Cities to be tamed? Standards and alternatives in the transformation of the urban South
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# Pragmatic planning: extending water and electricity networks in irregular settlements of Lima, Peru

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To understand how informal settlements access to urban services in emerging cities requires to go beyond theoretical debates on urban planning and on liberalisation of utilities. Spontaneous urbanisation challenges traditional urban and infrastructure planning by imposing a built-up framework and organised population. In Lima, in order to extend their networks, service companies develop innovative technologies and techniques to adapt to unplanned contexts. They also enter into informal governance arrangements to work and negotiate with CBOs. This pragmatism has the potential to create institutions for a planning practice in coherence with the urban fabric. However these ad hoc sociotechnical practices are ignored by official authorities in charge of foreseeing the urban development of Lima, thus hampering the possibility of innovative planning.

**Keywords**: Urban planning, Basic services, Informal settlements, Pragmatism

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## Introduction: Planning spontaneous urbanisation

Spontaneous urbanisation challenges urban planning, encompassing by definition all the unplanned and irregular settlements of a city which do not follow the conventional cycle of urbanisation (Baross 1990). To think about it in terms of legality or poverty only does not allow grasping the reality of this process. Beyond socioeconomic and legal issues, spontaneous urbanisation is a political, spatial and urbanistic challenge for urban planners and service providers, imposing an existing and functional built-up framework, as well as the presence of an organised population. Urban actors have to shift from traditional planning to a catching-up, demand-driven and adaptive logic. Since the 1950s, a variety of planning theories have emerged to cope with the failure of traditional Master planning in the North: incremental planning, strategic planning, collaborative planning, pragmatic planning, visioning… Nevertheless, the relevance of these models is challenged in emerging cities (Devas & Rakodi 1993; Huxley & Yiftachel 2000; Robinson 2005; Roy 2011; Todes et al. 2010; Watson 2009). The case for indigenous or Southern theories is growing up, in order not only to understand the actual fabric of emerging cities, but also to develop some thoughts on planning for already built-up and functioning settlements.

Basic infrastructure services, as socio-technical systems that combine a physical dimension in structuring a metropolis and a social impact on communities' living-conditions, constitute a key tool for urban planning (Marvin & Guy 1997). For long in Lima's history, the regularisation and upgrading of spontaneous settlements have been considered a viable option (Turner 1976). Beyond the trend in favour of property formalisation as promoted by Hernando de Soto (Durand-Lasserve 2006; Payne et al. 2009), we argue that the issue of extending water and electricity networks is as much, or even more, determinant for urban integration and consolidation (Rakodi 2000; UN-Habitat 2009). Indeed, spontaneous settlements are actually getting access to the network, meaning that service companies do work at extending their coverage in unplanned zones, regardless of their legal status.

To understand how utilities extend their networks in irregular contexts requires to look at the actual fabric of the city, the process of consolidation and upgrading of spontaneous settlements, as well as to the coping strategies, technological innovations and informal arrangements that actors enter to adapt to an unconventional situation. By definition, spontaneous settlements do not respect plans, norms and forecasts that planning an infrastructure network may require. How then do utilities work in these contexts? We observe that the complexity of irregular settlements and the involvement of different actors at the local level prompt them to create technical and political arrangements, necessary for a sustainable urban development through service provision. These dynamics have the potential to reconcile spatial, social and political dimensions of planning with the actual process of informal urbanisation.

This study is based on a field research in spontaneous settlements of Northern Lima, a representative cone of invasions on desert lands in the 1950s until recent colonies on steep hillsides. We look at the practices actors have developed to extend water and electricity infrastructures, in order to show how engineers change their working habits to fit with the context of irregular settlements (Connors 2005). First, the process of urbanisation in Lima is presented to understand the extent of spontaneous urbanisation, and the specificity of Peruvian policies to deal with it. Second, a review of the legal and institutional framework is done to analyse the rules and norms that frame actors' strategies and capacity. Then, on the basis of interviews realised with CBOs and NGOs as well as decision-makers and engineers in utilities, sub-contractors and municipalities, we shed light on the actual practices for network expansion and their physical and social impacts. The discrepancies between rules and practices are here considered coping strategies and adaptation to the actual situation (Leitmann and Baharoglu, 1998), that do shape the city fabric of Lima and function as socio-political institutions.

## Spontaneous urbanisation of Lima

*Urban growth and informal urbanisation*

Lima grew at an annual growth rate around 5% in the 1950s and 1960s, due to rural-urban migration, now stabilising at an average of 2% in the last decades, mainly from natural increase. In the 1950-1960s, the insufficient of housing provision pushed migrants to invade land in the peripheries (Sakay et al. 2011). The vast majority of these areas being State land, the authorities tolerated these invasions, and even passed in 1961 a path-breaking law declaring of public necessity and of national interest the remodelling, sanitation and legalisation of marginal settlements[2]. With this law, the State recognised and promoted low-cost progressive housing through organising and planning land invasions by migrants, a process later called 'progressive development by John Turner (Turner 1976) and spread internationally as 'self-help housing' (Bromley 2003; Fernández-Maldonado & Bredenoord 2010). Until the 1980s, migrants thus settled on land without facilities, but respecting a basic layout plan that fulfilled the urban requirements for regular dimension and shape of streets and plots and reserved land for future equipment (Ramirez Corzo & Riofrío 2006). This process of encouraging self-help housing, though not urban planning per se, constituted a coherent and innovative answer to housing for the urban poor.

From the 1990s, easily urbanizable land was less and less available, and the population started to invade smaller areas, on steep hillsides or desert land, with less supervision from public authorities and less organisation from civil movements. Beyond the issue of property formalisation, the economic and political crisis of the 1980s hampered the State's capacity to support urbanisation by bringing services. Moreover, technical challenges have started to appear for extending services in these uneven, remote and dense settlements, as well as legal difficulties to regularise settlements located on archaeological, at-risk or agricultural land (Caria 2008).

In 1993, according to the national census, 66.6% of Lima's population had a water connection within its house, 63.8% were connected to the sanitation network, and 85% had an electricity connexion. In 2007, 75.6% had in-house water connection, 75.4% in-house sanitation and 94.5% electricity. Nowadays, the majority of the population still lacking urban services live in these recently-built settlements.

*Legal framework for formalisation and access to services in irregular settlements*

Lima has never had a tradition of urban planning. The Institute for Metropolitan Planning, depending from the Metropolitan Municipality of Lima, has been weakened in the 1990s, mainly due to the take-over by the central State over urban development. As to the forty-two district municipalities, they do not have the competency for land-use zoning nor land registry. None of these two levels of local government really has a say in infrastructure policies, utilities being directly run by the central State or private firms. The institutional framework for urban development in Lima thus depends more on national policies and laws than on municipal guidance and control.

The election of A. Fujimori as president in 1990 marked the beginning of neo-liberal reforms in Peru (Fernández-Maldonado 2008). After decades of tolerance and progressive consolidation of informal urbanisation through invasion, the need for services as well as the economic difficulties encouraged a change in the policies directed at spontaneous settlements. In the early 1990s, the sectors of telecommunications, electricity and water and sanitation were opened to privatisation. As to urban

[2] Ley n°13517 'Declarando de necesidad y utilidad públicas e interés nacional la remodelación, saneamiento y legalización de los barrios marginales o barriadas, existentes en las áreas urbanas y sub-urbanas del territorio nacional'.

development, A. Fujimori's government created in 1996 a centralised agency for formalising informal properties – the Cofopri[3] – supported by a loan from the World Bank, on the basis of Hernando de Soto's theories (De Soto 1986).

In Lima's context, this was mainly the beginning of a new process for urban consolidation: while until then, the property title was the ultimate step in the process of urbanisation, this same title began to be the prerequisite for accessing urban services (Calderón 2005).

'[The Cofopri] argue that its approach rests on an alternative theoretical perspective dating from the 1950s which posits the merits of "strategic planning" – prioritizing narrowly focused and prepared to leave loose hands for tying up later – a perspective critical of the "comprehensive" planning tradition still well entrenched in Lima' (Leonard 2000: 441).

But the aim of the government with this strategy has been widely criticised for looking for fast and massive results instead of coping with the issues of spontaneous settlements in an integrated way as the previous approach of *saneamiento fisico-legal* did. The legal focus of this policy contradicted the city planning process and the actual city fabric, and moreover, did not succeed either in improving access to financial credit nor to basic services (Ramirez Corzo & Riofrío 2006).

In 2006, the inadequacy of the legal framework for improving living conditions in spontaneous settlements and the demands from the population for urban services urged the newly-elected government of A. Garcia to reform the housing sector. A Law of development and complement for the formalisation of informal propriety, access to land and provision of basic services[4] – water, sanitation and electricity – was passed that ease up the process for land titling and access to urban services. This law created a new tool, the 'certificate of possession', issued directly by the district municipality. The requirements to get this certificate are simple: an official request, a copy of the national identity document, a boundary plan of the plot, and the certificate of verification by a municipal civil servant. This certificate of possession is only valid for basic services, and is not a recognition of property rights. Without changing the process of formalisation followed-up by the Cofopri, this law permitted to disconnect the access to urban services from property title in a pragmatic and needs-oriented strategy.

The procedure for requesting basic services is simplified too, only requiring the certificate of possession and a boundary plan. Utility companies must attend to all settlements within their area of concession, including informal ones, by delivering a notice of feasibility. However, companies keep on planning and executing projects applying economic and technical criteria of their own. On the one hand, this 2006 law has facilitated the process of application for urban services, allowing firms to implement large-scale extension programmes. On the other, the general character of the law does not encroach upon the capacity of utility companies to set up their own criteria and requirements for considering the applications. Therefore, they have developed specific tools that help gather the necessary information as to the urban layout and development of irregular settlements to examine the requests.

[3] Decreto legislativo n°803 'Ley de promoción de acceso a la propiedad formal'

[4] Ley n°28687 'Ley de desarrollo y complementaria de la formalización de la propiedad informal, acceso al suelo y dotación de servicios básicos'

## Infrastructure extension: adapting to the built-up framework

*Facilitation and innovation for rapid electrification*

When the electric sector was privatised in 1992, Lima was split into two areas of exclusive concession: Edelnor in the North of Lima, Luz del Sur in the South. We will here focus on Edelnor's strategy in Northern Lima. The main objective of the electrical concessions Law of 1992[5] was to increase access to electricity (Campos et al. 1999). In order to reduce the cost and accelerate electrification, the Law authorised to lay overhead lines, which was not the case until then in Lima (Museo de la Electricidad 2001). For informal settlements, the law also created a special provisional system for in-block sales of electricity.

Using this provisional option, Edelnor started a programme of massive electrification and reached to cover 100% of its zone in 1996 (i.e. 100,000 additional connexions in a two-year time). This process started with provisional macro-meters for every twenty to forty households, from which people pulled the wires and put in wooden posts on their own; Edelnor then upgraded with definitive infrastructure within two years. Neither the property title nor the settlement plan was a prerequisite; electrification was done in 'obviously consolidated parts of the city' (interview with an engineer from Edelnor, 04/09/2012), with a simple approval from the municipality that secured the settlement's tenure. Today, this provisional system is still used for the newest neighbourhoods, the only requirement being to have the residents' association registered by the district municipality.

From the end of the 1990s, only remained the newer, remote, risky, smaller settlements. At the same time, the Cofopri started its regularisation policy, and the property title was enforced as legal prerequisite to any urban project. Edelnor reduced its activity of electrification in irregular settlements down to around 10,000 connexions per year, and focused on improving high and medium-voltage capacity. It is only with the 2006 Law that massive electrification started again, and the pace increased even more in 2009 thanks to an Emergency Decree[6] announcing that the Ministry of Energy will reimburse connexion charges for a two-year period (then extended until the end of 2012). From that time, Edelnor has sped up electrification, with an average of 35,000 new connections per year.

In the last few years, Edelnor has also developed some technological innovations to facilitate the installation of infrastructures in remote places with difficult access and topography. A simple one is the utilisation of single-post transformers for medium-tension lines. To maintain equal stability in the seismic zone of Lima, these posts have to be driven-in deeper, but they also require less space. But the main innovation is the use of fibre-glass posts: weighting only fifty kilograms, four workers only can carry it up to settlements on tops of the hills, where trucks or machines cannot get. Though the price of the material is higher than traditional concrete posts for now, Edelnor bets on the expansion of the market to lower it down. The economic calculation is that the reduced labour costs in terms of direct labour and security for workers is sufficiently reduced to compensate for the price of the fibre-glass post (interview with an engineer from Edelnor, 18/07/2012). This search for technical efficiency (Pérez-Reyes & Tovar 2010) have also largely contributed to the expansion of Edelnor's coverage in the most recent and remote settlements of Northern Lima, which reaches 95% today.

[5] Decreto Ley n°25844 'Concesiones eléctricas'

[6] Decreto de urgencia n°116 'Promueve el suministro del servicio público de electricidad en zonas urbano marginales del país

*Figure 1*. Innovations for electrification: Macro-meter and wooden provisional posts, Single-post transformer yet to be connected, Installation of fibreglass post (Settlement *Año Nuevo*, District of Comas, photos by the author, 16/08/2012).

*The mixed picture of the water and sanitation sector*

The outbreak of cholera in 1991 was the sign of large-scale inadequate access to water and sanitation in Lima's peripheries, urging for a reform. In 1994, the General Law for water services[7] opens the Peruvian water sector to private investments. But social and political resistance impeded the privatisation of Sedapal, the water and sanitation company of Lima, leading the State to take responsibility for the reform (Fernández-Maldonado 2008). Sedapal is now a public firm under the supervision of the national Ministry of Housing, Construction and Sanitation. It has implemented several programmes to reform its management and expand its services to Lima's informal settlements.

The first programme was financed from 1994 to 2001 by the European Union; the aim was to bring safe and drinking water to marginal settlements that would not get a network connection in the near future (Ioris 2011). Building reservoirs to be filled up by trucks – which themselves get the water from Sedapal's selling points – and the main network line from reservoirs to public standpipes, the idea was to lay down a basic, but progressive infrastructure to be reused by Sedapal when extending its definitive network (Bonfiglio et al. 2002). Indeed, with this system, the only missing parts to build would theoretically be the connexion from main transmission pipes to the entry point of the network, and the connexion between standpipes and in-house pipes. The sanitation option was conventional latrines. But this programme was not only a technical option; it went with an extensive social intervention for community capacity-building. Beyond water use and hygiene education, the population was organised into neighbourhood committees for the administration of drinking water[8] in charge of the payment and safe distribution through hosepipes. In total, 214 autonomous systems were built for around 335,000 people. However, the social and technical innovations developed in these progressive systems have faced some difficulties in sustaining the momentum. First, the main pipes that were supposed to be reused are more often replaced or abandoned by Sedapal when shifting to definitive connection. Both technical reasons (age, size, quality etc.) as commercial arguments are brought up: Sedapal's subcontractors themselves recognise that the lobbying from material firms encouraged changing pipes rather than recycle old ones… Secondly, the

[7] Ley n°26338 'Ley General de Servicios de Saneamiento'
[8] Comité Vecinal de Administración de Agua Potable

social organisation of communities is fragile: some settlements managed to administrate their system and build a sense of ownership and maintenance, but others have stopped functioning soon after (Bonfiglio et al. 2002). Nevertheless, some NGOs keep on implementing this system in small and remote settlements with a long-term follow-up, thus having excellent results in community involvement and then connection to the main network.

*Figure 2*: Progressive water system from community standpipe to individual tankers through hoses (Settlement *Señor Cautivo de Ayabaca*, District of Comas, photos by the author, 29/08/2012).

In 2002, under the influence of the Water and Sanitation programme for the Andean region of the World Bank, a new innovative experiment came out: the condominial project. Adapting the Brazilian technology, Sedapal developed these cheaper, smaller, less deep and less long networks that appeared to be particularly adequate to the uneven zones built-up in the 1990s on the hillsides. Social intervention was a key component since the smaller size of the pipes required a good maintenance and use of water and sanitation to avoid collapsing of the systems (Conza & Macedo 2004). Hence, to bid for Sedapal's tenders, the condition was to be consortium of engineering firms and NGOs. These condominial systems, both for water and sanitation, cost 40% less than the conventional technology (Miranda 2004), and around 25,000 connexions were realised. Nevertheless, despite some exceptions, the acceptation of this low-cost technology by the population has been low, and several conflicts between Sedapal and the communities have hampered the success of the experiment (Ioris 2011). Additionally, some reluctance from within Sedapal itself to implement unconventional approaches and to collaborate with social workers, as well as the populist and political utilisation of the notion of 'technology for the poor' slowly led to discrediting condominial networks.

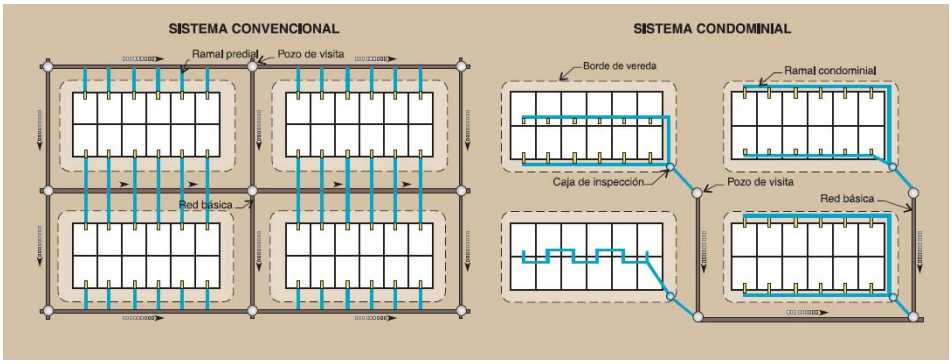


*Figure 3*: Comparison of conventional and condominial systems (Melo 2007, p.39)

In 2006, the World Bank's project got to an end, and coincided with the launching of the programme '*Agua para todos*' by the newly elected president A. Garcia. This programme was led by the Ministry of Housing, based on a 'shock of national investment' and ten large schemes for water and sanitation in Lima were designated by law. '*Agua para todos*' is based on the traditional approach for infrastructure extension, with conventional technologies and networks, and much less social capacity-building. It must be noticed that even though Sedapal has officially abandoned the condominial systems, it actually keeps using this technology, especially on steep hillsides where it is particularly adequate. It is today called 'small-diameter pipes' technology, and is not implemented along with specific community capacitation. Though some projects are still at the implementation phase and do not permit to get a complete evaluation, the programme has obviously benefited from the simplification of legal requirements for spontaneous urbanisation, and has managed to reach irregular settlements without waiting for the property regularisation.

In both sectors, some technological innovations have been developed by utilities to adapt to uneven built-up contexts, showing that the topographical difficulties that utility companies face in unplanned urbanisations are not definitive obstacles to the extension of infrastructure networks. The technologies have been adapted or created to fit to external constraints, and actual urbanisation processes and situations are pragmatically taken into account.

## Informal arrangements and institutions: creating urban tools

Beyond material constraints overcome by technological innovation, the difficulties in expanding infrastructures to spontaneous settlements are the governance challenges involving communities that interfere in projects' implementation. Pressuring the State for access to urban services has for long been the motto of Peruvian civil society, overflowing the State's capacities in Lima by a pacifist, gradual and progressive movement (Matos Mar 1984). Once registered as a settlement, CBOs immediately mobilise and organise themselves to request services to municipalities and service utilities (Jaime 1999; Calderón 2004).

*The layout plan as a tool to draw infrastructures' lines*

The link between urban settlement consolidation and extension of services, or the adequacy of infrastructure to urban patterns, is articulated through the layout plan[9] that utility firms require to emit the feasibility advice. This is the inheritance from the period when the legal regularisation of the settlement by the Cofopri was the precondition for obtaining services. In the process of formalising properties, the Cofopri emits an official layout plan that presents the plots, roads and public spaces respecting urban norms and registered by the official administration. Utility firms used these plans to draw their own network lines and identify the topographical, technical and spatial feasibility of extension projects. When the condition of property title was levied in 2006, so was the requirement of the layout plan. Nevertheless, based on sector-specific laws and the law for regulating private investments in public services, utilities have kept the competency of defining their own list of requirements. Thus Edelnor and Sedapal took advantage of the new 'certificate of possession', but have maintained the layout plan as the document on which they base their feasibility study.

Utility firms ask for this plan mainly in order to be sure of the roads where they will lay down their network, as it is the first and main spatial criteria (Baharoglu & Leitmann 1998). First of all, they need to

[9] Plano de trazado y lotización.

be sure to have enough space and stability to dig and put safely their pipes or posts, on spaces secured from future encroachments. Second, signed by municipalities, this is the guarantee that the main roads where they will locate their infrastructures will not move or change. Otherwise, when for the need of another project, the municipality or the community present a viable layout plan, utility firms have to relocate their infrastructures, as for instance Edelnor has nowadays to move many of its posts – too quickly – installed in the 1990s.

Another issue in Lima is that many settlements are on the slopes of hills, where platforms and streets are not consolidated. The risk of mudslide is important, considering also that Lima is a highly seismic zone. Therefore, in many cases, there is a need for retaining walls to consolidate the places where infrastructures will be built. Sedapal can require for example the building of retaining walls before starting the infrastructure works, but do not include these into its budget. Communities therefore use their layout plan to apply to other financing schemes to get their walls done. Through this process, the layout plan is the tool that not only utility firms, but also municipalities, NGOs or other institutions use to consolidate the urban pattern. The application for urban services initiates a general process of urban consolidation around streets and roads, even though neither legal formalisation nor city planning is actually at stake.

*The layout plan as a tool for urban consolidation*

The layout plan is thus not only the key document for communities to access services, but also to start thinking about the future of their settlement. When communities enter into the process of organising their settlements to get the notice of feasibility for urban services, they have to obtain their certificate of possession as well as the layout plan signed by the district municipality. Community leaders contract an engineer or architect to draw the layout plan, which cost between PEN 60 and 100 per plot (EUR 15-25) depending on the size of the settlement and its topographical situation. This layout plan not only shows the plots, but also the roads and public spaces, including the places that the community wants to preserve for future parks, colleges, sports areas etc. The district municipality is then entitled to stamp these plans, provided they respect the road plan from the metropolitan municipality, though they are not registered and do not have any urbanistic, planning or official value.

Based on the actual pattern of the settlement, the process of elaborating the layout plan in a way officialises the pattern of the future living environment. Respecting urban norms, foreseeing the public equipment, and anticipating the needs for stairs and retaining walls is a complex process that community leaders coordinate. In a collaborative way, incorporating progressively the comments from utility firms and municipalities, CBOs draw a plan that identifies the works and investments to be done in their settlement for urban integration. These layout plans thus have a hybrid dimension to fit with the context of irregular settlements: there is a part of strategic planning (Albrechts 2006), with the entry point of urban services to start urban consolidation, and of collaborative planning (Healey 2006), in the sense that inhabitants work on defining their priorities and needs for the future.

The layout plan constitutes a new policy instrument (Lascoumes & Le Galès 2007), which is not a simple, neutral, technical tool but acts as a coordinating institution that structures the urban fabric of spontaneous urbanisation. Therefore, as a technical and political device, this layout plan could bring significant change in urban policy and planning practices, mainly for its capacity to coordinate actors and its context-sensitivity. However, the bottleneck in this process is in its scaling-up. Indeed, the layout plans are like working documents that have no official value as to the urban planning and formalisation process. Neither the Cofopri nor municipalities take into account these plans when they implement their own development strategy, for the plans are not registered and have no official value.

## Conclusion

From the 1990s, utilities have worked in Lima to extend their infrastructure networks to catch up with informal urbanisation. In order to overcome the physical constraints, they have developed a range of adequate technologies. Though more efficient in the electricity sector than for water and sanitation, there have been experiments that enlarged service coverage, and helped in identifying the key factors for success, mainly community participation. The inhabitants have always been highly mobilised in Lima to pressure public authorities in bringing services. Today, this involvement has transformed them into ex-post pragmatic planners that do use access to services as the entry point for some kind of strategic planning, for which all the relevant actors agree on an operational layout plan. Meanwhile, the Peruvian State has developed a legal framework aiming at facilitating the integration of spontaneous settlements into the urban setting. Even if property regularisation remains the ultimate objective of public authorities, they have worked pragmatically to disconnect access to services from legal status of land ownership. Nevertheless, the relatively informal character of the practices developed at the micro-local level of settlements hampers their consideration by urban planning authorities. Far from engaging into a bottom-up process, the disconnection between metropolitan and conventional planning and the urban fabric on the field creates a cognitive dissonance (Sager 2001) that impedes scaling up pragmatic practices and informal arrangements which actually shape urban consolidation through infrastructure extension.

## References


Albrechts, L. (2006), 'Shifts in strategic spatial planning? Some evidence from Europe and Australia', *Environment and Planning A* 38/6: 1149-1170.

Baharoglu, D. and Leitmann, J. (1998), 'Coping strategies for infrastructure: How Turkey's spontaneous settlements operate in the absence of formal rules', *Habitat International* 22/2: 115-135.

Baross, P. (1990), 'Sequencing land development: the price implications of legal and illegal settlement growth', In Baross P. and Van der Linden J. (ed.), *The transformation of land supply systems in Third World cities* (London: Aldershot), 57–82.

Bonfiglio, G. et al. (2002), *Servicios de agua en zonas periurbanas de Lima Metropolitana. La experiencia del proyecto Alimentación de Agua para Pueblos Jóvenes* (Lima: Programa de Agua y Saneamiento).

Bromley, R. (2003), 'Peru 1957–1977: How time and place influenced John Turner's ideas on housing policy', *Habitat International* 27/2: 271-292.

Calderón, J. (2004), 'The formalisation of property in Peru 2001-2002: the case of Lima', *Habitat International* 28/2: 289–300.

Calderón, J. (2005), *La ciudad ilegal: Lima en el siglo XX* (Lima: Fondo Editorial de la Facultad de Ciencias Sociales UNMSM).

Campos, T.S. et al. (1999), *Energy Access for the Urban Poor: Peruvian Case Study* (Lima: Intermediate technology development group - Peru energy program).

Caria, A.S. (2008), *Títulos sin desarrollo: los efectos de la titulación de tierras en los nuevos barrios de Lima* (Lima: DESCO – Programa urbano).

Connors, G. (2005), 'When utilities muddle through: pro-poor governance in Bangalore's public water sector', *Environment and Urbanization* 17/1: 201-218.

Conza, A. and Macedo, O. (2004), 'El alcantarillado condominial en el cono Norte de Lima: una experiencia en Comas', *Agua - Boletín del Comité Sectorial Agua y Saneamiento* 18.

Devas, N. and Rakodi, C. (ed.) (1993), *Managing fast growing cities. New approaches to urban planning and management in the developing world* (Hartlow: Longman Scientific and Technical).

Durand-Lasserve, A. (2006), 'Informal settlements and the Millennium Development Goals: global policy debates on property ownership and security of tenure', *Global Urban Development* 2/1: 1–15.

Fernández-Maldonado, A.M. (2008), 'Expanding networks for the urban poor: Water and telecommunications services in Lima, Peru', *Geoforum* 39/6: 1884–1896.

Fernández-Maldonado, A.M. and Bredenoord, J. (2010), 'Progressive housing approaches in the current Peruvian policies', *Habitat International* 34/3: 342-350.

Healey, P. (2006), 'Transforming governance: Challenges of institutional adaptation and a new politics of space', *European Planning Studies* 14/3: 299-320.

Huxley, M. and Yiftachel, O. (2000), 'New paradigm or old myopia? Unsettling the communicative turn in planning theory', *Journal of Planning Education and Research* 19/4: 333-342.

Ioris, A.A.R. (2012), 'The geography of multiple scarcities: Urban development and water problems in Lima, Peru', *Geoforum* 43/3 : 621-622.

Jaime, J. (1999), *Lima Megaciudad, Democracia, Desarrollo y Descentralización en Sectores Populares* (Lima: Alternativa).

Lascoumes, P. and Le Galès, P. (2007), 'Introduction: Understanding Public Policy through Its Instruments — From the Nature of Instruments to the Sociology of Public Policy Instrumentation', *Governance* 20/1: 1-21.

Leonard, J.B. (2000), 'City profile: Lima', *Cities* 17/6: 433-445.

Marvin, S. and Guy, S. (1997), 'Infrastructure provision, development processes and the co-production of environmental value', *Urban Studies* 34/12: 2023–2036.
Matos Mar, J. (1984), *Desborde popular y crisis del Estado. El nuevo rostro del Perú en la década de 1980* (Lima: Instituto de Estudios Peruanos).
Melo, M.C. (2007), *La ciudad y el saneamiento. Sistemas condominiales: Un enfoque diferente para los desagües sanitarios urbanos* (Lima: Water and Sanitation Program for Latin America and Caribbean, World Bank).
Miranda, J. (2004), 'La provisión de servicios de agua con redes condominiales', *Agua - Boletín del Comité Sectorial Agua y Saneamiento* 17.
Museo de la Electricidad (2001), *Historia de la electricidad en Perú* (Lima: Museo de la Electricidad).
Payne, G., Durand-Lasserve, A. and Rakodi, C. (2009), 'The limits of land titling and home ownership', *Environment and Urbanization* 21/2: 443-462.
Pérez-Reyes, R. and Tovar, B. (2010), 'Explaining the inefficiency of electrical distribution companies: Peruvian firms', *Energy Economics* 32/5: 1175-1181.
Rakodi, C. (2000), ' " Getting the pipe laid is one matter and getting the water flowing through the pipe is another": user views on public-sector urban water provision in Zimbabwe, Sri Lanka, Ghana and India', *International planning studies* 5/3: 365–391.
Ramirez Corzo, D.N. and Riofrío, G. (2006), *Formalización de la propiedad y mejoramiento de barrios: bien legal, bien marginal* (Lima: DESCO – programa urbano).
Robinson, J. (2005), 'Urban geography: world cities, or a world of cities', *Progress in Human Geography* 29: 757-765.
Roy, A. (2011), 'Urbanisms, worlding practices and the theory of planning', *Planning Theory* 10/1: 6 -15.
Sager, T. (2001), 'Planning style and agency properties', *Environment and Planning A* 33/3: 509–532.
Sakay, C., Sanoni, P. & Deng, T.H. (2011), 'Rural to Urban Squatter Settlements: The Micro Model of Generational Self-Help Housing in Lima-Peru', *Procedia Engineering* 21/0: 473-480.
De Soto, H., 1986. *El otro sendero* (Lima: Instituto Libertad y Democracia).
Todes, A. et al. (2010), 'Beyond master planning? New approaches to spatial planning in Ekurhuleni, South Africa', *Habitat International* 34/4: 414–420.
Turner, J.F.C. (1976), *Housing by people: towards autonomy in building environments* (New York: Pantheon Books).
UN-Habitat, (2009) *Planning Sustainable Cities: Global Report on Human Settlements* (London: Earthscan).
Watson, V. (2009), ' "The planned city sweeps the poor away...": Urban planning and 21st century urbanization', *Progress in Planning* 72: 151-193.