

Elasticity for Civil and Political Society between the Formal Cadastre and Informal Land Tenure

Francis HARVEY, USA

Key words: cadastre, land tenure, Poland, European Union, agriculture

SUMMARY

The objective of this presentation is an analysis of some of the complexity of establishing formal cadastres in rural areas of Central and Eastern Europe with established informal land tenure regimes. This presentation considers the Polish cadastral infrastructure, which is undergoing substantial change. Currently Poland, along with other new member countries of the European Union, is creating a new quasi-cadastre for controlling agricultural policy. Discrepancies to the existing cadastre are provided by the central agency for Agricultural Restructuring and Modernization to local governments. How these discrepancies are resolved is an important question. Many ambiguities in land ownership arise from centuries of partition, occupation, war, and collectivization. This is seen in evidence that between 4%-30% of agricultural land in Poland is not recorded in a cadastral registry, a consequence of the gap between the formal registration of land and informal land tenure. Agrarian reform is now taking place that in many ways represents the first attempt in over 200 years to bridge the gap between political and civil society.

To analyze the tensions and conflicts between informal land tenure and formal land cadastre arising in the introduction of LPIS, this research relies on an extension of Katherine Verdery's theoretical concept of property "elasticity" as the articulation of similarities and differences between the formal cadastre for different instances of government and informal land tenure. The hypothesis for this research is that the multiple meanings of the term cadastre for different groups make it possible for the cadastre to function as a registry of property ownership, rights, and obligations. The cadastral infrastructure must address tensions between political and society as differences between formal and informal land tenure. No resolution of the differences should be expected. As a boundary object for these groups, the cadastre simultaneously relates different civil and political understandings of the cadastre while separating the differences.

Elasticity for Civil and Political Society between the Formal Cadastre and Informal Land Tenure

Francis HARVEY, USA

1. TENSION AND ELASTICITY OF LAND TENURE

In this paper I develop an approach to understanding the development of formal cadastres in transition countries in terms of tensions between political and civil society that are instantiated in persistent differences between formal and informal land tenure, or the formal cadastre and informal land tenure. Several caveats need to be pointed out regarding this paper. The research I present here is in a preliminary phase; the empirical examples and conclusions I present are tentative and subject to revision. This research only focuses on the cadastral infrastructure of Poland, certainly an atypical transition country in many ways, but as I discuss below exactly for this reason a very interesting case to consider how formal cadastres take existing informal land tenure regimes into account.

The title of this paper focuses on a concept of elasticity. Briefly, the argument of this paper is that it is impossible to resolve all tensions formally and legally between the formal cadastre and informal land tenure. Instead, a dynamic equilibrium is maintained in an infrastructure involving people, institutions, and technologies. The cadastre cannot function as a lock-step guarantee for all possible uses of land, but must be flexible enough to serve the needs of political society as well as engender civil society. This flexibility is necessary for any meaningful cadastre in a representative democracy. I hypothesize that this flexibility is intrinsic to the success of agrarian reform occurring through the integration of central and eastern European agriculture in the European Union (EU). The cadastral infrastructure in Poland continues to undergo substantial changes due to the influx of support for creating new administrative technologies.

The development of the cadastral infrastructure is essential to the development of market-orientated agriculture. However, uncertain ownership of between 4 – 30% of Polish agricultural land (Prosterman and Rolfes 1999; Harvey 2004) poses a grave impediment to the development of free market agriculture, threatening to undermine the development of Polish agricultural markets in the EU (Prosterman and Rolfes 1999; Csaki and Lerman 2000; van Dijk 2003). Uncertain agricultural property ownership exemplifies the challenges for EU agricultural policy and for territorial governance in general. Agricultural governance in Poland has to account for the informal land tenure regimes established over almost 300 years of partition, occupation, war, and economic dependency. As in CEE countries and developing countries around the world, clarifying property ownership in rural areas faces several problems 1) adaptive extralegal strategies, historically developed to circumvent government controls to sustain farming incomes (Bne Saad 2002), and 2) confused land ownership (Lerman 2000). These problems are part of the tensions between civil and political society that make Poland an ideal site for studying the development of the cadastral infrastructure and its role in the governance of agrarian reform. Theoretically the cadastre, ideologically aligned with Western models of liberal individualism, is understood to be an essential part of a

Now this deficit must be dealt with, while at the same time legal security is provided for land owners.

The political failure from 1989 until today to modernize the Polish cadastral infrastructure points to the extent of the tensions between civil and political society (Ostrowski 2000; Csaki and Lerman 2001; Gwozdz 2002). However, some modernization was necessary to support conditions of EU accession. The EU Common Agricultural Policy (CAP) requires at a minimum the identification of agricultural property users for each parcel of land. The Land Parcel Information System (LPIS), part of CAP, is the key administrative technology for recording agricultural land use and uses cadastral information. LPIS may take up a significant role in resolving unclear ownership and modernizing the cadastral infrastructure, but the role of LPIS depends on local governments. LPIS, a centralized system, is based on the existing cadastre as a registry of agricultural parcels solely to check applications for EU and national agricultural support. Over \$20 million have been spent in the next years since 2000 and the \$50 million is to be spent for LPIS (Departament Ewidencji Gospodarstw 2004).

Discrepancies to existing property cadastral data are shared with local governments (*powiaty*) following EU guidelines. Lacking government regulations, it remains the local government's arbitrary decision to determine how this data will be used to upgrade the land parcel registry.

2. THE CADASTRE AS INFRASTRUCTURE

This research examining the cadastral infrastructure follows the observation that the cadastre, a form of calculative administrative technology, constitutes a significant part of modern governance's governmentality (Porter 1995) and underpins essential parts of the economy (de Soto 2000; Mitchell 2002). The cadastre is more than a set of maps for calculating taxation, "... when [maps are] allied with state power, [they] would enable much of the reality they depicted to be remade a state cadastral map ... does not merely describe a system of land tenure; it creates such a system through its ability to give its categories the force of law" (Scott 1998). Through colonization the cadastral infrastructure, which includes the people, institutions, and technologies of different cadastres, has diffused as a key instrument of governance around the world, often in tension with civil society (Turnbull 1989). Kain and Baigent (1992) conclude their historical study of cadastral mapping with salient points that highlight interactions and tensions related in the governance of agrarian reform:

- The cadastral map is an instrument of control that reflects and consolidates the power of those who commission it
- The cadastral map is partisan
- The cadastral map is active. In portraying one reality it obliterates the old
- The cadastral map can be understood as a balance of power and a balance of interest

The current political events in Central and Eastern Europe have stimulated great progress, but also evoked great tensions between political and civil society that existing governmental structures struggle to adapt to. These tensions are no less strong in various levels of government, but they can play out quite differently. Administrative technologies are a key vehicle for introducing procedures and rules that align themselves to new ideologies and political society's values. This development is quite clear in the creation of the LPIS system to control agriculture support applications (discussed in section 3). This research takes into consideration the interactions between the cadastral infrastructure, agricultural reform activities, and the important civil society roles of the peasantry in Poland.

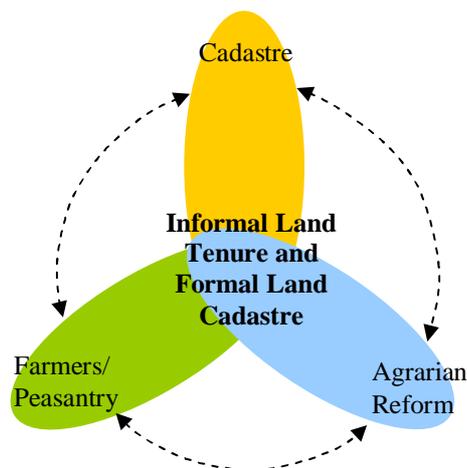


Figure 1: Interactions between land tenure and land cadastre

The roles of the cadastral infrastructure for governance finds precedents in the work of Scott and Mitchell (Scott 1998; Mitchell 2002) develop spatialized conceptualizations of the interactions between governance and administrative technologies, which serve as an initial theoretical entry point for considering area studies scholarship on post-Socialist transition and EU expansion (Pickles and Smith 1998; Regulska 1998; Christiansen, Petito et al. 2000; Ingham and Ingham 2002; Gillmor 2003). Interactions are a key issue in work on actor network theories, boundary objects, and infrastructure (Star and Griesemer 1989; Neumann and Star 1996; Law and Hassard 1999). Together they provide the key theoretical and methodological basis to examine the social and technological resolution of tensions between civil and political society and examine how hegemonic consent is established. Polish civil society is integrally linked with political society in complex locally contingent ways. In this regard, this work follows the insightful analyses of Wedel (Wedel 1992) and Buchowski (Buchowski 1996) that transcend traditional dualist models of civil and political society (Hann 1996) to conceptualize the imbrications of government institutions with civil and political society.

The work of Katherine Verdery on parcel elasticity forms the keystone of the theoretical framework for analyzing the relationships between informal land tenure and the formal cadastres in the cadastral infrastructure (Verdery 1994; Verdery 2003). Verdery describes the multiple boundaries, sizes, and shapes that a parcel of land could take during the process of property restitution in a rural Rumanian community: Although the parcel is always formally the “same,” she documents how it goes through startling and arbitrary changes in order to reconcile official cadastral records with changing assertions. Extending this concept to the cadastral infrastructure, flexibility at the scale of the infrastructure engenders the stability of

the formal land cadastre and provides the elasticity for constructing and maintaining the cadastral infrastructure's governance functions.

The flexibility of an administrative technology can be analyzed using the boundary objects concept (Star and Griesemer 1989). This concept provides the theoretical and methodological traction to assess how socio-technological artifacts, or boundary-objects, obtain and maintain flexibility for the infrastructure interactions that are part of the civil/political society tensions. Boundary objects stabilize network relationships and enable interactions, serving different even contradictory roles and needs (Harvey and Chrisman 1998). Stabilizing meaning for different groups, they connect different meanings while allowing the retention of internal group specific meanings, e.g., the usage of the term "cadastral" in Poland. It can mean any of the three cadastral registries, but usually only refers to the land registry. The ambiguity masks important obstacles to integrating the three registries.

Terminological ambiguity is one of the important flexibilities in the cadastral infrastructure. Other flexibilities include adaptation of standards, interpretation of guidelines, and selective adherence to procedures. These flexibilities allow for staff to resolve tensions between the formal cadastre and informal land tenure and political and social society. In research in Poland, one of the most interesting issues to consider is how local governments (powiaty) incorporate discrepancies between the LPIS agricultural parcels and the land parcels, which were used as a basis for the agricultural parcels. These discrepancies are sent to each powiat, but the use of this data lies entirely in the hands of each powiat. Without a legal basis requiring the consideration of these discrepancies it seems doubtful that they will be used by most powiaty.

The administrative technology of the cadastre is part of an infrastructure in the broadest sense. The concept of infrastructure (Bowker and Star 1999; Star 1999) draws together cultural, political, social, economic, and technological dimensions of the people, institutions and technologies involved in the assemblages that are the framework for much of modern life. The impacts of administrative technologies on civil and political society issues in terms of the interdependencies between people and technology can be addressed as a process of creating and maintaining infrastructure.

The acceptance of the cadastral map as an instrument of the state was as turbulent as the struggles for power themselves (Kain and Baigent 1992, p. 344). The cadastral infrastructure continues to be the locus for tensions between civil and political society. However, there is no simple black/white division between civil and political society. Cadastral infrastructure actors take on multiple roles and want boundary objects to be flexible for the multiple interpretations that match their circumstances and possibilities. The separation of responsibilities and governance functions between levels of government and within bodies of government are important to creating flexibility for cadastral infrastructure boundary objects. The activities of government units are also transactions for civil and political society.

The role of the cadastral infrastructure in civil and political society can be approached through the concept of governmentality that Foucault presented (Foucault 1991). This concept has

become quite significant in a number of areas and is understood and applied in a variety of ways. Following Collins, I take the historically grounded concept of governmentality to refer to issues of how to govern (Burchell, Gordon et al. 1991). A key aspect of governmentality is the control of territory which has changed over the centuries. In the 19th century communications' technologies became critical to the development of liberal political and economic space (Barry 1996) that the government sought control of to assure the integrity of its territorial space. The cadastral infrastructure similiarily takes on a important role in

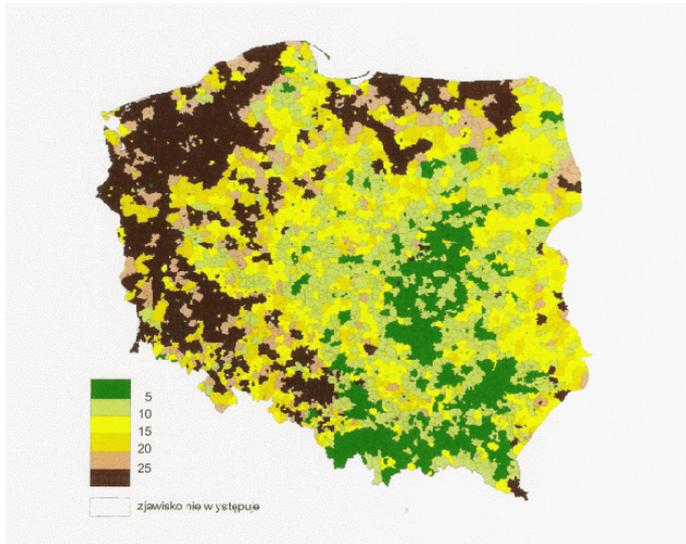


Figure 2 Percentage tenant land from total agricultural land (Source: Ciolkosz, A. (2003). *Charakterystyka rolniczej przestrzeni produkcji jnej polski*. Warszawa: Główny Urząd Statystyczny)

ensuring the integrity of the government's territory and assuring its control over land use and land markets. Administrative technology can be an instrument to enhance or limit governance. The dynamic equilibrium between civil and political society determines which for specific places and times.

2.1 Cadastral Infrastructure and Agrarian Reform

The cadastral infrastructure creates the basis for land transactions (de Soto 2000) and also alters possibilities for civil society to resolve problems with informal land tenure. Proposed government changes to the cadastral infrastructure will increase tensions between civil and political society. The changes to agriculture resulting from becoming a member of the

European Union also increase tensions. These changes are so profound and wide-sweeping that cumulatively they can be thought of as a liberal agrarian reform.

3. ISSUES FOR THE POLISH CADASTRAL INFRASTRUCTURE

3.1 Agricultural Change and Agrarian Reform

The ambiguity of Polish land rights in rural areas is characterized by regional distinctions that this research considers. The literature on agricultural change points to differences according to the historical partitions and level of education (Bański 2001; Gwozdz 2002; Ingham and Ingham 2002; Borsig and Kriszan 2004; Kulikowski 2004). Differences can be seen in a variety of measures collected in the 2002 agricultural census (Ciolkosz 2003).

Agrarian reform is also related to the role Polish farmers, or the social group of peasants, took on and maintained key socio-economic roles in the past. In most areas of Poland, private farmers, even with government policies working against them, were always economically and culturally significant. Even the Communist government had already undertaken a number of

measures to help private farmers in the 1980s (Borsig and Kriszan 2004). The socio-economic strategies farmers developed to minimize government intervention are significant for the proposed research. The importance of these strategies for Poland's socio-economy is the fact that it was possible to keep people fed during occupations and wars through an informal economy (Wyka 1992). Following Janine Wedel, the informal economy, tolerated if not condoned, kept the country economically afloat in the worst times of Nazi occupation and Communist mis-management (Wedel 1992). Unfortunately, English and Polish literature apparently fails to directly engage the question of informal land tenure in Poland, but drawing on Wedel's research, Polish publications, and current indicators, it seems plausible that informal land tenure offers rural dwellers much needed flexibility to deal with exigencies in life, craft flexible material production to maximize the value of their work, and minimize government intervention. Social circles (Wedel 1992; Gorlach and Seręga 1995; Buchowski 1996) remain significant for the informal allocation of land resources. For example, the dissertation of Salameh underscores the importance of civil society for the economy of one *gmina* studied between 1989 and 1983 (Salameh 1997).

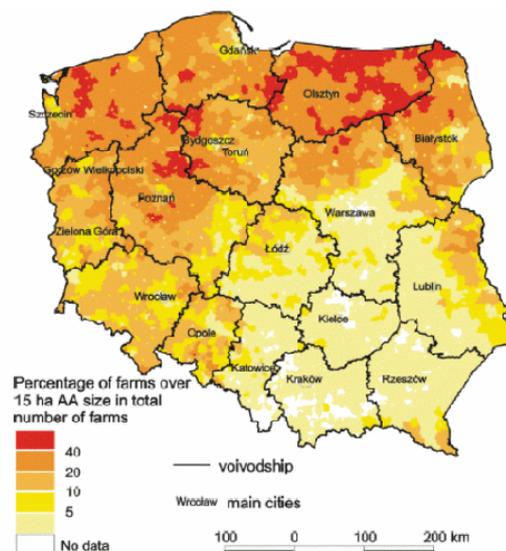


Figure 3 Regional Differences in Farm Sizes (Source: Gorz, B., & Uliszak, R. (no date). Poland's agriculture faces integration into the European Union. Retrieved 29Sep, 2004, from <http://www.wsp.krakow.pl/geo/bibliogr/Krzyzowa.pdf>)

3.2 Current Cadastral Infrastructure

The Polish cadastral infrastructure serves the same functions as the German cadastre on which it is loosely based, but is separated into three unrelated registries. The three responsible ministries do not currently coordinate the registries, in fact, they each deploy different hierarchies and technologies (see Figure 4), but studies to integrate the registries have been conducted (Albin 2003). The most successful of the three registries is the land registry, which in some cases is linked to the building registry. These registries are under the control of the Ministry for Infrastructure, office of the Surveyor General. Copies of all land survey activities are sent to the corresponding office in each *powiat*, when possible in both paper and digital formats. After entry in the *powiat*'s registry the materials are sent to the Wojwodscha (state) geodesy and cartography office. The second registry is the land and mortgage registry, which because of the over-taxed court system, experiences substantial back-logs, in some cases over two years to record a property sale. This registry is under the control of the Justice Ministry. All property transactions should be recorded in the district court. However, because of the legal problems arising as the result of back-logs, *gmina* administrative staff informally checks with the land registry when processing land transactions (Harvey 2004). The third registry is

the real estate tax register administered by the Ministry of Finance. This registry is used to determine and assess a property tax based on an archaic formula for determining the value of rye or wheat that could be grown on the property.

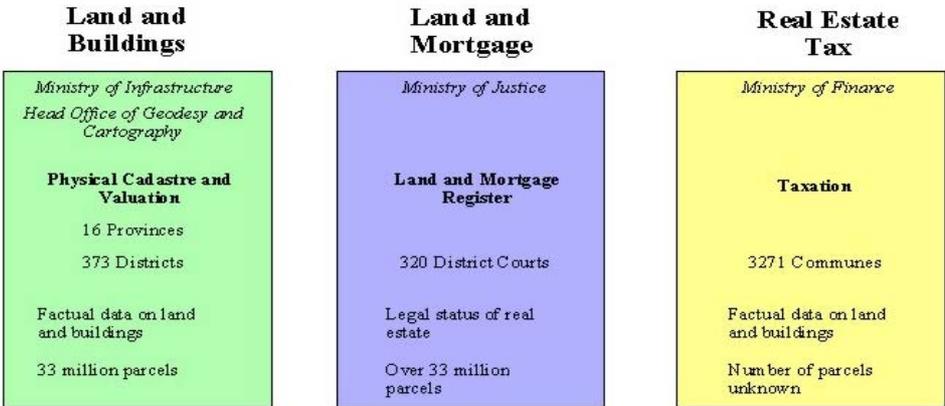


Figure 4 Three registries in the Polish cadastral infrastructure

The argument can be made that during the socialist period the discordant registries were acceptable in civil society because of their limited financial impact and Socialist ideology. This certainly creates challenges for modernizing the technical elements of the cadastre to EU standards and norms (Craglia and Masser 2002; Pauknerova, Corbin et al. 2003). Opening up land markets in the 1990s called for changes (Kempny no date), which were stymied politically, but external experts and EU funded projects supported the circumvention of the political blockade. Several successful pilot projects to coordinate the registries have been concluded (Knoop and Wilkowski 2003). These projects have been supported by other European countries (Sweden and the Netherlands), the World Bank, and the European Union (Steenberghen and Beusen 2003).

After the 1999 reform of the Polish local and regional government organization and re-definition of county and province boundaries with an emphasis on devolution, the enhanced control of the cadastre at the county (*powiat*) level has led to the creation of new geodesy, surveying, and cartography offices in the 373 counties instead of in the roughly 3271 communes before administrative reform. This change has significant consequences for the local development of cadastral infrastructure and its role in governance (Harvey 2004).

3.3 IACS and LPIS

The EU plays a key role in developing governance. Accordingly, the EU has a significant interest in creating a cadastral infrastructure in accession countries (Bogaerts, Williamson et al. 2002) and has funded two projects for over 15 million Euro to develop an integrated Polish cadastral system. The first project was completed in 2003. It led to the development of a standard (SWDE) and tools for accessing databases held by each ministry, which was tested in a simulated environment. The second project, due to be completed in 2005, is creating an electronic land and mortgage register as part of the Integrated Cadastral System (ICS), focusing first on courts where the backlog exceeds six months (Office of the Committee for

European Integration 2002). ICS involves bi-directional exchange: LPIS uses existing cadastral data and sends discrepancies to the corresponding county government (*powiat*).



Figure 5 LPIS Agricultural Parcel Types (Source: Leo, O., & Lemoine, G. (2001). Land Parcel Identification Systems in the frame of Regulation (EC) 1593/2000 (Discussion paper). Ispra, Italy: DIRECTORATE GENERAL JRC, JOINT RESEARCH CENTRE - ISPRA.)

The cadastral infrastructure connects agricultural policy administration to the existing property cadastre. The EU is the key supporter of the IACS and LPIS systems used in CAP. CAP uses cadastral data to create the Land Parcel Information System (LPIS) which is part of the Integrated Administrative Control System (IACS). These two systems are under development in Poland, and the other nine new member countries, which are implementing the Single Area Payment System (SAPS), part of EU CAP reform (Ingham and Ingham 2002; Ingham and Ingham 2002). IACS is a hierarchical system consisting of 314 district offices, 16 regional offices, and a head office. The centralized information system stores information on agricultural producers, farms, and application materials to process, evaluate, and check applications for subsidies. LPIS is the related GIS-based system, with 13 million parcels digitized from orthographic aerial photographs in all of Poland. It is used “to verify the correctness of the declared area as well as evaluate and verify its base for qualification” (Orlinska and Jarzabek 2004, p. 3). LPIS is used in IACS for spot-checks, random checks, and systematic checks of applications. Currently in its first version, over 1.4 million applications were submitted and 217,794 dossiers, or about 15%, had anomalies (Agency for Restructuring and Modernization of Agriculture 2004). 142,741 parcels had errors in the declaration of eligible area; the remainder used incorrect identifiers. It is not clear how the errors between LPIS and the property cadastre areas arise. Now it is up to county governments to resolve the discrepancies.

3.4 Local Government Perspectives

Preliminary research in Poland with local governments (*gminy* and *powiaty*) strongly suggests that there are sharp divisions between the roles of the cadastral infrastructure. Divisions between the registries seem to be dealt with by local governments who cannot integrate the registries, but can serve as a common access point for citizens involved in land transactions. A newly created standard for the exchange of cadastral data is apparently being embraced by local governments—perhaps because of its utility in integrating cadastral data from various

sources. Flexibility in cadastral laws allows local governments a great deal of discretion. The data provided to local governments from LPIS are non-consequential because there is no legal requirement to use them.



Figure 6 Powiat offices in Olsztyn (photo by author)



Figure 7 Gmina Offices in Belsk-Duży (photo by author)

These preliminary findings based on seven interviews in two powiaty require additional interviews to verify. These interviews are still ongoing and will be completed by July 2005. At this point, analysis of the first interviews suggests that many farmers have quickly and thoroughly updated the land registries related to their properties, when advantages could be had. This means that because of the separation between the LPIS agricultural registry and parcel's cadastral registry, a farmer seeking to assure area-based support was correctly determined would request clarification if LPIS records indicated a smaller parcel size than the parcel. However, if the LPIS area was larger, they would not have to request a correction and according to some interviewees take this advantageous situation for themselves.

The liberalization and lack of legally required coordination of registries means that significant discrepancies abound. In fact, it seems that these discrepancies have been understood by foreign experts in the past as an indicator of incomplete registration of land. Prosterman writes of 30-40% for example. Interviewees in powiat geodesy offices suggest that only between 4% - 10% of the parcels in their areas are not registered. The amount seems to depend on previous events, in particular the evacuation and resettlement of people and entire families following World War II.

3.5 Preliminary Summary and Outlook

At this point, only a suggestion about boundary objects and their flexibility can be made contingent on further interviews and evaluation. Based on this research, a list of the most significant boundary objects would have to include the four registries discussed in this paper, the gmina records, the powiat records, and the geodetic and cadastral laws. While the interviews suggest a great deal of flexibility in application, procedure, and interpretation, this preliminary analysis must be evaluated.

At this point, I would conclude that tensions between political and civil society shown in discrepancies between formal and informal land tenure have largely been resolved through local government activities. National government divisions create difficulties, but have largely been accounted for. How agrarian reform following on the liberalization of the agricultural market impacts local governments is an important issues for research in the coming years.

REFERENCES

- Agency for Restructuring and Modernization of Agriculture (2004). POLAND Agency for Restructuring and Modernisation of Agriculture. Ispra, Italy, Joint Research Centre. **2004.**
- Albin, J. (2003). Spatial Data Infrastructures in Poland: State of play Spring 2003. Leuven, K.U.LEUVEN RESEARCH & DEVELOPMENT. **2005.**
- Bański, J. (2001). "Problem areas in Poland's agriculture." Geographia Polonica **74**(1): 47-63.
- Barry, A. (1996). Lines of communication and spaces of rule. Foucault and Political Reason. Liberalism, neo-liberalism and rationalities of government. A. Barry, T. Osbourne and N. Rose. Chicago, The University of Chicago Press: 123-141.
- Blobaum, R. E. (1995). Rewolucja. Russian Poland 1904-1907. Ithaca, NY, Cornell University Press.
- Bne Saad, M. (2002). Can small farmers survive Poland's accession to the EU? European Association of Development Research and Training Institutes. **2003.**
- Bogaerts, T., I. P. Williamson, et al. (2002). "The role of land administration in the accession of central European countries to the European Union." Land Use Policy **19**: 29-46.
- Borsig, A. and M. Kriszan (2004). "Die Landwirtschaft Polens zwischen Transformation und Strukturwandel." Europa Regional.
- Bowker, G. and S. L. Star (1999). Sorting Things Out. Classification and its Consequences. Cambridge, MA, The MIT Press.
- Buchowski, M. (1996). The shifting meanings of civil and civic society in Poland. Civil Society. Challenging Western Models. C. Hann and E. Dunn. London, Routledge: 79-98.
- Burchell, G., C. Gordon, et al., Eds. (1991). The Foucault Effect. Studies in Governmentality. New York, Harvester Wheatsheaf.
- Christiansen, T., F. Petito, et al. (2000). "Fuzzy politics around fuzzy borders: the European Union's 'near abroad'." Cooperation and Conflict **35**(4): 389-415.

- Ciolkosz, A. (2003). Charakterystyka rolniczej przestrzeni produkcyjnej polski. Powszechny spis rolny. Warszawa, Główny Urząd Statystyczny.
- Craglia, M. and I. Masser (2002). "Geographic Information and the Enlargement of the European Union: Four National Case Studies." URISA Journal **14**(2): 43-52.
- Csaki, C. and Z. Lerman (2000). Structural Change in the Farming Sectors in Central and Eastern Europe. Europe and Central Asia Environmentally and Socially Sustainable Development Series. Washington, D.C., The World Bank.
- Csaki, C. and Z. Lerman (2001). Land and farm structure in Poland, The Center for Agricultural Economic Research. **2003**.
- Dale, P. F. and J. D. McLaughlin (1999). Land administration. Oxford; New York, Oxford University Press.
- Daszyska-Golinska, Z. (1921). Land Reform in Poland. London, Sampson Low, Morston and Co.
- Davies, N. (2001). Heart of Europe. The Past in Poland's Present. Oxford, Oxford University Press.
- de Soto, H. (2000). The Mystery of Capital. Why Capitalism triumphs in the West and Fails Everywhere Else. New York, Black Swan.
- Departament Ewidencji Gospodarstw (2004). Postęp prac w budowie systemu LPIS. Warszawa, Departament Ewidencji Gospodarstw. **2004**.
- Foucault, M. (1991). Governmentality. The Foucault Effect: Studies in Governmentality. G. Burchell, C. Gordon and P. Miller. Chicago, University of Chicago Press.
- Gillmor, D. A. (2003). "Change in rural Europe." Geographia Polonica **76**(1): 3-12.
- Gorlach, K. (1995). "The peasant issue in contemporary Poland." Polish Sociological Review **110**(2): 139-158.
- Gorlach, K. and Z. Seręga (1995). The family character of private farms: An empirical test for postcommunist Poland. Family Farming in the Contemporary World: East-West Comparisons. K. Gorlach and Z. Seręga. Craków, Poland, Zeszyty Naukowe Uniwersytetu Jagiellońskiego: 113-122.
- Gwozdz, K. (2002). Le devenir du monde rural polonais en europe. Paris, France, Groupement d'études et de recherches notre europe.
- Hann, C. (1996). Introduction. Political society and civil anthropology. Civil Society. Challenging Western Models. C. Hann and E. Dunn. London, Routledge: 1-25.
- Harvey, F. (2004). Interview in Gmina Belsk Duży, 7Dec2004.
- Harvey, F. (2004). Interview in Powiat Grojec, 7Dec2004.
- Harvey, F. and N. R. Chrisman (1998). "Boundary objects and the social construction of GIS technology." Environment and Planning A **30**(9): 1683-1694.
- Ingham, H. and M. Ingham (2002). EU accession: The Polish case. EU Expansion to the East. Prospects and Problems. H. Ingham and M. Ingham. Cheltenham, UK, Edward Elgar: 205-221.
- Ingham, H. and M. Ingham, Eds. (2002). EU Expansion to the East. Prospects and Problems. Cheltenham, UK, Edward Elgar.
- Kain, R. J. P. and E. Baigent (1992). The Cadastral Map in the Service of the State: A History of Property Mapping. Chicago, University of Chicago Press.
- Kempny, M. (no date). Three years of mortgage banking in Poland. Paris, OECD. **2003**.

- Kieniewicz, S. (1969). The Emancipation of the Polish Peasantry. Chicago, University of Chicago Press.
- Knoop, H. and W. Wilkowski (2003). Integrating electronic platform (IPE) as a basic component of cadastral system in Poland. Paris, France, Permanent Committee on Cadastre in the European Union (Eurocadastre). **2004**.
- Kulikowski, R. (2004). The changes in and the spatial patterns of Polish agriculture. Changing Functions of Rural Areas in the Baltic Sea Region. J. Banski and J. Owsinski. Warsaw, PAN and European Rural Development Network: 123-136.
- Law, J. and J. Hassard, Eds. (1999). Actor Network Theory and After. Oxford, Blackwell Publishers/The Sociological Review.
- Lerman, Z. (2000). Status of land reform and farm restructuring in central and eastern Europe. Structural Change in the Farming Sectors in Central and Eastern Europe. Lessons for the EU Accession--Second World Bank/FAO Workshop, June 27-29, 1999. C. Csaki and Z. Lerman. Washington, DC, World Bank: 3-21.
- Miron Perez, J. (2002). Cadastre in Europe: Actions to improve the situation of the cadastre among the accession countries, Eurocadastre. **2003**: Paper presented at the first congress on cadastre in the EU.
- Mitchell, T. (2002). Rule of Experts. Egypt, Techno-Politics, Modernity. Berkeley, University of California Press.
- Neumann, L. J. and S. L. Star (1996). Making Infrastructure: The dream of common language. PDC'96, Participatory Design Conference, Cambridge, MA, USA, Computer Professionals for Social Responsibility.
- Office of the Committee for European Integration (2002). Integrated cadastral system - Phase II, Office of the Committee for European Integration.
- Orlinska, J. and J. Jarzabek (2004). LPIS - the core of IACS. Geodeta. Warsaw, Geodeta Sp. z o. o. **6**: 2-7.
- Ostrowski, L. (2000). Selected problems of Polish agricultural land policy in the process of accession to the European Union. Studies on the Agricultural and Food Sector in Central and Eastern Europe. Institute of Agricultural Development in Central and Eastern Europe (IAMO). Kiel, Wissenschaftsverlag Vauk Kiel KG: 308-319.
- Palmer, D., P. Munro-Faure, et al. (2003). Land consolidation and rural development in central and eastern Europe. Rome, Italy, FAO. **2005**.
- Pauknerova, E., C. Corbin, et al. (2003). GI Capacity Building in the EU Accession Period: Technical Report, GINIE: Geographic Information Network in Europe.
- Pickles, J. and A. Smith, Eds. (1998). Theorising Transition. The Political Economy of Post-Communist Transformations. London, Routledge.
- Porter, T. M. (1995). Trust in Numbers. The Pursuit of Objectivity in Science and Public Life. Princeton, NJ, Princeton University Press.
- Prosterman, R. L. and L. J. Rolfes (1999). Agricultural land markets in Lithuania, Poland, and Romania: Implications for accession to the European Union. Seattle, Rural Development Institute.
- Regulska, J. (1998). 'The Political' and its meaning for women. Transition politics in Poland. London, Routledge: 309-329.
- Robeson, T. (2000). The State and Community Action. London, Pluto Press.

- Romaniszyn, K. and J. Nowak (2002). *Poland: State, Nation Formation, and Europe*. Cracow, EURONAT. **2004**.
- Roszkowski, W. (1991). *Landowners in Poland 1918-1939*. Boulder, CO, East European Monographs.
- Salameh, S. (1997). *Bitter Harvest: Antecedents and Consequences of Property Reform in Postsocialist Poland*. *Sociology*. Berkeley, University of California, Berkeley.
- Scott, J. C. (1998). *Seeing Like A State*. New Haven, CT, Yale University Press.
- Star, S. L. (1999). "The ethnography of infrastructure." *American Behavioral Scientist* **43**(3): 377-391.
- Star, S. L. and J. R. Griesemer (1989). "Institutional ecology, "translations," and boundary objects: Amateurs and professionals in Berkeley's museum of vertebrate zoology." *Social Studies of Science* **19**: 387-420.
- Steenberghen, T. and P. Beusen (2003). *Spatial data infrastructures in Poland: State of play Spring 2003*. Leuven, K.U. Leuven Research and Development: 24.
- Turnbull, D. (1989). *Maps are Territories. Science is an Atlas*. Chicago, University of Chicago Press.
- van Dijk, T. (2003). *Dealing with Central European land fragmentation. A critical assessment on the use of Western European instruments*. Delft, The Netherlands, Eburon.
- Verdery, K. (1994). "The Elasticity of Land: Problems of Property Restitution in Transylvania." *Slavic Review* **53**(4): 1071-1109.
- Verdery, K. (2003). *The Vanishing Hectare: Property and Value in Postsocialist Transylvania*. Ithaca, NY, Cornell University Press.
- Wedel, J. R., Ed. (1992). *The Unplanned Society. Poland During and After Communism*. New York, Columbia University Press.
- Winniczki, M. (2003). *Wykastrowac kwasniewskiego i jego syjonistyczna kilke szpiegów KGB/SVR-GRU w SLD i PO, Nasz Dziennik*. **2003**.
- Wolff, L. (1994). *Inventing Eastern Europe: the map of civilization on the mind of the enlightenment*. Stanford, Calif., Stanford University Press.
- Wyka, K. (1992). *The excluded economy. The Unplanned Society. Poland During and After Communism*. J. R. Wedel. New York, Columbia University Press: 23-61.

BIOGRAPHICAL NOTES

Francis Harvey is an Associate Professor in the Department of Geography at the University of Minnesota. He teaches undergraduate and graduate courses on GIS and specializes in research on organizational aspects of GIS use and development in governments. Before coming to the University of Minnesota in 2001 he was at the University of Kentucky for three years following a two year post-doctorate position at the EPFL in Lausanne, Switzerland. He completed his PhD in 1996 at the University of Washington. He is a member of several academic and professional societies including the American Congress of Surveying and Mapping, the Association of Computing Machinery, Computing Professionals for Social Responsibility, and the Association of American Geographers. He serves on the editorial boards of the *International Journal of Geographic Information Science*, the *URISA Journal*, and *Cartographica*.

CONTACTS

Dr. Francis Harvey
Department of Geography
University of Minnesota
414 Social Sciences
Minneapolis
USA
Tel. +1 612 625 2586
Fax + 1 612 624 1044
Email: fharvey@umn.edu
Web site: <http://www.tc.umn.edu/~fharvey/index.html>