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**Earth Constellations:  
Agrarian Units and the  
Topological Partition of Space**

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**Abstract**

During the Spanish Inner Colonisation – a large-scale agricultural reform and land settlement program of the central decades of the 20<sup>th</sup> century – new towns were built in the middle of the arid areas that were going to be transformed into irrigated lands. Their names and locations were announced in the Official State Gazette together with their proposed locations. The system employed to address their positions in the wastelands was based on the road network: it involved the distances to the nearest roads, and the specification of the kilometric milestones concerned.

This paper proposes to analyse the positioning system in relation to one of the most salient features of this Spanish program: the use of the so-called cart-module to distribute the settlement towns. These were arranged in constellations so that each piece of land could be addressed through a walking distance from the closest town. Taking into account also the role of the authoritarian State, present in the technical management of the irrigation systems, the agriculture put into work will be analysed as a vertical practice.

This paper will consider these operations from what social anthropologist Penelope Harvey has pointed out as the topological quality of infrastructural spaces, where space is apprehended in relation to the effects of a calculating framework. The material transformation of this topological zoning through irrigation, finally, will be examined in relation to Lisa Parks' critical infrastructure notion of satellite footprints and signal territories.

**Keywords**

Footprints, infrastructure space, large-scale agriculture, state-driven programs, verticality.

**Introduction**

The practice of agriculture is one of interweaving the sky to the ground. “Activated by radiation, the matter of the biosphere collects and redistributes solar energy, and

ultimately converts it into free energy capable of doing work on Earth,” stated Vladimir I. Vernadsky when arguing for the Biosphere to be understood as an interfacial geological layer of the planet (1998: 44). Soils are cultivated and crops grown because operations such as seedtime or harvest have been coordinated with “exogenous cosmic forces,” to use again the early 20<sup>th</sup> century biochemist’s words (Vernadsky, 1998: 44). This coordination entailed a close observation of natural cycles, such as the revolutions of the Sun, the Moon or the position of the stars, which coalesced, together with the agricultural everyday, into calendars and, ultimately, into the production of the notion of time (Macho, 2003). As media theorist John Durham Peters’ play on words put it succinctly, “time is planted in heaven” (Peters, 2016: 183), thanks to an agriculture that works by synchronising the biosphere to the celestial spheres.

Exogenous radiation feeds both the agricultural and the non-agricultural lands of the biosphere. The difference between the two is delineated first by an operation that occurs upon the ground. Recalling Cornelia Vismann’s work on the foundational cultural techniques of ploughing (Vismann, 2010), Geoffrey Winthrop-Young highlights how elemental “agriculture...is initially not a matter of sowing and reaping, planting and harvesting, but of mapping and zoning, of determining a piece of arable land to be cordoned off by a boundary that will give rise to the distinction between the cultivated land and its natural other” (Winthrop-Young, 2014: 6-7). However, this initial two-dimensional demarcation gives rise to a practice that can be further understood when the many vertical layers that exist simultaneously above and below the ground start to be considered. From the interaction of synthetic nutrients in the soil with the roots of the plants, to the influence of weather or the effect of both human and machinic labour, agriculture appears as a volumetric activity whose many different strata recall the vertical analysis that geographer Stephen Graham (2016) has claimed for the cities and their surrounding spaces.

With this perspective in mind, this paper deals with a set of spatial and temporal operations that took place in Spain between the 1940s and the 1970s as part of a large-scale agricultural program. The state-driven creation of towns designed to host human workforce, the planning of circular units conceived as coverage areas around

them, and the organisation of the involved flows of water and chemicals will be scrutinised here as vertical technical practices. In particular, the management of time in these operations of addressing, partitioning and watering land will unveil a relation to contemporary positioning systems in the context of the ubiquity of satellite signals. To borrow a term from Keller Easterling, this case of “infrastructure space” (2014: 19) will be analysed in terms of its topological reshaping of space, a reformulation where agriculture will emerge, finally, as a satellite-like footprint of this early form of orbital geography.

### **Rational units of agricultural production**

At the end of the Civil War in Spain in 1939, after the three-year long exposure of a large amount of territories to intense destructive forces, the government of the resulting dictatorship of Franco launched several plans designed to support the recovery of economic activities, such as the development of industry, housing, and agriculture. Among them, the National Institute of Colonisation (INC) was created to be in charge of the development of the latter, agriculture. The institute carried out a land settlement program that involved the expropriation of plots, the introduction of new techniques – water infrastructures in particular – and the accommodation of settlers. It accomplished a program of so-called *inner colonisation*, differentiated from the standard form of colonisation of land resources of an external country. As defined within the Spanish laws, *inner colonisation* was put into practice by the State as:

an administrative activity, of a technical and legal nature, that transforms the agronomic and economic characteristics of specific extensions of land as well as the social organisations within them, creating rational units of agricultural production whose property is delivered to certain farmers, with the aim to ease the fulfilment of their individual and familiar needs, provide stability to the society as a whole and augment the production (Leal, 1969: 116).

Many similar programs, albeit with local differences, had been accomplished already in other countries. Most of them took place before WWII<sup>1</sup>; a fact that highlights that, in relation to these, the Spanish one was a late colonisation. In detailed and exhaustive documentation work carried out by the Spanish government in 1925, a

total of thirty-four individual countries were analysed in relation to their existing agrarian and repopulation reforms.<sup>2</sup> The common double dimension of these – an intensification of agriculture production on the one hand, and the settlement of new populations on the other – identified them in several cases as colonization processes, specifying in some cases that it was an “inner” or “internal” colonization, contrasting with the more usual expansive sense of the word. These include the Italian *bonifiche*<sup>3</sup> from the Mussolini era, the Portuguese *Internal Colonisation*, the German *Innere Kolonisation*, and the Israeli Moshaves and Kibbutzs.

In his classic work, *Seeing Like a State* (1999), James C. Scott describes the rationalisation of farming performed by social engineers and agricultural planners in the context of authoritarian States as an ordering of landscape in terms of legibility and State control: “Units can easily be duplicated across the landscape, and the inspectors coming to assess their operations enter legible domains which they can evaluate with a single checklist” (117). As I demonstrate below, this readability was performed in Spain against a notion of idle lands. Large areas of land were rendered empty, unproductive and prone to be colonised by a centralised authority. They needed to be brought under central control: to be addressed, registered and connected to a new productive cycle. Networks of settler towns, inhabited by farmers, managers and agricultural engineers, became the sites from where to access, read and transform the remote lands, in what has been described as “the largest urban operation within rural zones ever practised in Spain” (Gómez Benito, 2004: 84). If, during the colonisation of America, fleets of ships were sent across the Atlantic together with a set of managing techniques to handle a problem with idlers and vagabonds,<sup>4</sup> an earthly constellation of urban platforms was, in a related way, sent to the rural space to terraform the idle soil.<sup>5</sup>

## **Idle lands**

One of the main constraints that the inner colonisations had to face was the limitation of the available lands. As one of the leading theorists involved in the Spanish *Inner Colonisation*, Alejo Leal García, stated:

The transformation into irrigation is one of the means that can be used to satisfy the needed amount of agricultural products; a means that is chosen as it is estimated that the arable surface cannot be augmented noticeably and because the simple improvement of cultivations only increases by an insufficient factor its productivity (Leal García, 1969: 113).

New methods needed to be applied, and in Spain, the first to come to mind, as it was known for a long time, was irrigation. Although the INC also supported practices related with dry agriculture, its main goal was the replacement of dry plots and wastelands by irrigated lands. This meant that the problem of productivity in the Spanish case was understood, briefly, in terms of lands; that is: to improve agriculture involved the improvement of lands, and not, initially, its mechanisation or the chemical manipulation of natural processes. The colonisation plans, therefore, aimed to “revalorise” the territories through water. It was a matter of “revalorisation” linked to the surface, then, as Leal García explains: “this revalorisation can be considered from several points of view, such as the value or price of the lands, the indices of seeded surface, the performance of exploitations and the indices of employment” (1969: 112). For those attempting to colonise through irrigation, then, land – and the societies settled on it – was the targeted object to transform.

It is worth observing at this point that Franco’s colonisation program has been considered, in hindsight, a counter-reform of previous agrarian reforms (Barciela, 1996). The Government before the Civil War, the *República*, had started an expropriation program aimed at redistributing land in response to the political actions of peasants facing uneasy labour conditions, to the point of even occupying lands in the tumultuous 1930s (Gaviria, Naredo and Serna, 1979: 18). It is an established fact that, as a consequence of these actions, the larger affected landowners were part of the lobbies that supported the military coup that gave rise to the War (Barciela, 1996: 354; Gómez Benito, 2004: 77). Barring other repercussions,<sup>6</sup> the initial aim of Franco’s colonisation was to counter the reform (Barciela, 1996: 354). As the new plans were presented, the emphasis was put on transforming the miserable conditions of wastelands populated by “rotten burgs” that had witnessed – and continue to hold, in the form of bombs and bones<sup>7</sup> – a “buried war” (Alagón

Laste, 2015: 2, 21). The lands of the New Spain were therefore defined in opposition to a stagnant past that, despite the effectiveness of the armed struggle, needed to be eradicated. In Franco's words, just before the end of the War, "Spain is still at war against every enemy from the inside and the outside" (Gutiérrez et al., 2004:13). If the military government started to seek, to pursue, to imprison and to sentence to death the supporters of the *República*, the unproductive lands needed to be mapped, addressed, and – in their own words – "redeemed" (Alagón Laste, 2015: 2).

To do this, an image-dependent surveying agriculture was put into operation. As I have discussed elsewhere (Gil-Fournier, 2017) this transformation of territories coincided with the first civilian use of aerial images in Spain, which gave rise to visualising techniques within agriculture in which the new irrigated lands were designed from above in a way that precedes contemporary precision farming techniques.<sup>8</sup> Interestingly, the task of redeeming, activating and revalorising large extensions of idle soil amplifies a different technical practice. In particular, it brings up the problems associated with writing down addresses that point to specific positions in the midst of the wastelands to be transformed.

## Ephemeris: Addressing the foundation of settlement towns

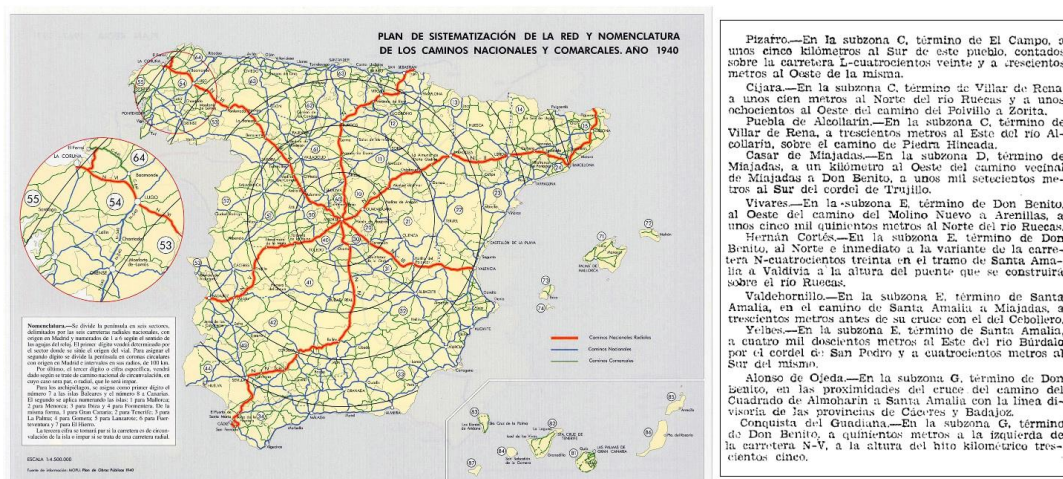


Figure 1: Left: map displaying the road network naming system, elaborated in 1940. Right: announcements of the new towns in the *Boletín Oficial del Estado* (BOE), in 1955.

After an initial autarchic period of confidence in private initiative – which proved to be a total failure (Tordesillas, 2010: 191) – the INC became more interventionist, particularly after their technicians visited the integral management programs carried

out in the United States (Delgado, 2013: 80). Subsequently, the Institute started to generate agricultural landscapes as sequences of easily recognisable patterns, networks of small towns, reached by irrigation channels and protected by a slim forest outline surrounding them. Through this “soupy matrix of details and repeatable formulas” (Easterling, 2014: 19), the infrastructure space of the Zones deployed, as “spatial software” (Easterling, 2014: 22), the model guidelines.

Part of these guidelines was the protocol used to address the positions of the newly built towns. As a state-driven program, most of the relevant actions of the Inner Colonisation plans were logged and published in the Official State Gazette, the *Boletín Oficial del Estado* (BOE). There, remarkably, we find the announcements of new settlement towns together with their proposed locations. In order to address their positions, a system based on the road network was used. Since 1940, roads and motorways were distinguishably numbered following a procedural nomenclature system<sup>9</sup> (Figure 1). Given this organised platform of road names, it served as a reference for the position of the new towns to be created inside the idle lands. This way, their locations were written down as distances to the nearest roads,<sup>10</sup> with the specification of the kilometric milestones concerned. The location of Pizarro, Hernán Cortés or Alonso de Ojeda, for instance – tiny towns significantly named after the *conquistadores* sent to America<sup>11</sup> – were specified (Figure 1) in the following way:

BOE, 5 of July of 1955	Pizarro	Subzone C, within the boundaries of the municipality of El Campo, 5Km South of this town, counted on the road L-420, and 300m West of this road.
	Hernán Cortés	Subzone E, within the boundaries of the municipality of Don Benito, to the North and next to the turnoff of the road N-430, in the stretch between Santa Amalia and Valdivia, next to the bridge that will be built over the Ruecas river.



	Alonso de Ojeda	Subzone G, within the boundaries of the municipality of Don Benito, in the vicinities of the crossing of the road from Cuadrado de Almoharín to Santa Amalia with the borderline between the provinces of Cáceres and Badajoz.
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As an address system based on the calculation of distances to an infrastructure in the background, this ephemeral information signifies what social anthropologist Penelope Harvey (2012) has pointed out as the topological quality of infrastructural spaces, or, in her analysis of the national road network in Peru, as the operational transformation of territories after the impact of transport infrastructures. Here, as Harvey emphasizes (2012: 78), geographical surfaces are conceived and designed after a new kind of spatial awareness. Space is apprehended in relation to the effects of a calculating background. As Nigel Thrift (2004) explains, it is a “movement-space” (597) that is linked to the experience of the gridding of time and space, the invention of filling and listing systems, and the invention of logistics (587). Surfaces of land are intertwined within a new spatiotemporal continuity that emerges in the practices of sorting, numbering and calculating, where “it is relationality that is important...turning space and time from ‘a priori’ into ‘a posteriori’ categories” (Thrift cited in Lury, Parisi and Terranova, 2012: 5).



**Figure 2: Settlement towns of Miralrío (Jaén) and Esquivel (Seville), part of the inner colonization. Source: (Delgado, 2013)**

The nodes of these constellations were announced then in the official gazette through messages that point at the projective logic that reshaped the colonised

territories<sup>12</sup>. Like satellites broadcasting their ephemeris information, these were towns sent from the design space of the Institute to the outer space of the rural.

### **The Cart-module: The footprint of a broadcast agriculture**

As Michel Serres (2007) explains, early large-scale agriculture entailed the expertise of geometry. Where the flooding of the Nile erased the parcelled banks, the land surveyors – the harpedonapts – with their ability to calculate areas from their measurements, were the ones who could bring back the agricultural order within that fluctuating stability: “They had the cord, the unit, the measure, writing, and prestige” (Serres, 2007: 179). The equilibrium between landowners was articulated by the size of the plots, which came out as the critical magnitude.

In the case of the agricultural program we are working with, property and size were not the problem. In the first place, the expropriated lands were considered areas of national interest and belonged to the State. Secondly, following the procedures put into work in the referential case of the US Columbia Basin Project, the shape of the family units and the sizes of the plots were prescribed as part of the colonisation plans (Tordesillas, 2010: 192). In other words, the Zones were partitioned in a homogeneous way. The main problem of the plans, however, resided in the spatial distribution of the houses of the settlers and the allocation of their plots within the Irrigation Zones, where nothing existed but wasteland or previous dry exploitations. A spatial distribution was sought that, taking into account the productive spirit of the whole project, filled the entire space with agrarian units – house plus plot – such that no idle soil could be found within the Zones.

After analysing the failure of a model based on disseminated farms authored by Mussolini (Alagón, 2015: 7), the INC decided to distribute settlers among constellations of towns scattered as networks inside the large Irrigation Zones. The problem was therefore transformed into a question about the spatial distribution of the nodes of a network. Additionally, each network of settlements had to be linked to the irrigation system, as the settlers needed to be placed in the vicinity of their irrigated plots. This problem was solved with one of the most salient features of the Spanish plans: the use of the so-called *cart-module*. The cart-module was a graphical planning tool used by the INC that was defined after the maximum operative

distance covered by a settler with a cart; that is, the distance that would allow a farmer to go and return to a plot without losing much time (Alagón, 2015: 8). Estimated as 2.5 km, this distance was used as the radius of a circle around the town – the cart-module, or its area of spatial influence – where the plots were placed. Neighbour towns, as a consequence, should ideally be separated by 5 km, with their influence areas drawn as tangent circles. The cart-module therefore allowed the graphical exploration of different combinations able to fill the available space. Once one of these visual arrangements was chosen, the circles were transformed into the canals, the water and the humans that would farm the Zones.

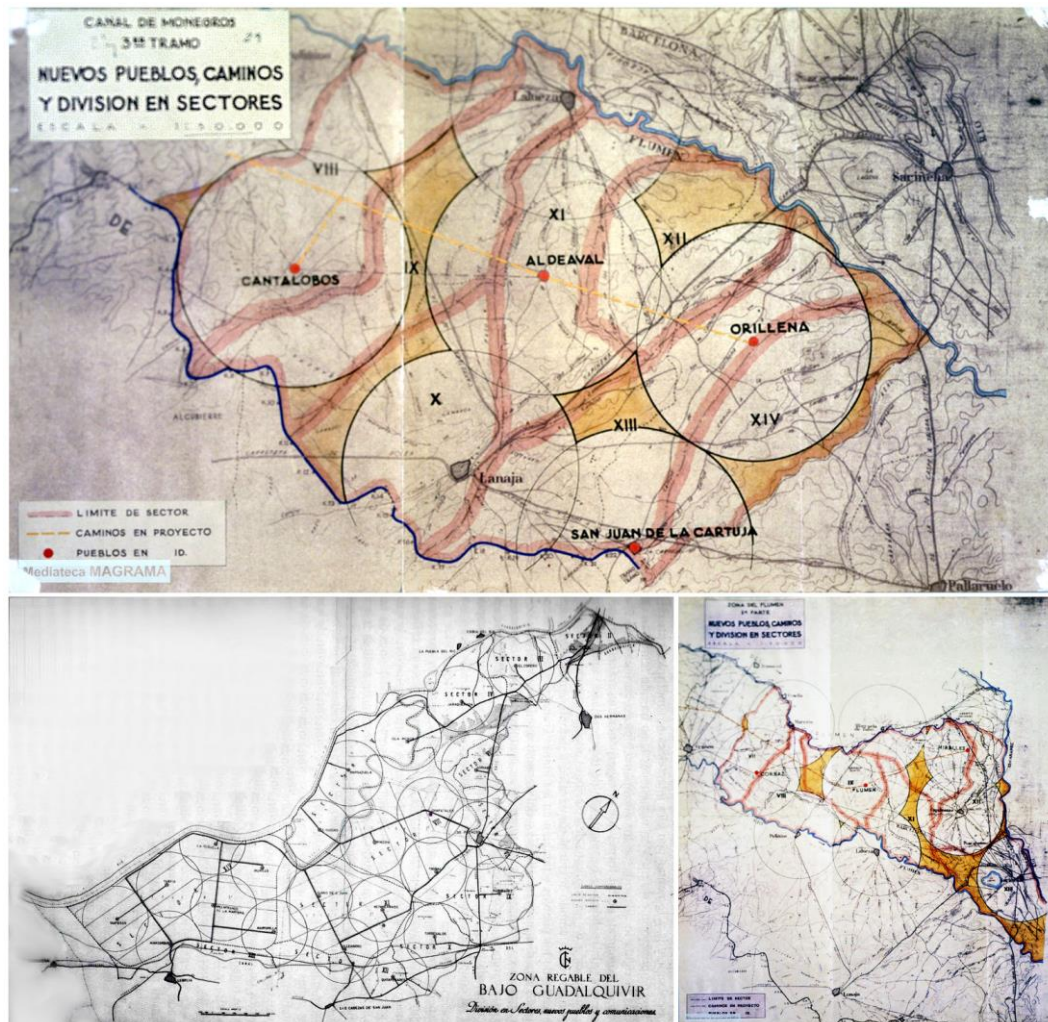


Figure 3: Cart-modules. Sources: (Villanueva and Leal, 1990) and Mediateca del Ministerio de Agricultura y Pesca, Alimentación y Medio Ambiente.

This drawing technique allowed the technicians of the INC to position the settler towns as well as to deploy the needed infrastructure; water canals in particular. A

singular case of mapping infrastructures, the central role of the cart-module highlights a significant dimension of the agriculture put into play: agriculture was being broadcast over these extensions. Following the work of Lisa Parks (2005; 2009; 2013), broadcasting can be understood as a technologized practice that results in the establishment of signal territories; that is, territories that are both culturally and materially transformed by the presence of specific signals. Within this inner colonisation, the design of the cart-modules abstracted the daily flows of farmers and water streams as periodic signals whose extent was calculated beforehand. On the maps of the infrastructure, workers and water are replaced by circular signals broadcast by the settlement nodes of the network. The Zones became signal territories, where each single settler town entailed its own footprint – the cart-module – as the territorial boundary in which its emissions could be received.

The arable space emerged after the expropriations as a signal space. Lands were connected lands. In addition to the space filling character of the cart-module circles, it is important to highlight their time-based nature. As I have explained, their radius was linked to the workers' displacement time considered in relation to their workday. It was an averaged everyday measurement of human activity that turned out to shape the vast Zones. If water had to reach the plots through the circuits of the network, farmers had to access them too, by their own means<sup>13</sup>. The ordering of space was subsumed to this temporal constraint.

## **Agricultures in orbit: Surfaces for the averaged sedimentations of time**

Once in the plot, another temporal window comes into play with the watering of the yields. These plans were designed to promote surface irrigation, which was at the time the standard system of distributing water. Practised for millennia, surface irrigation can be executed through several methods that guide and spread the water: parallel furrows, contour ditches, bench terraces, basin flooding, etc. Each of these methods irrigates differently, and it is recommended for different cultivations and characteristics of the terrain. As a general rule, water reaches one side of the plots through a canal, but enters the ditches and furrows only if the corresponding floodgate is opened.





Figure 4: Training and irrigation practices in one of the colonised areas. Source: *Mediateca del Ministerio de Agricultura y Pesca, Alimentación y Medio Ambiente.*

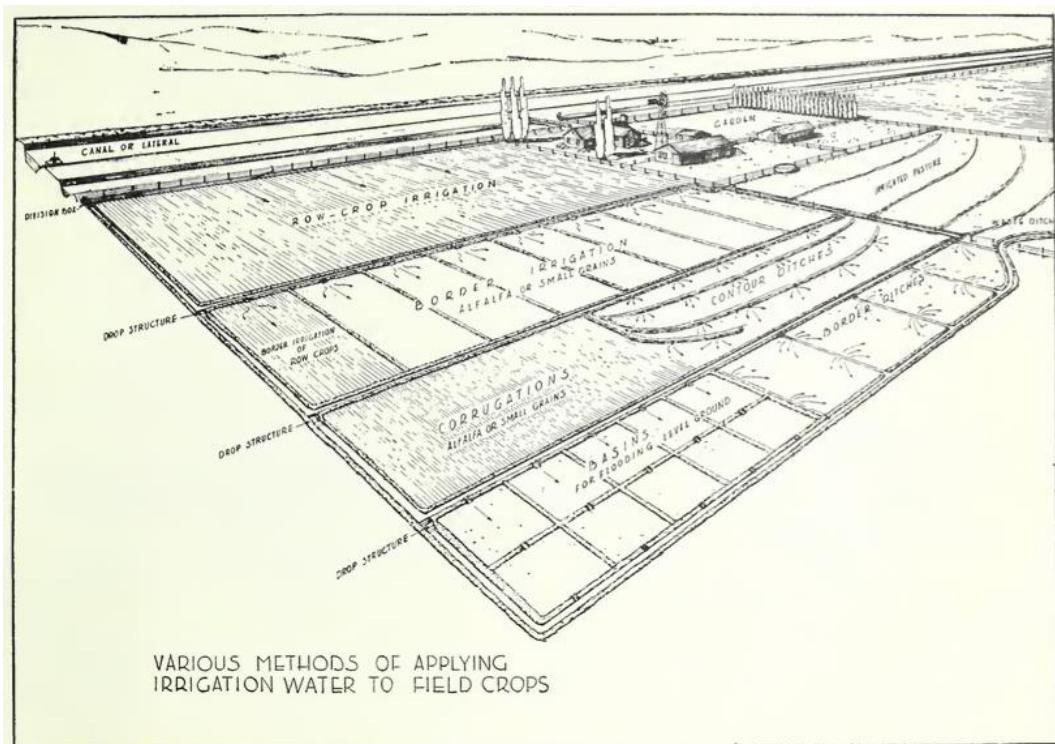


Figure 5: *First Aid for the Irrigator* manual (1947, p.3).

These farmers only had access to a stipulated maximum daily quantity of water, which they needed to manage and distribute within their fields through the use of different gates and irrigation methods. To make the most of that water depends on the expertise of the farmer. The *First Aid for the Irrigator*, for instance, was a 1947 manual by the US Department of Agriculture distributed during the execution of the American irrigation programs. It details the characteristics of the different methods and the importance of coupling them together, as for instance how the excess of water after an irrigated surface can be drained and used in another, how to avoid water erosion, over-irrigation, etc. Inside the booklet, flow is the most repeated word, and it might be read as a manual for the “accurate control of flow of irrigation water” (US FHA, 1947: 2), with sections devoted to the different types of gates, check boxes to limit the flows, measuring devices and more.

In the case of the Spanish inner colonisation, we need to take into account that in order to keep the big land tenants pleased, most of the plots offered to settlers had low quality soils.<sup>14</sup> In addition to this, a big amount of the settlers had never worked before with irrigation crops (Gaviria, Naredo & Serna, 1979: 278). Initially, during the first decade or so, these limitations resulted in very low figures, which in turn forced a redesign of the plan. After a new colonisation law,<sup>15</sup> each of the settler towns, for instance, received an agricultural engineer of the Institute, and each of the Zones was in the charge of a chief engineer. This way, the INC assumed control of the irrigation design, types of cultivations, timings, fertilizers and pesticides. The inner colonisation thus became a program of supervised agriculture. Settlers received specific training, and they were monitored during a testing period of two years. The watering machine, then, was put into operation, with controlled and periodic flows of water. No idle soil, no idle water.

The industrial character of the colonising agriculture we are analysing involved a controlled cut in time and space of the sedimentation of light on infrastructured surfaces of soil. Light was commodified by means of the spatial control of flows, such as water and pesticides, through gates and exposure times, as well as through the estimation and numerical averaging of their productivity. In these circuits, agriculture becomes an averaging activity that seeks the control of production, guaranteeing the needs of the markets as well as preventing the generation of surplus.



Embedded inside logistic circuits and broadcast over Irrigation Zones conceived as signal territories, the streams of water, chemicals and human workforce converge in these agricultural programs as a systematic practice of slicing surfaces of commodified light.



**Figure 6: Satellite image and map of the colonised Zone of the Bajo Guadalquivir, the main producer of rice today in Spain. Source: Google Maps/Digital Globe.**

## **Conclusion: An inverted astronomy**

The entrance of the satellite into civilian life and spaces comes together with a transformation of the spaces themselves (Parks, 2005) as well as of the subjects inhabiting them (Kaplan, 2006). This technology that originated inside the military

complex is considered to have even “draped the planet with a militarised image of itself” (Stahl, 2010: 86), to a point that, in the experience of its surface, new conditions of knowledge and perception are involved: “an inverted astronomy...has come into being, looking down from space onto the earth rather than from the ground up into the skies” (Sloterdijk, cited in Graham, 2010: 44).

In this paper I have analysed a change in the surface of a small part of the planet, linked on the one hand to the practice of the aerial, and, on the other – as it has been emphasized in this case – to a set of agricultural and managing practices put in operation during one of the several episodes of state-centred, large-scale land reforms characteristic of the 20<sup>th</sup> century; the Spanish inner colonisation. The use of a particular geo-location procedure, the ideation of the cart-module as a design tool and the centralised organisation of the watering timings and policies have been related to the topological reshaping of space that characterises the orbital apprehension of the planet. On the whole, I have argued that this agricultural episode is linked to the genealogies of orbital space. By doing so, the cultural significance of notions including signal territory and footprint – as discussed in the work of Lisa Parks – has been extended to the agricultural, thereby linking this large-scale agricultural case to the broader context of the media histories of the planetary surface.

## References

- Alagón Laste, J.M. (2015) ‘Los pueblos de colonización del Plan de Riegos del Alto Aragón y su emplazamiento en el territorio,’ *Scripta Nova. Revista Electrónica de Geografía y Ciencias Sociales* 19: 500–526.
- Barciela López, C. (1996) ‘La contrarreforma agraria y la política de colonización del primer franquismo, 1936-1959,’ in: *Reformas y políticas agrarias en la historia de España: de la Ilustración al primer franquismo*, Madrid: Centro de Publicaciones Agrarias, Pesqueras y Alimentarias, 351–398.
- Bloodworth, G., White, J. (2008) ‘The Columbia Basin Project: Seventy-Five Years Later,’ *Yearbook of the Association of Pacific Coast Geographers* 70: 96–111.
- Delgado, E. (2013) *Imagen y memoria: fondos del archivo fotográfico del Instituto Nacional de Colonización, 1939-1973*, Madrid: Ministerio de Agricultura, Alimentación y Medio Ambiente, Centro de Publicaciones.



- Easterling, K. (2014) *Extrastatecraft: The Power of Infrastructure Space*, London /New York: Verso Books.
- Ferrán, O. (2013) 'Grievability and the Politics of Visibility: The Photography of Francesc Torres and the Mass Graves of the Spanish Civil War,' in: *Memory and Postwar Memorials. Studies in European Culture and History*. New York: Palgrave Macmillan: pp. 117–136.
- Gaviria, M., Naredo, J.M., Serna, J. (1978) *Extremadura saqueada: recursos naturales y autonomía regional*, Barcelona: Ruedo Ibérico
- Gil-Fournier, A. (2017) 'Seeding and Seeing. The Inner Colonisation of Land and Vision,' *APRJA A Peer-Reviewed Journal About, Machine Research* 6, viewed 7 March 2018, <http://www.aprja.net/seeding-and-seeing-the-inner-colonisation-of-land-and-vision/>
- Gómez Benito, C. (2004) 'Una revisión y una reflexión sobre la política de colonización agraria en la España de Franco,' *Historia del presente* 3:65–86.
- Graham, S. (2016) *Vertical: The City from Satellites to Bunkers*. London/New York: Verso Books.
- Gutiérrez, J.L., Sánchez, Á. del R., Bono, G.A., Macías, L.M. (2004) *El canal de los presos, 1940-1962: Trabajos forzados: de la represión política a la explotación económica*, Barcelona: Crítica.
- Harvey, P. (2012) 'The Topological Quality of Infrastructural Relation: An Ethnographic Approach,' *Theory Culture & Society* 29: 76–92.
- Kaplan, C. (2006) 'Precision Targets: GPS and the Militarization of U.S. Consumer Identity,' *American Quarterly* 58: 693–714
- Leal García, A. (1969) 'La transformación del medio rural a través de la puesta en regadío y de la colonización,' *Revista de Estudios Agrosociales* 66: 107–137.
- Lury, C., Parisi, L., Terranova, T. (2012) 'Introduction: The Becoming Topological of Culture,' *Theory, Culture & Society* 29: 3–35.
- Macho, T. (2003) 'Zeit und Zahl. Kalender und Zeitrechnung als Kulturtechniken' in: Krämer, S., Bredekamp, H. *Bild – Schrift– Zahl*. Munich: Wilhelm Fink, 170–192.
- Parks, L. (2013) 'Earth Observation and Signal Territories: U.S. Broadcast Infrastructure, Historical Network Maps, Google Earth, and Fieldwork,' *Canadian Journal of Communication* 38: 285–307.

- Parks, L. (2009) 'Signals and Oil Satellite Footprints and Post-Communist Territories in Central Asia,' *European Journal of Cultural Studies* 12: 137–156.
- Parks, L. (2005) *Cultures in Orbit: Satellites and the Televisual*, Durham: Duke University Press Books.
- Peters, J.D. (2016) *The Marvelous Clouds: Toward a Philosophy of Elemental Media*, Chicago: University of Chicago Press.
- Scott, J.C. (1999) *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*, New Haven: Yale University Press.
- Serres, M. (2007) *The Parasite*, Minneapolis: University of Minnesota Press.
- Siegert, B. (2015) *Cultural Techniques: Grids, Filters, Doors, and Other Articulations of the Real*, New York: Fordham University Press.
- Stahl, R. (2010) 'Becoming Bombs: 3D Animated Satellite Imagery and the Weaponization of the Civic Eye,' *Mediatropes* 2.
- Thrift, N. (2004) 'Movement-Space: The Changing Domain of Thinking Resulting from the Development of New Kinds of Spatial Awareness,' *Economy and Society* 33: 582–604.
- Tordesillas, A.A. (2010) 'Referencias internacionales en los pueblos de colonización españoles,' *Ciudades: Revista del Instituto Universitario de Urbanística de la Universidad de Valladolid* 13: 183–200.
- United States. Farmers Home Administration. Engineering Division (1947) *First aid for the irrigator*. Washington, D.C.: U.S. Dept. of Agriculture.
- Vernadsky, V.I. (1998) *The Biosphere*, New York: Copernicus.
- Villanueva Paredes, A., Leal Maldonado (eds.) (1990) *Historia y evolución de la colonización agraria en España*, Madrid: Ministerio de Agricultura, Pesca y Alimentación.
- Vismann, C. (2013) 'Cultural Techniques and Sovereignty,' *Theory, Culture & Society* 30: 83–93.
- Winthrop-Young, G. (2014) 'The Kultur of Cultural Techniques Conceptual Inertia and the Parasitic Materialities of Ontologization,' *Cultural Politics* 10: 376–388.
- Wood, H., Bjerke, C. (2018) 'New Ground II: Countryside 2030', *Architect*, viewed 7 March 2018, <<https://architect.com/features/article/150052196/new-ground-ii-countryside-2030>>

## Notes

- <sup>1</sup> Two important exceptions are remarkable, as their influence to the Spanish *inner colonisation* has been highlighted several times. First, the North American large irrigation program, the Columbia Basin Project, whose final execution works took place between 1948 and 1952 (Bloodworth and White, 2008); it had been designed since the decade of the 1920s, but it was only after the war that water started to arrive to the fields. Second, the agrarian reform performed by the Italian Christian Democrats after the war as also a sister project of the *colonisation* (see for example Tordesillas, 2010; Gómez Benito, 2004).
- <sup>2</sup> *La colonización y repoblación interior en los principales países y en España* (1925) – The colonization and internal repopulation in the main countries and in Spain – published during the dictatorship or Primo de Rivera (1923-1930), consisted of three volumes in which the following cases were examined: Germany, Austria, Hungary, Belgium, Denmark, France, Finland, Netherlands, England, Ireland, Italy, Norway, Portugal, Russia, Sweden, Switzerland, India, Japan, Siberia, Korea, Algeria, Egypt, Tripoli, Tunis, South Africa, Argentina, Brazil, Canada, United States, Mexico, Uruguay, Australia, New Wales and New Zealand.
- <sup>3</sup> Among these, the *integrals* (1924-1950) was the most influential for the Spanish program (Gómez Benito, 2004: 75).
- <sup>4</sup> As Siegert has insisted, the use of grids in the colonization of America is linked to the importance that the Spanish Authorities assigned to the problem of the idlers. As “the New World was a paradise for idlers, a realm of lazybones, gamblers, and loose women” (Siegert, 2015: 91), it was crucial to devise a system against the vagabond – originally the bagamundo, the idler world wanderer. They were the parasite that threatened the economic activities in the New World as well as the stability of the Spanish cities. Parallel to their definition, to their distinction, they were channeled: as it has been plainly demonstrated by Siegert, the grid-shaped cities performed the disciplinary and governmental need.
- <sup>5</sup> The relation between the Inner Colonisation with Siegert’s notion of grids as cultural techniques has been explored in (Gil-Fournier, 2017).
- <sup>6</sup> The striking and murderous violence of the Civil War in the affected lands, in Extremadura particularly, are related to this agrarian conflict (Gaviria, Naredo & Serna: 17).
- <sup>7</sup> Cartridges and other projectiles are still easy to find in some of the Civil War scenarios. Moreover, most of the mass graves are still uncovered. In relation to this, see for instance the work of Francesc Torres (Ferrán, 2013)
- <sup>8</sup> An updated revision of these precision and automated farming techniques can be read in a recent speculative essay on the futures of the rural countryside (Wood and Bjerke, 2018).
- <sup>9</sup> The new naming system was elaborated in the *Plan General de Obras Públicas* (1940), and referenced each road with number that depended on 1) its angular location in relation to the six main radial motorways and 2) its distance to the *Puerta del Sol* square in Madrid. This nomenclature protocol is still in operation nowadays.
- <sup>10</sup> Other geographical references were also used, such as the course of rivers or borderlines between provinces.
- <sup>11</sup> Many towns received names linked to the colonisation of America, to recall an infamous “glorious national past” (Delgado, 2013: 21).
- <sup>12</sup> Interestingly, the design decision of positioning settlement towns in the nearby of the road system has been discussed by Scott to the control and monitoring disposition of authoritarian States (Scott 237). In this sense, the INC program has been criticized for its pervasive practices of surveillance on the settlers (Gaviria, Naredo and Serna, p.356).
- <sup>13</sup> The “cart” in the cart-module accounts for the main transportation means in the rural Spain at the time, a cart pulled by a donkey, a horse or a farmer. As explained, the plans clearly took this into account. To a level that, as it has been repeatedly argued (Alagón, 2015: 8; Tordesillas, 2010: 199), this has been one of the most salient failures of the model too, as the design became immediately obsolete when mechanised vehicles filled the lands (once the international blockade to Franco’s Spain ended).
- <sup>14</sup> To keep the big landowners pleased, the State assigned the worst lands to the settlers. The rest of the plots – still private property – were connected to the irrigation system. This way, the owners multiplied their benefits, despite the lands having been expropriated (Gaviria, Naredo & Serna, 1979: 262).

<sup>15</sup> The new colonisation law was introduced in 1949 (Gómez Benito, 2004: 75).

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