knowledge.

In brief, the strengths of local land users’ ITK and LSK are its contextual focus, its social integration, relevance to local priority problems, its predictive power under local conditions, its accumulated knowledge base, its dynamism and development and experimentation.

The relative weaknesses are: poorer predictiveness under changed conditions, dealing with new alternatives, e.g. new crops, deficiencies in information storage,

and transmission, communication with scientists, for instance, ITK is rarely quantitative, relying on nominal, sometimes ordinal, data inputs.

Definitions of Indigenous or Local Knowledge

Warren (1991) p.1 “IK is the local knowledge – knowledge that is unique to a given culture or society. IK contrasts with the international knowledge system generated by universities, research institutions and private firms. It is the basis for local-level decision-making in agriculture, health care, food preparation, education, natural resource management, and a host of other activities in rural communities. Such knowledge is passed down from generation to generation, in many societies by word of mouth. IK has value not only for the culture in which it evolves, but also for scientists and planners striving to improve conditions in rural localities.” McCall (1995)

- vernacular technical knowledge held by all local people
- specialized knowledge of certain skilled 'resource persons'
- controlling knowledge held by dominant groups in society
- social knowledge belonging to the group (village, clan, caste, tribe, etc.) qua community

Flavier et al. (1995) p. 479. “IK is the information base for a society, which facilitates communication and decision-making. Indigenous information systems are dynamic, and are continually influenced by internal creativity and experimentation as well as by contact with external systems.”

IIRR (1996) Recording and Using Indigenous Knowledge: A Manual Indigenous knowledge is the

knowledge that people in a given community have developed over time, and continue to develop. It is: Based on experience. Often tested over centuries of use. Adapted to local culture and environment. Dynamic and changing. Indigenous knowledge is not confined to tribal groups or the original inhabitants of an area. It is not confined to rural people. Any community possesses indigenous knowledge -- rural and urban, settled and nomadic, original inhabitants and migrants.

IKDM (July 1998) “Indigenous knowledge is the sum total of the knowledge and skills which people in a particular geographic area possess, and which enable them to get the most out of their natural environment. Most of this knowledge and these skills have been passed down from earlier generations, but individual men and women in each generation adapt and add to this body of knowledge in a constant adjustment to changing circumstance and environmental conditions. They in turn pass on the body of knowledge [...] to the next generation ...”

Cognitive Complexities of Local Spatial Knowledge (Lsk)

Much of local knowledge or ITK has spatial connotations; consider for instance the locations of indigenous resources and local resource management activities, environmental hazards, ecosystems relationships, or spatial correlations between local groups and resource units. This type of local knowledge can be termed local spatial knowledge. LSK “.. describes home and action space, is innate and sustained knowledge about the land, identifies issues of immediate significance, and encodes the

information about the environment in a language a region’s inhabitants understand.” (McCall 2003, after Duerden and Kuhn, 1996)

Content

However, the concept of LSK or ‘Local Spatial Knowledge’ [¹] is more complex and multi-levelled than that. It can be construed initially as three levels or dimensions of increasing complexity, ‘otherness’, and ‘distance’ from positivist scientific spatial knowledge:

1, Specific local spatial ‘technical’ knowledge, similar in characteristics and structure and purpose and cognition to ordinary ‘scientific’ knowledge, but which is known only (or in detail, primarily) to the local people, (e.g. local knowledge of soils, plants, water sources, and medicines). Similar to the concept of the spatial component of local people’s ITK about resources, events, activities, etc. - but of which the local spatial knowledge of instances is unknown to external professionals or sciences. This is ‘*conventional information*’. The least controversial application is for recording technical spatial knowledge of specific resources, or natural resource management systems, and similarly for hazards. Related to this is local spatial knowledge of physical phenomena that external scientists / professionals do not yet know, - e.g. in bio medicines, water sources, hazards and risks. This is ‘*new and unknown information*’

¹ Spatial knowledge –spatially distributed, topological and scalar knowledge.

from new sources, for making specific entitlements and rights claims to locations or resources which are conventionally mapped. Much indigenous technical knowledge of land uses, pest management, hunting and gathering, soil and water conservation, ethno-veterinary and ethno-medicine, etc. is similar to scientific knowledge. In many respects, it is better because it embodies years, if not generations, of specific practical knowledge which also has the benefits of being interactive, holistic and not reductionist; thus incorporating the real linkages. (Consider the alternatives of crop testing under controlled conditions on an experimental farm, and in an actual farming system with real people.) But even this prosaic spatial information may possess values that differ from official maps of that place.

The importance in natural resource management, e.g. in land and soil evaluation, of understanding and legitimising ITK has been recognised since at least the Rio Conference of 1992. (Warren et al. 1991; Ostberg & Reij 1996; World Bank 2000; Brodnig & Mayer-Schonberger 2000).

2. **Knowledge that actually represents different viewpoints,** different priorities, different interests and problems of different local actors, (that is, different from the dominant 'official' view, and likely different from other local actors). The knowledge of local actors' needs, interests, priorities and values includes local configurations of land and resource ownership with all the complexities of multiple user rights and

communal property regimes, etc., that are frequently misunderstood by external researchers. These different viewpoints can be reflected in '*counter maps*'. Counter maps were first applied to mapping gendered spaces, especially women's maps of resource access, ownership or control (Rocheleau et al. 1995; Peluso 1995). Children, landless, resource-poor, subordinate ethnic groups or castes also merit dedicated counter-maps.

They include, a fortiori, the special cases of knowledge of secret or sacred sites, historical sites, cultural artefacts, treasures, holy locations which local people frequently do not want to become universal knowledge, for several reasons – cultural heritage, physical preservation, and prevention of material theft.

3. **More specialised and restricted to particular peoples is the spiritual or mystical spatial knowledge** associated with cultural spaces, and particularly with specific landscapes or certain land resources. This indigenous knowledge is apparently qualitatively different from scientific knowledge. This indigenous or local knowledge is symbolic, metaphoric, and visionary, (mystical in 'scientific' terms), and especially related with the land and land features. [²] Knowledge of the landscape is the embodiment of the people's identity. (see Rundstrom's (1995)

² Nevertheless, there are often functional connections with 'scientific' explanations, as in traditional restrictions on using 'sacred land' which is also a protected forest or a dry season grazing reserve.

examples of hunting areas and water management from North American first peoples.)

This may be interpreted as cosmovisions (= cosmos, corpus & praxis) which commonly incorporate the origin or creation myths of cultures, therefore are more usually found among indigenous, natural resource-dependent, less-globalised peoples. Furthest away from conventional mapping, this level elides into cognitive maps which preserve a sacred, cultural and personal significance in terms of cosmological explanations, where geography (relative location and space) as well as landscape hold deep significance for individuals and communities. This deep knowledge frequently holds obligations of stewardship of the land, and, together with the specialised, location- and resource-specific, problem-oriented technical knowledge, provides the basis for local people's participation.

Downsides to local knowledge

- Uneven distribution and transmission of local knowledge and LSK - this is

partly because of the low population densities and scattered communities, but mainly due to the other reasons below.,

- Slow rates of knowledge generation - because of slow experimentation and measurement techniques.
- Large swathes of local knowledge, especially the technical ITK of NRM, agriculture, forestry, livestock management and health, etc. are being rendered obsolete by the rapid changes in natural conditions of climate, weather, ecosystems, etc. due to the accelerating impacts of global climate change.
- Unrecorded knowledge; - there are many limits on storage
- The local knowledge resource is lost when it is not utilised
- Control of local knowledge within rural societies, - there is unequal access to the knowledge based on social characteristics of: especially, age and gender, and also social function, economic and social class, religion, institutions, and political linkages, etc.

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