Up-to-dateness in Land Administration: Setting the Record Straight

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Key words: land administration, up-to-dateness, synthesis model, epoch of time

SUMMARY

A contemporary problem in the realm of cadastres, land registration, and land administration centers upon up-to-dateness. Conventional theories argue that in order to be effective, land information systems must be up-to-date. However, what is exactly meant by 'up-to-date' is often left ill-defined. The authors argue that this impedes the design of land administration system establishment and maintenance, as well as communication in land administration. This paper aims to organize and analyze various understandings on up-to-dateness in land administration. To achieve this aim, literature synthesis is undertaken. Literatures are selected through prescribed channels: text books, journal articles, conference proceedings and publications of authorative organizations. The searching terms involve 'up-to-date', 'updating', 'upgrading', 'renewal', 'dynamism', 'changes', 'maintenance' and 'evolvement'. Implementing this synthesis, the philosophy of embedding LMP into EIM is underpinned. In the end, the synthesis model is established to present the whole picture of up-to-dateness in land administration. It is found that up-to-dateness occurs in any component of land administration (based on LMP) with certain epochs of time (based EIM): longer term changes to sustainable development and country context (10^2-10^3 years); long term changes to land policies (10-10^2 years); medium term changes to land administration systems (1-10 years); and far more regular changes to land information (continuous). This paper is the first attempt to synthesize and clarify the various explanations of up-to-dateness in land administration systematically. The findings prompt the initiation of viewing up-to-dateness in land administration from the temporal perspective.

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1. INTRODUCTION

Up-to-dateness is a contemporary problem in the realm of cadastres, land registration, and land administration. It is argued that up-to-dateness is closely relating to or determines the efficacy of land administration functions (Effenberg,Williamson, 1996; Enemark, 1998; Henssen, 2002; Hesse,Benwell et al., 1990; Karnes, 2004; Larsson, 1991; Zevenbergen, 2009). However what is exactly meant by up-to-dateness is often left ill-explained in land administration science. In this context, it is necessary to make a clarification. Whilst it may appear a trivial point, the implications are important.

Normally, up-to-dateness in land administration is understood as occurring between land information system establishment and maintenance phases. Donors who fund land-related projects in developing countries tend to be project-oriented. The establishment of a land information system fits comfortably with this management approach: a project team can be created and managed until completion with a fixed amount of resources. System maintenance is less amenable: ongoing resources, impetus and skills are required. For these reasons, many establishment efforts are an initial success, yet many attempts fail in the end as they do not adequately consider the issues of up-to-dateness after the project is accomplished. In this view, it is believed that understanding up-to-dateness in land administration science will contribute to fit-for-purpose maintenance regimes design for land information system.

In land administration theories, up-to-dateness is interpreted from sporadic perspectives with various terms, involving 'up-to-date' and 'updating' (Scheu,Effenberg et al., 2000; Williamson,Enemark et al., 2009), 'upgrading' (Scheu,Effenberg et al., 2000), 'renewal' (Henssen, 2002), 'dynamism' (van der Molen, 2002; Zevenbergen, 2002), 'change' (Ding, 2003; Mattsson, 1999; Williamson, 2006; Williamson,Ting, 2001), 'maintenance' (Dale,McLaughlin, 1999; Scheu,Effenberg et al., 2000), and 'evolvement' (Kaufmann, 1999; Ting, L.,Williamson, I., 1999; Ting,Williamson et al., 1999; Williamson,Grant, 1999; Williamson,Wallace et al., 2006). The preliminary synthesis is made by (Williamson,Enemark et al., 2009) to organize up-to-date or dynamic components of land administration. Yet there still lacks a systematic synthesis of these diversified understandings on up-to-dateness. As such, 'up-to-dateness' needs re-evaluation as the first step. This paper aims to re-evaluate 'up-to-dateness' through literature synthesis. The subsequent sections of this paper are methodology, result, discussion and conclusion.

2. METHODOLOGY

A research synthesis is for analyzing and organizing literatures (Hart, 1999). Based on the

problem formulated, the qualitative study involved literature selection, analysis, and presentation of results (i.e., synthesis modeling) (Cooper, 1998). This methodology was adopted to identify, compare and re-evaluate various interpretations of up-to-dateness among land administration theories.

The synthesis philosophy underpinning in this study is embedding Land Management Paradigm (LMP) into the Model of Economics of Institutions (EIM). LMP and EIM models were respectively developed by (Enemark, 2005) and (Williamson, 1998). LMP is the latest typical model representing the land administration domain. LMP provides the basis for classifications of land administration domain. EIM is the classical model of institutional changes. EIM provides temporal perspective to view interpretations of up-to-dateness in land administration.

Based on this philosophy, the synthesis process was implemented. Firstly, the selection process used prescribed channels - textbooks, journals, conference proceedings and publications of authorized organizations. Search terms included: updating, upgrading, dynamism, changes, renewal, maintenance and evolvement. These terms were considered to be covered by up-to-dateness in land administration. Then, categorization and analysis ensued. In the end, a synthesis model was established to present a holistic view of up-to-dateness in land administration.

3. RESULT

This section attempts to synthesize all the existing interpretations of up-to-dateness in land administration. As discussed, LMP was the chosen model to classify these various interpretations. LMP is shown as below.

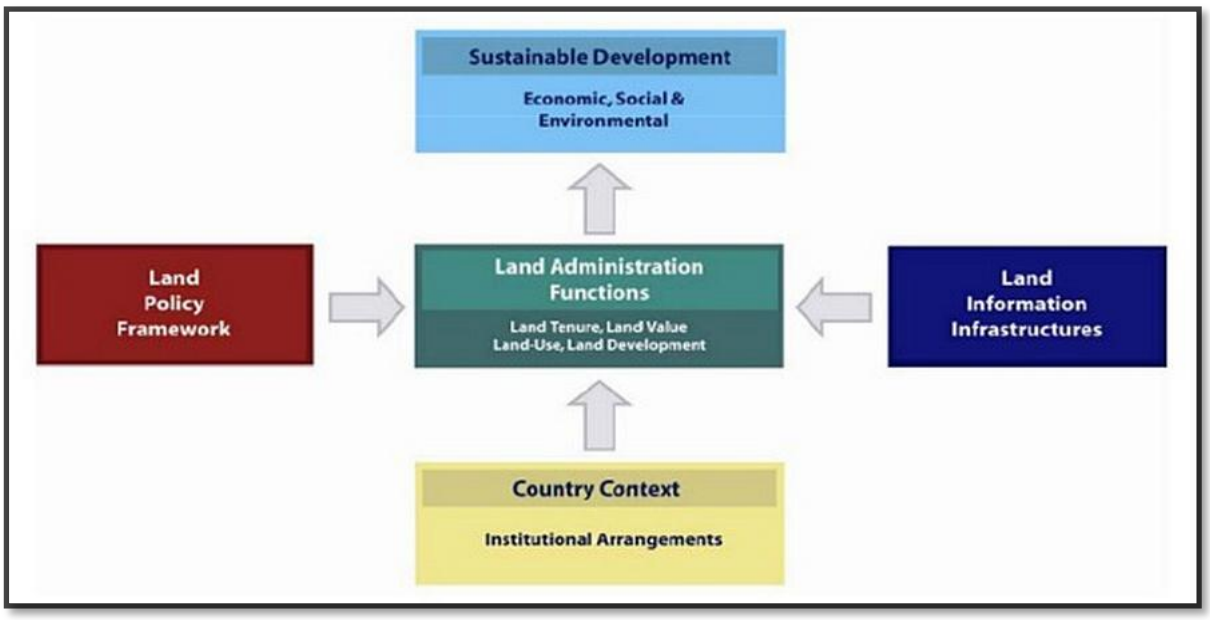

Figure 1: Land management paradigm (Enemark, 2005)

Seen from Figure 1, LMP consists of five components: sustainable development, land policy, land administration functions, land information infrastructures and country context. A wide range of literatures reveal that up-to-dateness occurs in any component of LMP. Up-to-dateness of each component could be equally understood as its dynamism with temporality. This temporality can be appropriately analyzed through EIM, shown in Figure 2.

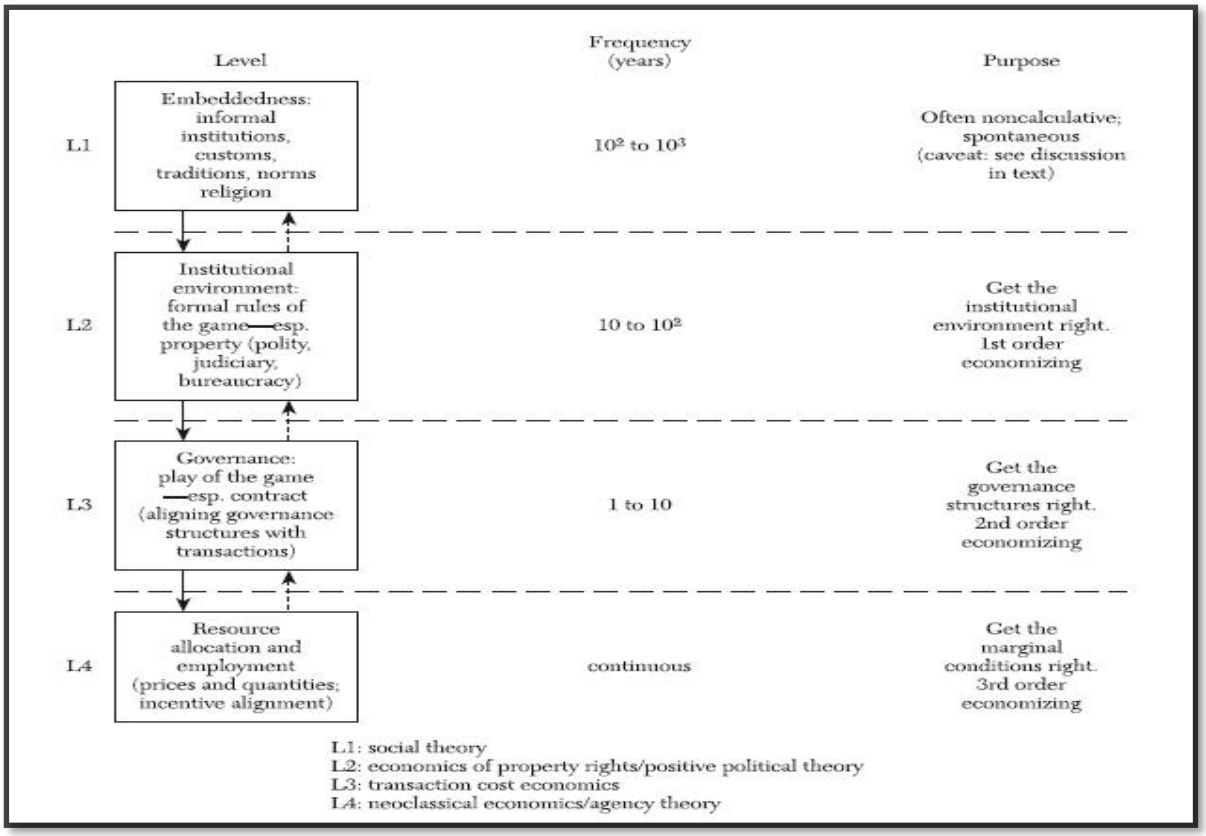

Figure 2: Economics of institutions (Williamson, 1998)

This well-known EIM suggests that institutional changes occur in four hierarchical epochs of time in the unit of year. They are successively 10^2-10^3 (social theory), 10-10^2 (economics of property rights/positive political theory), 1-10 (transaction cost economics) and continuous (neoclassical economics/agency theory). This temporal hierarchy is applied to analyze up-to-dateness in land administration.

Prior to holistic synthesis, Dynamic Land Administration System (DLAS) is worth mentioning, shown in Table 1.

Table 1: Dynamic land administration system (Williamson,Enemark et al., 2009)

Dimension One	Evolution of human-to-land relationships.
Dimension Two	Evolving ICT and globalization, and their effect on the design and operation of LAS.
Dimension Three	The dynamic nature of the information within LAS, such as changes in ownership, valuation, land use, and the land parcel through subdivision.
Dimension Four	Changes in the use of land information.

This table shows land administration dynamism. This could be regarded as the latest preliminary synthesis of up-to-dateness in land administration. However, we still argue a more holistic synthesis, based on pre-existing theories. That is, to provide a more complete view of up-to-dateness in land administration. Accordingly, the following starts this synthesis through the lens of embedding LMP into EIM.

3.1 Country context

Country context refers to institutional arrangements (Enemark,Williamson et al., 2005). Country context, namely institutions, needs up-to-dateness. Institutions are humanly-devised constraints for shaping human interaction, more broadly, the rules of societal rules for structuring incentives of human exchange in political, social, and economic (North, 1990).

Institutions should constantly evolve themselves due to the requirements of the community for becoming open, transparent and effective (Williamson,Grant, 1999), for better supporting land policies and good governance implementation (Enemark,Williamson et al., 2005) and as the key of understanding historical change due to shaping the way of societal evolvement (North, 1990). Institutions change incrementally, rather than discontinuously as a consequence of changes in rules, constraints and enforcement (North, 1990). Institutional changes or evolvement presents the significance of country context up-to-dateness.

Country context up-to-dateness is found concerning temporality. This temporality represents in certain epoch of time, fitting into level 1 (10^2-10^3 years) of EIM. The following two diagrams can make clear demonstration.

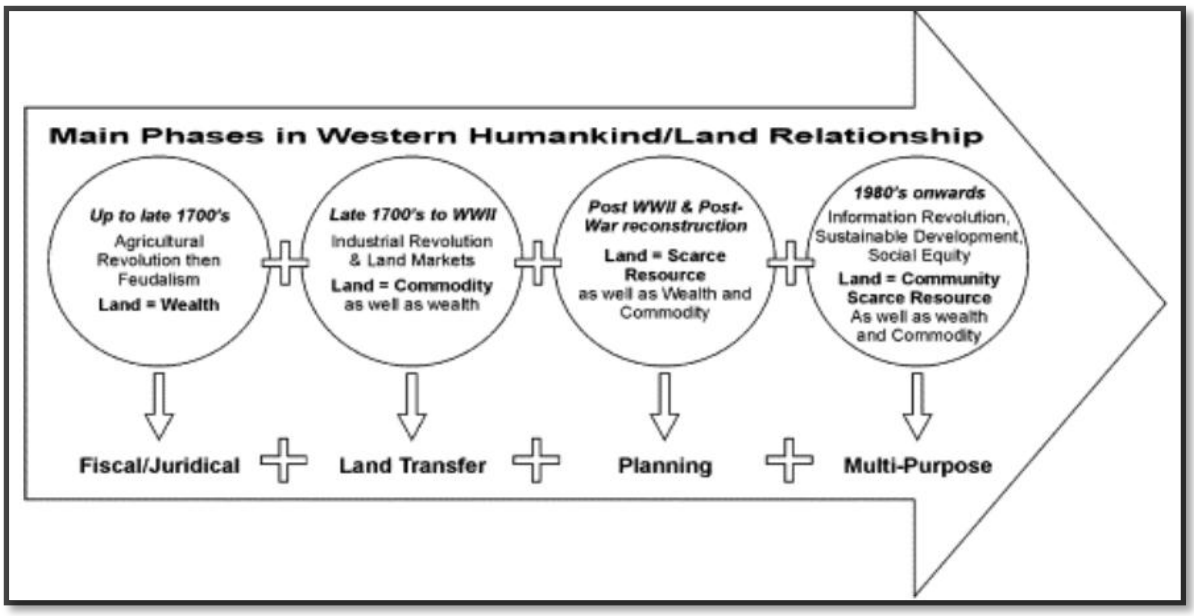

Figure 3: Main phases in the humankind/land relationship and cadastral evolution (Ting, L.,Williamson, I., 1999; Ting,Williamson et al., 1999)

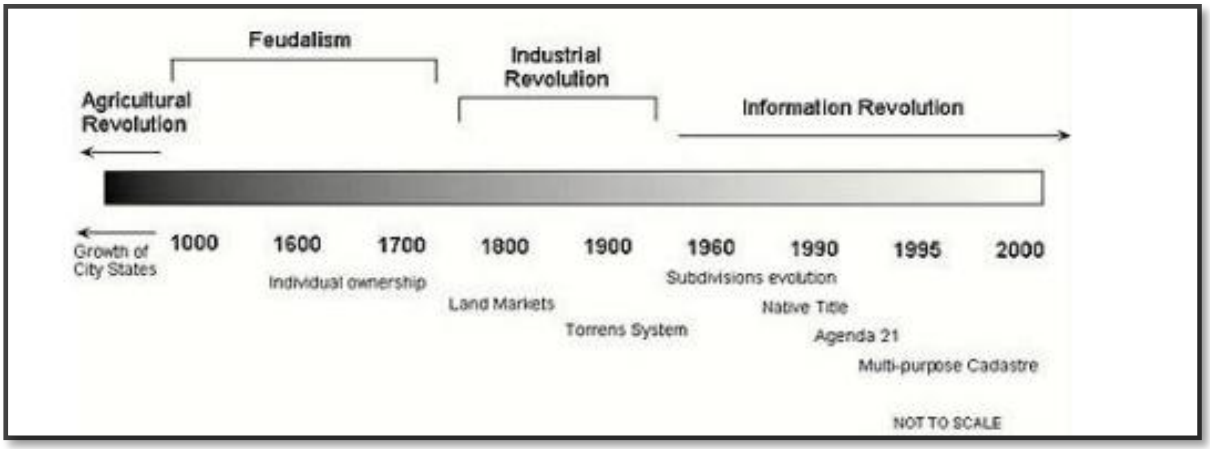

Figure 4: The evolution of modern cadastres (Williamson, 2001a)

Seen from figure 3, a specific focus on land administration evolvement through western context specifically reflects into: 1) attitudes towards land shift: from wealth, commodity, and scarce resource to scarce community resource; 2) cadastral functions shift: from record, fiscal, land market, planning to multi-purpose. All these occurred fundamentally as a result from country context changes. All these evolvements match the epochs of time from up to late 1700's, late 1700's to WW II, Post WW II & Post-War reconstruction, to 1980's onwards. In Figure 2, epoch of time (10^2-10^3 years) could be preliminarily shown.

Figure 4 shows this epoch of time (10^2-10^3 years) more clearly and accurately: 1) changes from agricultural revolution to feudalism, industrial revolution to information revolution, in

epoch of time 700 years, 100 years and more than 100 years; 2) changes from growth of city states, to individual ownership, land markets, Torrens system, subdivision evolution, native title, agenda 21 and multi-purpose cadastres, in epoch of time of around 100 years. As such, epoch of time for up-to-dateness of country context fits into Level 1 of EIM (10^2-10^3 years).

3.2 Sustainable development

Sustainable development is deemed as the current overarching aim of land administration. This overarching aim of land administration is up-to-date as well. The initial aim of land administration originated from its initial establishment by Napoleon in France - land taxation (Williamson, 1983), shifted to land market (land as commodity) (Ting, L.,Williamson, I., 1999; Ting,Williamson et al., 1999), to multi-purpose service (Dale,McLaughlin, 1988; Dueker,Kjerne, 1989; Ting, L.,Williamson, I. P., 1999), to current sustainable development (Bennett,Wallace et al., 2008a; Enemark, 2001, 2007, 2009; van der Molen, 2001; Williamson, 2001b; Williamson,Enemark et al., 2009, 2010). This overarching aim is argued not static, and will continuously changing in response to social evolvement.

The overarching aim underpins modern land administration design. Land administration design closely depends on the societal requirements in the country context. As such, epoch of time of this evolvement is argued to keep the same pace of country context. That is, its epoch of time is believed to fit into level 1 (10^2-10^3 years) of EIM.

3.3 Land policy

Land policy needs updating. Three cases can show the necessity of land policy up-to-dateness: 'land reform policy' published in world bank in 1975 should be updated considering changes of requirements of title types and land market efficiency after decades of years (Deinlnger,Binswanger, 1999); China's land policy since 1978 has been changed dramatically in response to land allocation systems adjustment (Ding, 2003); Chinese cultivated land use changes between 1999 and 2007 resulted in policy changes and evolving (Song,Ouyang et al., 2012). These cases could also imply that the epoch of time for land policy up-to-dateness is decades of time.

Land legislation, in this paper, is considered involving into land policy. Because setting or refining of legal rules is the subsequent procedure to land policy updating. Similarly, land legislation needs up-to-dateness (Van der Molen,Österberg, 1999). This up-to-dateness could be presented in 'reforming' and 'strengthening': land legislation needs reforming to become modern, standardized and simple through simplifying title nature (reduce to limit tenure types), enabling compulsory registration, introducing state guarantees in case of risks or integrating land-related laws into one systematic legislation (Dale,McLaughlin, 1999); legal principles should be strengthened for protecting land ownership and creating effective land markets; surging regulatory requirements drive the move to legalize almost all aspects of human behavior, especially for land administration issues (Bennett,Wallace et al., 2008b; Wallace,Williamson, 2006). Legal updating is closely relating to or directly determined by

land policy. As such, various channels to achieve legal updating is actually demonstrating the necessity of land policy updating.

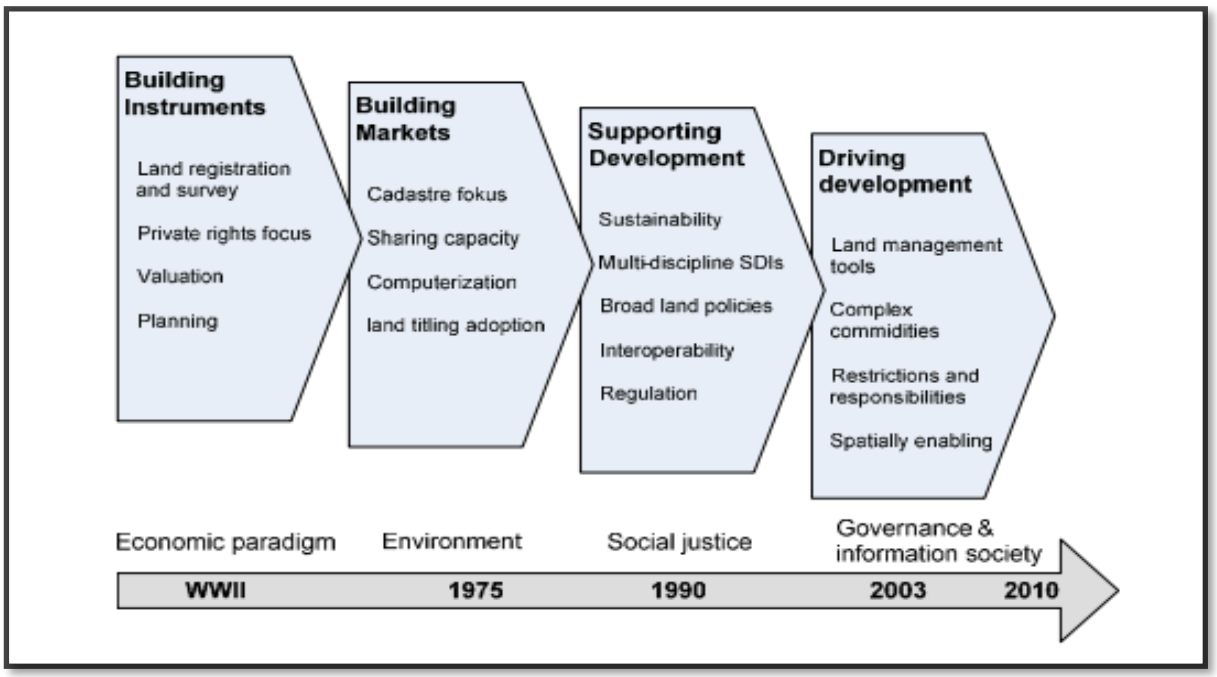

Figure 5: The policy focus on land administration has changed through time (Williamson, 2006)

Land policy up-to-dateness fits into level 2 (10-10^2 year) of EIM. From figure 5, we can see that land policy evolves keeping pace with economic, environmental, social, governmental and informatics development, for purposes of building instruments, building markets, supporting development and driving development. The temporal span is respectively from the Second World War, the year of 1975, the year of 1990, the year of 2003 to the year of 2010. As such, figure 5 provides a clear picture and proves that land policy evolvement is in 10-10^2 years.

3.4 Land administration functions

Land administration systems need updating inevitably and essentially for efficiency improvement or at least avoiding degradation due to dynamic human-to-land relationship (Smith, 1990; Williamson, 1990). This up-to-dateness can be presented in 'dynamic', 'evolvement' and 'reform' aspects: land administration systems contain dynamic component, reflecting in land tenure, land use and land value (van der Molen, 2002); due to land administration system evolvement, a modern framework is needed in response to the demands of sustainable development (Kaufmann, 1999); land administration system reform could be standardizing procedures, minimizing duplication, introducing risk management, developing 'one-stop shopping' facilities for the provision of public services or decentralizing selected operations to local community (Dale,McLaughlin, 1999). All these demonstrate the necessity

of updating land administration systems through different channels for achieving sustainable development.

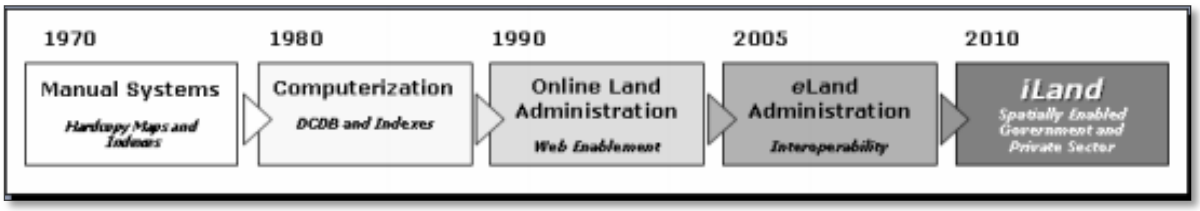

Figure 6: Technical evolution of land administration (Williamson,Wallace et al., 2006)

Up-to-dateness of land administration systems fit into the Level 3 (1-10 year) of EIM, which can be shown in figure 6. Driven by technological development, land administration systems shift from paper records (1970), computerized systems (1980), online land administration (1990), e-land administration (2005) to iLand (2010). The epoch of time for land administration matches 1-10 years. It is believed that this epoch of time is also changing due to dynamic technological, political and economic development.

3.5 Land information infrastructures

Land information infrastructures, in this paper, refer to land information. A lot of scholars emphasized the necessity of land information: land information should be up-to-date due to inheritance, prescription, erosion or accretion along rivers, and calamities (Henssen, 2002); land information accuracy should be upgraded through the process of updating to achieve land administration maintenance (Scheu,Effenberg et al., 2000); cadastres are expected to be updated and accessed in real-time because of political, environmental, technological, social-economic drivers (Bennett,Rajabifard et al., 2010; Tambuwala,Bennett et al., 2010); land information up-to-dateness can be elaborated through the Dynamic Model of Land Registration System (DMLRS) in Figure 7 and three parameters for land information changes (transfer of property rights, property formation and alteration of land use) introduced by (Mattsson, 1999) .

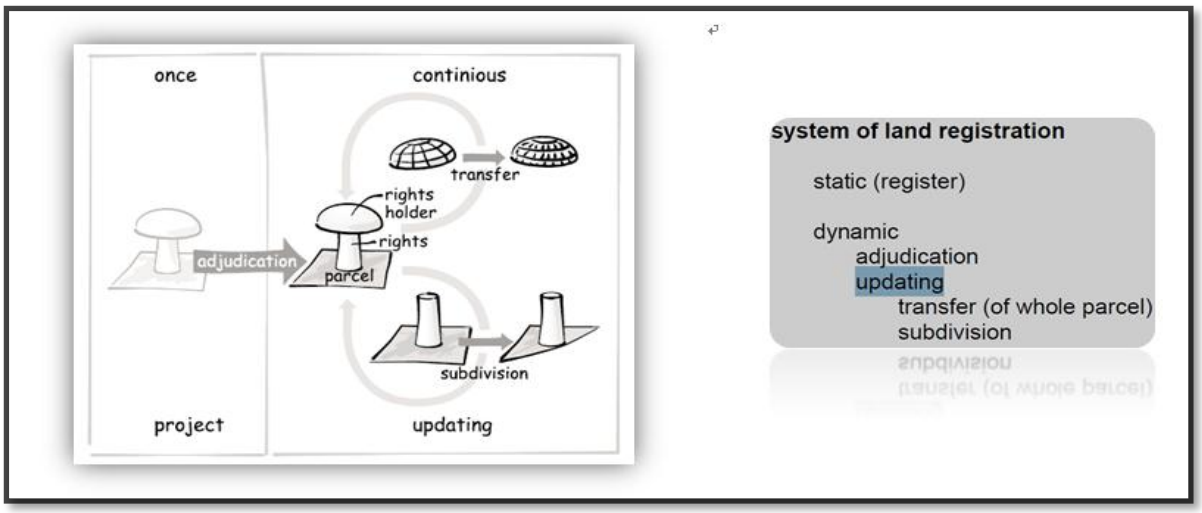

Figure 7: Dynamic model of land registration system (Zevenbergen, 2002)

In Figure 7, two categories of land information up-to-dateness are reflected in the updating process of land registration. One is textual information changes through transfer. The other is graphical information changes through subdivision.

Land information up-to-dateness should fit into level 4 of EIM (continuous). Even though cadastral information updating occurs in various epoch of time globally in reality. Considering the rapid growing demand for land information, continuous land information updating is extremely essential to keep conformity with reality for land-related services and geo-political decision makings.

4. DISCUSSION

The findings of this study can be shown in Figure 8:

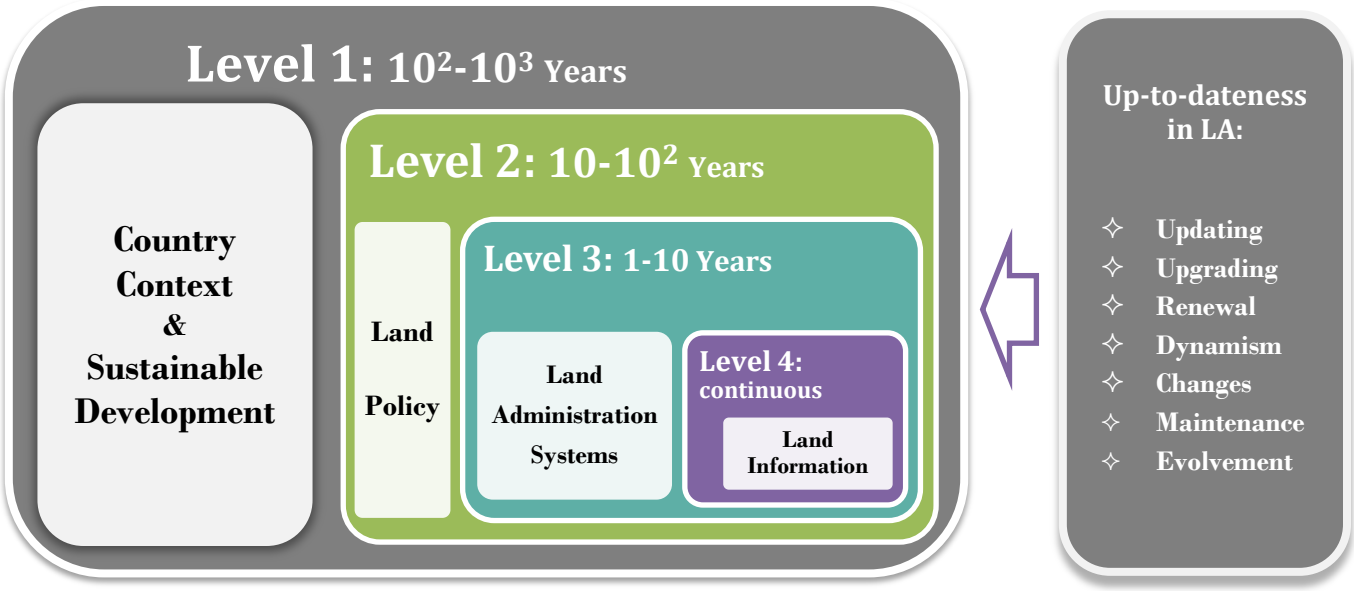

Figure 8: Epochs of time for up-to-dateness in land administration

It is revealed that up-to-dateness occurs in any component of land administration, through literatures in terms of 'up-to-date', 'updating', 'upgrading', 'renewal', 'dynamism', 'changes', 'maintenance'and 'evolvement' in land administration. Furthermore, up-to-dateness is found to concern certain epochs of time in land administration: up-to-dateness of country context and sustainable development fits in the level 1 of EIM (10^2-10^3); up-to-dateness of land policy is in the level 2 of EIM (10-10^2); up-to-dateness of land administration systems is in the level 3 of EIM (1-10); and up-to-dateness of land information is in the minimal epoch of time - level 4 of EIM (continuous).

Based on the main findings, further implications are argued that grasping principles in regards with the exact epochs of time of up-to-dateness in land administration will facilitate land administration activities: through mastering principles on epoch of time for country context up-to-dateness, institutional reform could be exactly predicted and relevant preparations could be well made in advance; through epoch of time for sustainable development up-to-dateness, the vision or overarching aim of land administration could be foreseen, and this will ultimately contribute to state development and stability due to considering the changing societal real requirements; through epoch of time for land policy up-to-dateness, proactive and reasonable land policy initiatives could be made by politicians; according to epoch of time for up-to-dateness of land administration system, land administrators could make responses to enhance land administration in advance; the last but not the least, epoch of time for land

information up-to-dateness is the core of up-to-dateness in land administration, influencing all other components within land administration domain. Accordingly, mastering principles on exact epoch of time for up-to-dateness is believed to guide managerial activities in land administration.

Despite the main findings and further implications, the limitations of this study are worth mentioning: firstly, classification of LMP is probably limited - whether there is other components of land administration need probing or supplementing; secondly, hierarchies of EIM could be further reconsidered - whether the four levels need subdivision; thirdly, the synthesis model still needs further supplementing based on detailing epoch of time and supplementing components of land administration; fourthly, whether up-to-dateness of each component with certain epochs of time should be re-organized or not need reconsidering based on limited literatures. All in all, due to the limitations of LMP, EIM, limited literatures and inevitable environmental changes, the synthesis model itself still needs continuously updating in future. Yet, the synthesis model in this paper is accurate and complete in the present moment.

5. CONCLUSION

A wide range of literature reveals that up-to-dateness in land administration is presented in terms of 'up-to-date', 'updating', 'upgrading', 'renewal', 'dynamism', 'changes', 'maintenance', and 'evolvement'. All these diversified interpretations of up-to-dateness could be equally regarded as the dynamism of land administration. The established synthesis model shows that this dynamism occurs in any component of land administration (land information infrastructures, land administration systems, land policy, sustainable development and country context). It also shows that up-to-dateness or dynamism of each component of land administration is found to concern certain epochs of time.

This paper is the first attempt to synthesize and clarify the various explanations of up-to-dateness in land administration systematically. This synthesis promotes the communication in up-to-dateness of land administration domain. It is also believed to facilitate land administration design and maintenance programs. Furthermore, the findings (the synthesis model) prompt the initiation of viewing up-to-dateness in land administration from the temporal perspective.

This synthesis model is a starting point for initiating research on up-to-dateness from temporal perspective in land administration science. What is the proper epoch of time for up-to-dateness of each component and how to evaluate the fitness-for-purpose of the current epoch of time could be the interesting directions for further probing.

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BIOGRAPHICAL NOTES

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