

Land Registration in the Context of Informal Settlements

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Summary

The paper is a kind of "back to basics" response to the scepticism which disciplines with a tradition for social science approaches tend to have towards land registration in context of informal settlements. The general argument is that specific efforts are needed to improve interdisciplinary discussion. The paper suggests three ways to improve the general understanding of the importance of land registration. Firstly, to emphasize that the form of formal land ownership is - in principle - subject to design, that formalisation does not mean any specific form of title. The example concerns whether or not land should serve as collateral in context of low income groups. Secondly, it may be possible to use theories from social science to explain the basic function of land registration especially in context of social change. As an example, land registration is explained in perspective of historical materialism. Thirdly, devising appropriate forms of tenure and corresponding administration for informal settlements may be seen as just another case of "appropriate technology". A conceptual framework for technology transfer is related to land registration in context of informal settlements.

Introduction

Informal settlements in developing countries define a fundamentally new environment for land registration. This presentation is concerned with only one aspect of the numerous new challenges, namely the need for interdisciplinary approach and dialogue. It is based on limited personal experience in Southern Africa.

The paper sees a difference in orientation where economists, sociologists and planners are inclined towards a social science approach and where surveyors, lawyers and conveyancers are oriented towards the administrative and practical issues. Furthermore, from the social science approaches there is a general scepticism towards land registration, that formalisation of tenure may jeopardize rather than improve tenure security, and that it is associated with free hold and access to mortgaging as well as cumbersome procedures. Bluntly: land registration has a reputation for being insensitive to the specific social context.

The paper suggests three ways to improve the general understanding of the importance of land registration. Firstly, to emphasize that the form of formal land ownership is - in principle - subject to design, that formalisation does not mean any specific form of title. The example concerns whether or not land should serve as collateral in context of low income groups. Secondly, it may be possible to use theories from social science to explain the basic function of land registration especially in context of social change. As an example, land registration is explained in perspective of historical materialism. Thirdly, devising appropriate forms of

tenure and corresponding administration for informal settlements may be seen as just another case of "appropriate technology". A conceptual framework for technology transfer is related to land registration in context of informal settlements. It may be useful in devising solutions and the technology perspective may provide a different way of explaining to a broader audience what land registration is all about.

I. Design of land tenure - land as collateral

Despite the latest acknowledgements in research and project experience with informal settlements everyday perception is - by and large - that formal title means free hold with access to mortgaging.

It is a fact that virtually all financing of major investments, especially land developments, are based on an arrangement where the investor borrows money against security in his land and future investment. The concept of collateral is fundamental in the common perception of formal title. Professionals as well as lay people have little doubt: Formal title opens the door to credit because the land can serve as security for loans. We shall challenge this implicit assumption.

The logic in mortgaging is founded on at least the following three assumptions:

(1) The arrangement presupposes that debtor has the money. Potential foreclosure serves to make him pay as agreed. Legal action is expensive and the logic in this structure of incentives is precisely that the ultimate sanction is only applied in exceptional cases.

(2) The arrangement presupposes that debtor has valuable assets. In the event of default legal action is taken so that creditor recovers his loss by taking over and selling the property that was surrendered as collateral. The proceeds from this must cover the outstanding claim as well as the cost of legal action otherwise the money lender has incurred a loss.

(3) The arrangement presupposes that the collateral is identified beyond any doubt and that it is freely transferable. It is routine for financial institutions to require a official freehold title because the survey on which that is based identifies the land and the title ensures that the applicant owns the land on which he will build and which he surrenders as security.

All three conditions must be met.

Mortgaging typically runs over 20 or 30 years. Financial institutions carefully examine the soundness of the investment which the loan is going to finance such as the feasibility of a productive investment or the quality of a residential house. They must be assured that the collateral retains its value throughout the mortgaging period. Furthermore, there is also an overall assessment of the credit worthiness and reliability of the applicant.

The incentives in conventional mortgaging arrangements are a chain of contingent

actions of increasing harshness where the ultimate sanction is foreclosure. The initial sanctions are efficient in most cases because the next ones are known to be enforced efficiently. Also the ultimate sanction - foreclosure - is known to be efficiently applied occasionally. The point is that enforcement is generally known to be effective and, therefore, normally not necessary and the ultimate sanction foreclosure is applied only in exceptional cases. This is possible because people involved in conventional mortgaging are at a high and regular income level and because their property which they have surrendered as collateral does possess a market value matching the debt. In short, conditions (1) and (2) are met.

Considering upgrading and formalisation of an informal settlement there is commonly - among residents, politicians, and donors - a temptation to associate the issuance of a formal title with access to loans. Residents would think of a loan for building a better house and a housing program would offer building loans on the condition that the applicant has a formal title to his plot. Such intuitive expectations reflect the common practice that land under formal tenure serves as collateral.

However, in low income groups in a developing country many will be formally jobless and very poor. Repayment of building loans is likely to compete with food, clothing, and school fees which will often represent more urgent needs. A low income household which engages in a loan arrangement based on its newly issued formal title commits itself to additional regular cash payments without corresponding increase in household income and is, therefore, likely to default. It now becomes crucial that condition (1) and (2) are not met.

The logic in conventional enforcement of repayment thereby ceases to work. In case of default the conventional sequence of contingent actions - which are essentially threats - can not prompt payment. There is only the ultimate sanction, foreclosure, which will not recover the outstanding claim nor the costs of legal action. Potential creditors will know this, namely that condition (1) and (2) are still not met. In other words, cadastral identification and legal remedies is not enough to create a collateral. The property must have considerable and permanent value to qualify as a collateral. In yet other words, if condition (2) and (3) are not met there is no collateral.

How come then that formalisation is world wide reported to facilitate access to credit? The explanation - we believe - is that security of credit is secured in other ways. The critical factor indicating whether or not the classical collateral is the cause of increased credit and performance of repayment is the incidence of foreclosure. If the classical system of incentives is at work there must - especially in the initial phase of institutionalizing it - be a few cases of foreclosure to teach the community and in particular to reassure potential creditors that the legal remedies are available and effective. So, we argue, to prove that it is land as collateral that explains an increase in credit provision the critical indicator is not performance of repayment but performance of foreclosure.

Our point is that improved security of credit - this is seen from the side of creditor - in the wake of a formalisation process derives from a variety of factors. Generally, the settlement may experience a higher degree of certainty as relations

to planning authorities are clarified and perhaps the power of warlords and various "illicit practices" have been limited. Specifically, formalisation may have established an address system where a person can be held responsible (McLaughlin and de Soto, 1994, p. 210). Community organisation may have created savings groups with internal mobilisation of repayment, etc.

Such background for increased security of credit based upon local community network, of careful screening of applicants, of local networks of mutual assistance, etc. is a fundamentally different concept of credit security than the classical collateral where plot and house is surrendered as security and potentially traded as a commodity in a market. It is a more socially complex concept and harder to define than just listing conditions 1 ^ 2 ^ 3.

Implications for tenure design

One underlying reason that the conventional system of incentives fails to work is "the cash flow problem" (Shoup, 1994, p. 239). The problem in the conventional mortgage arrangement is that it "ignores the ability to pay". Repeatedly, this has been pointed out by critics of formalisation. See Payne (1989, pp 53-54) for an overview. The new access to credit is not matched by a simultaneous increase in income and it does not replace existing expenses. This is one of the important reasons why land registration or formalisation is seen by many people as likely to de-stabilize de-facto security. There are, therefore, good reasons to be sceptical towards land registration: "Attempts at regulation may expose the poor to costs that they did not have to face before - at least as soon as they get a job or a house plot." (Jones and Ward, 1994, p. 17).

However, the implication is not necessarily that formalisation is undesirable. The implication might equally well be that forms of formal ownership must be devised in which land does not serve as collateral: *Land tenure for informal settlements must be tailored in such a way that land tenure relations and relations of service provision and payment are established independently and enforced independently.* In short, a consistent separation of cash and land tenure: (a) Formal relation of land tenure, and (b) formal relations concerning service provision, building loans, etc. Each category established and enforced independent of the other. As there is no security in either property or income among poor people any outstanding claim is in fact a loss.

The absence of landed property as collateral has implications for strategy on credit provision and cost recovery: *A reversed sequence principle should be applied: To give loans only after previous saving whether in deposit or in the form of savings behaviour.*

An interesting example of this construction is the "pre-paid concept" where people buy electricity with coded cards for meters installed in each house. The system reverses the sequence of certain steps in conventional service provision and the service-cost relation is separated from the land tenure relation. The system is widely used in South Africa and is being introduced in Namibia: " ... the use of pre-paid meters resolved budgetting and payment problems for both the supplier

and the consumer. For the supplier the task of billing and collection have been eliminated, reducing administrative costs, bad debts and reconnection. The pre-paid concept also helped reduce the impact of consumer boycotts. The concept was, and indeed remains, supplier and consumer friendly." (May, et. al., 1994, p. 134).

The absence of land as collateral opens the door to relaxed information requirements. A considerable part of the workload in the procedures for official registration concerns the unambiguous identification of the land rights. These procedures establish certainty about land rights by providing the information that unambiguously answers three basic questions: What rights? Who holds them? and Where? The classical levels of accuracy in cadastral surveying and generally very rigid and detailed character of these procedures serve to reassure creditors that the collateral exists, that it is unambiguously defined, and that the specific legal remedies are available through the courts.

If - for whole areas and or types of tenure - land is not designed to serve as collateral because security of credit is secured in other ways, then, information requirements may be relaxed and speedier and cheaper procedures for registration of land rights may be set up.

Summing up: The discussion of collateral illustrates how the form of land tenure can be seen as a dependent variable, as subject to design as the specific social context may require. Furthermore, the administrative procedures - especially the information requirements - depend in turn upon the character of the formal tenure. The difficulty for the general image of land registration is that the conventional registration procedures tend to be so thoroughly institutionalised that people perceive the issue the other way round: that existing legislation on cadastral surveying and registration determines what forms of tenure and type of procedure are possible. Sometimes alternatives are perceived as something almost informal.

It is important to emphasize that land registration means official identification and recognition of a land right and the backing of official sources of power - *in one form or the other*.

II. Land registration - from a perspective of historical materialism

It has been observed with respect to planning that ..."Most of the literature on town planning is descriptive; it reports what planners do and what kind of problems they try to solve. There are few cogent accounts written by town planners themselves why we need town planning and what its functions are within the political economy of development. Professions tend to assume that without a genuine need they would not be there and are not unduly bothered to justify their existence." (Luithlen, 1996, p. 2).

A similar statement could be made with respect to land registration. Especially in context of informal settlements is there a need to explain to a broader audience why we need land registration or formalisation and what its main functions are. The following gives an example where a conceptual framework from the social sciences - historical materialism - prepares the ground for a definition of the main functions

of land registration.

Historical materialism is Karl Marx's theory of history. It is a theory about how human society develops and it is "material" because it claims that the fundamental engine of history is the development of the material basis for human existence. In the light of recent historical developments many people would think that marxism is now proved wrong as a theory and has failed in practice. Besides, marxism is widely associated with the oppressive regimes which it has served to legitimize.

Marxism is not one theory, but a set of more or less related theories. (Cohen, 1988, 155). Historical materialism is a set of ideas which does not depend on the marxian economics. It is interesting from a perspective of land registration because it analyses property relations in context of social change. Cohen's exposition and defense of historical materialism (Cohen, 1978) develops the distinction between effective and legal rights, between powers and rights. This is useful to the understanding of what land registration is, especially concerning "formalisation" of "informal" rights. The exposition of the "grey zone" between rights and powers may also be useful to a broader understanding of land registration.

Concepts and principles

Historical materialism builds on three fundamental categories.

The productive forces are those facilities and devices which are used to productive effect in the process of production: means of production on the one hand and labour power on the other. Means of production are: tools, machinery, raw materials, premises, and so forth. Labour power includes not only the strength of producers, but also their skills. Land belongs to the category of productive forces which are essentially material and non-social. The development of the productive forces is largely a function of the development of productively useful science. (Cohen, 1978, p. 4).

"Production relations are relations of effective power over persons and productive forces not relations of legal ownership" (Ibid., p. 63.) Together, relations of production in a given society is said to constitute the economic structure of the society, which in the marxian jargon is also called - in relation to the superstructure - the basis, or base, or foundation. (Cohen, 1988, p.6).

The superstructure is what is commonly called institutions, notably the law and the state. (Cohen, 1978, p.216). Despite the many controversies among philosophers and historians there is a general consensus that property law belongs to the superstructure.

The relevance to informal settlements lies in the distinctions between the material, the de- facto and the de-jure levels of society.

Conceptual stringency in these distinctions reveal a "problem of legality", which also is apparent in ordinary language referring to informal settlements, namely that legal terms are used to describe non-legal relations. "The offending concept ...

(being) ... the concept of a right." (Ibid., p. 219).

Cohen resolves the problem by way of a consistent distinction between rights and powers. Firstly, ownership is displayed as a matter of enjoying rights. Then, for each ownership right there is a 'matching power'. "If x has power p and power p matches right r , we may say that, roughly speaking, the content of the power he has is the same as the content of right r , but we cannot infer that he also has right r . Possession of powers does not entail possession of the rights they match, nor does possession of rights entail possession of the powers matching them. Only possession of a *legitimate* power entails possession of the right it matches, and only possession of an *effective* right entails possession of its matching power. One might say that the power to \emptyset is what you have *in addition to* the right to \emptyset when your right to \emptyset is effective, and that the right to \emptyset is what you have *in addition to* the power to \emptyset when your power to \emptyset is legitimate." (Ibid., p. 219).

The reason for the common conceptual ambiguity is that..."Ordinary language lacks a developed apparatus for describing production relations in a *rechtsfrei* manner. It does have a rich conceptual system for describing property relations, strictly so called. Given the poverty of the vocabulary of power, and the structural analogies of powers and rights, it is convenient to use rights-denoting terms with a special sense, for the sake of describing powers." (Ibid. p 224).

These terms may be convenient to explain the main functions of land registration to people from the social sciences. For example, one might say that formalisation establishes consonance between effective rights and legitimate powers. Or land use control, including updating the land registers, etc. could be explained as ensuring that legitimate rights do in fact match effective powers.

Functional explanation

Historical materialism suggests an explanation of why and how property relations occur in human society.

"The heart of historical materialism is the thesis that there is, throughout history's course, a tendency towards growth of human productive power, and that forms of society (or economic structures) rise and fall when and because they enable and promote, or frustrate and impede, that growth. ... They flourish to the extent that they help to raise the level of development of the productive forces, and they decline when they no longer do so." (Cohen, 1988, p. 155).

Very simplified there is a two-stage determination: The productive forces tend to grow throughout history. New productive forces may require new material relations of production, which in turn require new social relations of production, new forms of authority, and distribution of rights." (Ibid., p. 166).

"The general explanatory thesis is that given property relations have the character they do because of the production relations property relations with that character support. Thus property relations change in order to facilitate, or ... to ratify, changes in production relations. The production relations change so that the

productive forces can be properly used and/or developed, and the property relations change to allow for or to stabilize the required changes in production relations. Sometimes,... the economic change precedes the legal; sometimes the reverse is true; and sometimes the changes proceed simultaneously. But in all cases, so historical materialism contends, the property relations change in the service of changes in production relations (which in turn reflect development of the productive forces).

Very simplified there can be said to be four main types:

I. At a certain time circumstances favour the formation of relations which are forbidden by the law. Nonetheless, the law is broken. At a later time the law is changed so that consonance between the effective relations of control and the institutions is restored.

II. As in I, conditions favour the formation of currently forbidden relations of control over resources. But in this case the legal system is too strong to allow relations in defiance of it. Accordingly, the law is sooner or later changed, so that the new relations can be established.

III. In this case new relations of control over resources form which violate no law, since no law forbids them. Fresh laws are nevertheless desirable to make the new relations more stable and they are consequently passed.

IV. Here certain forms of relations are legally allowed for but such relations are still only marginal in extent. If circumstances encourage more widespread development of such relations they can develop unimpeded by the law and even facilitated by it.

History is full of examples of all four types and commonly there is a multiple patterning: in a complex transition we find that some new powers are exercised illegally, while others await a change in the law. The same legal change typically both ratifies achieved powers and permits the formation of new ones." (Ibid., pp. 226 - 230).

This explanation is functional.

Functional explanations are of the form which most people are familiar with from Darwin's explanation of the evolutionary process as a series of adaptations: Survival until reproductive age is the selective criteria for the survival of species. Attributes with this effect thus become decisive. When environmental conditions change other attributes will determine survival and those species which happen (for example by way of random mutation) to be best fitted for the new conditions will then flourish. One of Cohen's examples of a functional explanation is this: "Birds have hollow bones because hollow bones facilitate flight". A functional explanation is one where "...something (birds having hollow bones ...) which has a certain effect (flight facilitation ...) is explained by the fact that it has that effect." (Cohen, 1988 p. 8).

Formalisation in perspective of historical materialism

Although this theory of history is aimed at the large epochs in history the following three observations illustrate that it may also be useful to explain issues of land registration in a dialogue with social science people.

1. The role of land registration: Historical materialism emphasises the role of property relations and thereby of land registration as ensuring social stability. In particular in a process of social change the formalisation of new property relations serve to confer stability on such new forms of de-facto "relations" the occurrence of which has been "favoured by circumstances". The main function of land registration in this perspective is simply to establish stabilizing property relations - as far as land based resources is concerned.

2. Change and law: The four cases of tension between powers and rights, between change and law may be useful to describe specific situations of informality and institutional reform. One example is the updating of cadastral legislation. It is widely experienced that survey laws are changed only under pressure. More often than not change of survey laws tends to follow the case I pattern where circumstances (including urbanisation, technological development, and resource constraints) favour methods which are currently forbidden by the law. At some stage regulations are amended to establish consonance between what is technically and organisationally possible and what is legally possible. But it is a slow and hard process. Sometimes the situation looks more like case II.

One might wonder - naively - whether it would not be possible to make survey laws follow the case IV pattern?

3. Functional selection: Historical materialism contends that property relations - and this must include also systems of land registration - are selected in a process of darwinistic selection of "the fittest". Informal settlements define an environment where the conventional land management paradigm from developed countries - which implicitly assumes complete information, abundance of financial and human resources and which is geared only to manage gradual change under conditions of social stability, etc. - seems to be among the dying species. Informal settlements need stabilizing institutional arrangements fit to survive in this harsh environment of extreme resource constraints, time constraints and social instability.

The process in the course of which more appropriate modes of land registration and related institutions are selected could be seen as one where systems will rise and fall when and because they enable and promote, or frustrate and impede the pursuance of social stability. Systems of land registration will accommodate themselves to the new material conditions. They flourish to the extent that they help to stabilise prevailing and developing relations of land use and general social stability, and they decline when they no longer do so. (rephrasing of Cohen, 1988, p. 155 quoted above).

Speculating on the possible features of these new forms of property relations and corresponding institutions able to survive in the environment of informal

settlements in developing countries: a far more varied and nuanced scope of tenure forms, and of agents and organisation especially community relations, a shift towards in-direct approaches, ability to cope with incomplete information, all possible use of new technology, ...

Perhaps we will see systems with hollow bones.

III. Land registration from a perspective of technology transfer

In the process of setting up realistic systems of land administration in informal settlements it may be instructive to see land registration in informal settlements from a perspective of technology (See for example Nichols, 1993, p. 105) and to draw on experience from the field of technology transfer.

A recurrent issue has been how to transfer already available techniques to entirely different social settings in developing countries. Most practical technology concerns manufacturing of goods in industry and agriculture. Land registration may at first sight appear as very different because its product is a formal right. Nonetheless, many of the problems in devising appropriate registration systems for informal settlements are similar to those which the technology people have worked with for many years.

The following reviews a conceptual framework for analysis of technology transfer. Originally, it grew out of a debate over appropriate technology in rural Tanzania in the 70s. It has since been further developed in the research programme Technology Development and Planning undertaken at University of Aalborg, Denmark.

The four-component definition of technology

The background was a debate on appropriate technology in small scale industries. Proponents of appropriate technology would typically assume that technologies can be developed and applied without a simultaneous change of prevailing conditions of production. Typically, this assumption would take the form of a "Technology must be appropriate to local conditions" - type of argument. The counter argument was that the technology in use - e.g. in rural Tanzania - already is developed as much as the local conditions allow, there is no room for any significant technological change, given these local conditions.

Another implicit assumption was " ... the view that what can be proven to be technically and economically feasible is also socio-politically feasible. If and when this view is maintained, it is possible automatically to make the step from "should be done" to "can be done"... Then one can ignore the socio-political implications, some would say the political economy, of technological choice." (Muller, 1980, p. 13).

Muller reasoned "... the way that technology is usually defined or perceived blocks for an understanding of these implications. I therefore define a conception of

technology which makes it inescapable to take a position on crucial aspects of the relationship between technological change and development in the rest of the society." (Ibid.). He proposed a simple concept of technology consisting of four basic categories and one principle:

Technique: This is the hard ware component. It is the man-machine-materials combination.

Knowledge: This is the soft ware component. It is commonly referred to as know-how.

Organisation: This concept embraces by what means the knowledge and the technique are brought together

Product: This concept refers to the result of production process. It is logically listed as the last component because it carries with it the other three components of technology which produced it.

The principle in the model is a "interrelation principle", namely that change in one component causes changes in all the others and the components can be considered in any order.

"Consequently when we talk about, or - more importantly - when we analyse the choice, transfer, change or development of technology this involves analysing the choice, transfer, change or development of knowledge, organisation, technique and product. Of course we may want to study only one of these components ... But the moment we leave the purely descriptive area and enter into something resembling analysis or prescriptions of how to change even tiny aspects of the components in question, it is absolutely indispensable to refer to the implications of such change for all the other three components." (Ibid., p. 25).

Relating the four technology concepts to formalisation of land rights

Choice of practical method of formalisation is made in a situation characterised by two general features: On the one hand there are the unpredictable circumstances in the informal settlements which have each their specific history and which are often undergoing rapid change. On the other hand there is now a wide scope of technological choice. We shall relate the four technology concepts to formalisation by listing a few broad issues under each heading.

Product: Product specification would include clarification in land tenure policy. Iterative strategy with initial block zoning and group titles? land as collateral? Indirect ways of improving tenure security?

Organisation: Identification of actors and clarification of their respective roles in the formalisation process. Esp. the roles of community based organisations in

decision taking and in subsequent technical and administrative functions. The roles of private developers, surveyors, engineers and planners in relation to local and central government and in relation to settlement organisations.

Technique: The digital technology together with the classical methods offer a wide scope of technical options in identification of land rights and related planning and administration: GPS, photogrammetry, possibility of step-wise extension of data bases, etc. Iterative strategies and incomplete information. Design of userfriendly soft ware for local administration. Envisaged techniques must be made available legally by appropriate amendment of survey laws and perhaps other legislation. The development of land law.

Knowledge: Knowledge requirements of envisaged technique and forms of organisation must be matched with knowledge and skill level of involved actors, esp. community representatives and technicians in new local administrations. Knowledge of the principles on which regulation of land use and dispute resolution is going to be based. Education, on-the-job training and supervision. Continued professional development.

Sketchy examples illustrate how "givens" or decisions in one category have consequences into the other three: If land is not envisaged as collateral then a mid-point cadastre (Jackson, 1995) might be considered, greatly reducing the information load on the formalisation procedure. If community representatives assume responsibilities in allocation, updating and re-planning within their area local government is relieved of work load but specific supervision in-puts from private surveyors and planners may be required. If photogrammetry is used to survey topography, mid-points, bench marks, etc. then a specific organisational input in pre-marking may be needed. If dispute resolution is needed (Haldrup, 1995) the process of establishing the pre-existing rules must be initiated.

Carrier of technology - the six conditions

The problems with bringing about technological change in developing countries have led to a specific focus on the involved actors. Technological change is brought about by "somebody". Such actors that take the lead and implement innovation are referred to as "carriers of technology". It is found that six conditions must be met before an actor becomes a social carrier of technology and technological innovation effectively takes place: "...

1. The social entity must have an *interest* in acquiring and implementing the technology or one its elements (typically: The technique).
2. The social entity must be sufficiently *organized* to formulate and decide which kind of technology will be able to solve its problem.
3. The social entity must have the social *power* enough to materialize its interests, both in relation to economic resources and social and political influence.
4. The social entity must have *information* about the existence of the technologies

(or elements of them) which would be relevant for its problem.

5. The social entity must have *access* to the wanted technology. Only seldom the potential social carrier is also the one who controls the first phases of innovation.

6. Finally the social entity must *know how to handle* the acquired technology or it must have access to knowledge about that. (Based on Edquist and Edquist, 1979:31ff)." (Lorentzen, 1988, p. 31).

Applying these six conditions to innovation within the formalisation context, the land surveyors - as a profession - could be considered potential carriers of new registration technology: They have a key role in the cadastral surveying, they are in private practice as well as in the administration, their professional association advice governments on cadastral reform, they are crucial in implementation:

1. Do the land surveyors have an *interest* in innovating formalisation methods?
2. Are they sufficiently *organised* to formulate proposals?
3. Do they have sufficient *power* and political influence?
4. Do land surveyors have *information* about relevant technologies?
5. Do they have *access* ..., that is, are they in a position to control the first phases of innovation?
6. Do land surveyors *know how to handle* alternative ways of land registration?

We shall not attempt to answer these questions but only show how the issue might be approached from a perspective of technological innovation.

For some the four concepts and the six conditions may be useful as just a check list in project formulation. Others might want to develop the approach in more detail to the land registration context. At Aalborg University, Denmark the four technology concepts approach is part of the theory for students choosing the so called international year where they relate their specific discipline to the international context. Finally, the technology perspective may provide a different way of explaining to a broader audience what land registration is about.

Conclusion

The paper is a kind of "back to basics" response to the scepticism which disciplines with a tradition for social science approaches tend to have towards land registration in context of informal settlements. The paper suggests three issues that may contribute to overcome the tendency among professionals as well as lay people intuitively to associate land registration narrowly with conventional private property and mortgaging and cumbersome procedures - insensitive to the specific social context.

Firstly, it needs to be emphasized in interdisciplinary dialogue that the essence of formalisation is the official recognition and the subsequent backing by official sources of power - not any particular form of tenure. Tenure form is designed as circumstances may require. For example, in informal settlements there may be a case for designing land tenure which does not rely on land as collateral. In turn, registration requirements depend on the specific type of tenure. For example, if land is not envisaged as collateral then information requirements may be relaxed and procedures simplified. The object of registration may then change from the parcel to the address.

Secondly, seeing tenure as a dependent variable at the level of the specific settlement is in line with an overall perception of social change which sees property relations as fundamentally being a dependent category which changes to accommodate other changes in society. Historical materialism is one such image of history that may be useful to put land registration in an overall context of social change. Its relevance to informal settlements is its fundamental distinction between the material, the de-facto and the de-jure levels of society. Despite its most general character aimed at the large epochs in human history the categories, refined by Cohen, distinguishing between powers and rights and the four cases of tensions between "change" and "law" contribute with conceptual stringency and they put "formalisation" in a historical perspective.

Thirdly, the technology perspective concerns the practical devising of realistic land administration systems for informal settlements. The paper suggests that inspiration can be drawn from the field of technology transfer. One such example is the approach which defines technology in four concepts. The approach sees the product as part of the technology which is in line with seeing tenure as subject to design. "Product specification" including clarification in tenure policy then is addressed in a systematic manner and perhaps less ideological atmosphere. The model accommodates the correlation between the four categories thereby emphasizing aspects of flexibility. The four concept approach is "actor oriented" it ensures systematic attention to the actors. This is important to understand the specific character of the informal settlement and also in devising practical solutions because the social actors would typically also be involved in the practical operations.

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