

Research Report

Background

The research project was designed to critically explore the promise of technological development projects (particularly the development of communications infrastructures) to deliver social change. Building on previous work in the field of information and communications technologies (ICTs) in Manchester, UK¹, we wanted to examine the more established and thus less hype-driven communications technology of road networks. These more concrete infrastructures seem to have already established their credentials for achieving modernising effects of communication and mobility. They are generally understood to deliver on the promises of social integration, economic development and modernization - and as such are integral to 'third world' development programmes. However it is clear that in countries such as Peru the 'social change' associated with infrastructural development does not equate in any direct way with either social cohesion or economic prosperity. The eighty year history of road-building in Peru, and the on-going enthusiasm for, and investment in major road-building projects offered an exciting research opportunity to generate deeper understandings of how technical connection is expected to become generative of social cohesion, and in how the political, economic and more general socio-cultural investment in these infrastructures is sustained, despite the clearly uneven, and often blatantly destructive and divisive outcomes. Our research hypothesis, again based on our previous research findings from the Manchester projects, was that much could be learnt by exploring the perspectives of those at whom these 'development technologies' are, at least rhetorically, directed. Such people are often blamed for the failures of development initiatives, as unable or unwilling to take advantage of new forms of connectivity. Yet we also knew from our previous research that existing social networks and knowledge practices are standardly ignored by future-oriented technological development. The Peruvian research project thus explicitly set out to examine the histories of three roads, chosen to maximise their comparative dynamics (both geographically, and in relation to their current status - one recently completed, one about to be substantially up-graded, and the other of established historical significance in relation to the emergence of the modern Peruvian national economy). We chose to focus ethnographically on what we termed 'the politics of knowledge', to enable an understanding of the texture of the relations between the diverse knowledges mobilised in everyday practice and the so-called universal knowledges on which technical projects rely.

Objectives

The following aims and objectives oriented the research and have remained the central concern of this project.

1. To develop theoretical contributions to the anthropology of science and communications technologies and to wider inter-disciplinary debates about the relationship between technological development and social change. By analysing the relationship between connectivity, integration and social cohesion, the study

of diverse knowledge practices aims to provide a novel theoretical position from which to explore processes of globalisation and modernisation.

The ethnographic and archival work on diverse knowledge practices has revealed the contested nature of the concepts of 'connectivity', 'integration' and 'social cohesion', and furthered our understandings of how the creation and enforcement of 'standards' (moral, technical and spatial) inflect the ways in which the 'connectivity' inherent in globalisation and modernisation works through people's daily lives. (See 'Results' section below for further detail).

2. To contribute to an understanding of contemporary Peru through an ethnographic analysis of roads and to develop knowledge about the interactions of the different groups of people who are implicated in projects of infrastructural development and modernisation.

This aim has primarily been addressed through ethnography, archival work and interviews. Key groups identified include: national, regional and local government officials, the military, 'experts' and 'professionals' (engineers, lawyers, economists, planners, managers), journalists, NGOs (both secular and religious), design and construction companies (national and international), labourers, drivers, travellers and transport companies, migrants, 'frontier colonists', Andean and Amazonian indigenous communities, urban and semi-urban populations. In addition we found it crucial to consider key non-human agents - particularly the materials (stone, earth/mud/dust, water), the inscriptions (numbers, images and written documents), the 'environment' (imagined and implicated in diverse registers), and an animate spirit world. (See 'Results' section below for further detail).

3. To apply ethnographic methods more usually deployed for the study of specific institutions or places to a more extensive object - a road. The project aims to refine the use of ethnography as a method of studying this kind of object, so that insights and lessons from this research might be taken forward, for example, for use in a larger project on communications technologies in the future.

Mobility (physical and social) has been a central feature of this ethnographic study. 'Ethnography in motion' emerged as a key research technique as we followed the activities of the construction company, and travelled independently to understand the diverse perspectives of those moving and living along the length of the roads we studied. The construction process draws all those who live along the road into its field of activities (as workers, land-owners, traders, speculators, squatters and/or as the dispossessed). The instability of both the material and social environments in relation to the construction process also contributed to the destabilization of classic fieldwork tropes. We worked closely with the engineers' concept of the 'linear site', tracing road building as an inter-disciplinary project with its own complex epistemological and communicative challenges. We have taken these insights forward, putting together a major interdisciplinary comparative research initiative on infrastructural development in the UK and in Peru which looks at how visualisation technologies operate as 'intermediaries' in linear construction projects, and at how 'expertise' gets reconfigured in the process.

Current enthusiasm for 'multi-sited' methodsⁱⁱ responds to awareness of the limits of ethnographic models that confine persons to specific spatial locations, but very little research has been done to integrate a focus on 'practices of location' (those activities that keep things and persons in place) with 'practices of movement'. 'Ethnography on the move' entails intense engagement with fellow travellers *and* with points of stoppage. We distinguish our approach from that of multi-sited methods as commonly practiced, precisely through our focus on how places are constituted through movement and through relationships formed over time. Greater emphasis is placed on connectivity and disconnection than on multiplicity. The method is predicated on substantial prior knowledge of the research region and the subsequent possibility of working through networks of established relationships. (See 'Methods' section below for further detail).

4. The accumulation of a new body of information on the history and experience of roads in Peru in the form of a collection of archival and ethnographic material. The project intends to explore the benefits of creating an archive of multi-media materials for other researchers and for a future research project. This will be explored through CRESC's qualitative research lab facility and in consultation with the ESRC Qualitative Data Archival Resource Centre.

We have collected a considerable body of archival information and oral history on the two specific roads that we have studied. This has been monitored and compiled into an online resource available through the website that we have constructed. We are also working with the qualitative data archive project (within CRESC) to address the issue of how best to (i) archive and (ii) create new points of contact between diverse data forms. We have collected a diverse range of media including documents, power point presentations, photographs, film, interviews, field notes, archival and bibliographic data, group discussions, maps, technical diagrams and reports. Again this issue is central to the new project. We are involved in CRESC's methods workshop next Spring on "*Image, Number, and Narrative*". The challenge of how to work across such diverse data sets is a central concern of our future research project.

5. To produce a website in order to facilitate two-way communication between themselves and development agencies in Peru. The website will be a resource through which the project will be able to communicate relevant findings to practitioners both during the fieldwork period and subsequently. It will also be an experiment in generating a different form of communication from face-to-face conversation and will provoke the researchers to reflect on the process of information dissemination to development agencies and the response of the agencies to the findings provided.

We set up a holding website during the time that we were conducting research in Peru, and this generated interest from other scholars in the UK also doing similar research on roads. On returning to the UK we commissioned a more complex and better designed site which will be used over the next two years as a location for placing publications and information about the road that we feel can be made public (see Outputs). Since the site has gone live, we have contacted all our collaborators and contacts made on this project in Peru, in order to make them aware of this resource.

Methods

This research project has been conducted through the use of ethnographic methods including participant observation, unstructured and semi-structured interviews, and archival and media research. Both researchers spent seven months in Peru. We recorded 56 interviews and many more informal interviews were conducted. The fieldwork was divided between three major sites - (i) the inter-oceanic highway in the Departments of Cusco and Madre de Dios (ii) the Iquitos-Nauta road in the Department of Loreto and (iii) Lima.

Research in Cusco/Madre de Dios:

a) The main focus was participant observation and interviews with the consortium constructing the road. We followed safety officers, topographers, lab technicians, road-maintenance engineers, construction engineers, environmental protection officers, and community relations staff whilst they did their jobs. We participated in the everyday life of the construction camps. In Cusco we interviewed political authorities, engineering professionals from both public and private organisations, and early colonists now living in the city, on their experiences of road building in this region, and their specific understandings and opinions of the inter-oceanic highway construction project.

b) We ethnographically ‘mapped’ the road between Cusco and the border with Brazil, travelling with drivers who knew the road intimately. We conducted interviews in each settlement along the road, talking to local residents and authorities. These conversations were supplemented by photographs, videos, and subsequent archival research and interviews with people no longer living along the road. We explored the history of the road and its relationship with extractive industries of gold mining, and logging, agricultural industries of sugarcane production, cattle ranching, rice, maize, and Brazil nut cultivation.

c) More extended periods of participant observation were conducted in two communities along the road, one in Amazonia and one in the Andes.

Research in Loreto: We conducted interviews and accompanied local residents and construction workers to understand the 70 year history and recent completion of the Iquitos-Nauta highway. Interviews were conducted with engineers, regional government officials, teachers, health workers, journalists, NGOs (religious and secular), and local residents in Nauta, in Iquitos and the road-side communities. Knox contracted a research assistant who was a resident in Nauta and had worked on the construction of the road who helped in organising and conducting interviews around the town. We made many journeys along the road, in various forms of transport - and also compared the road to the river as means of travelling between Iquitos and Nauta. We visited communities who were relocating from the river-side to the road-side and discussed how they had built the connecting pathways that effectively reorient these communities away from the rivers. We carried out extensive archival work in the libraries of the Instituto de Investigaciones de la Amazonía Peruana (IAAP), and the Biblioteca Amazonica in Iquitos, and in the Augustine School in Nauta. We were given access to the private collections of documents compiled by journalists.

Research in Lima: The researchers conducted archival and library research in the following institutions: Instituto de Estudios Peruanos, Archivo Historico Militar,

Universidad Nacional de la Ingeniería historical archive, Biblioteca del Congreso, the Ministry of Transport and Communications, The Instituto de Estudios Marítimos del Perú, Centro Amazónico de Antropología y Aplicación Práctica, the Biblioteca Nacional, the library of the Universidad Católica del Perú, and the Archivo General de la Nación, to gather information about the general history of roads in Peru, and specific information on the history of the Interoceanica and the Iquitos-Nauta roads. We also conducted interviews in the company headquarters, and with academic researchers working in Pro-etica (a branch of Transparency International).

We made one substantive change to the research design during the course of the project. We had originally suggested that we would conduct ethnographic research on three roads. However when we started the ethnographic research, the amount of activity taking place on the interoceanic highway as the international contract was signed and work got underway presented a far richer and more exciting research resource than we had originally envisaged. Thus, rather than attempting to conduct a partial ethnography of the *carretera central* (the third road mentioned in the original proposal) - or alternatively, to be distracted from the fascinating interactions between different groups that was occurring on the interoceanic highway, we decided to incorporate the *carretera central* through archival rather than through ethnographic research. We believe that this slight reorientation has produced much richer and more focused research data with which to answer the questions that we set out to investigate. This shift to a more historical focus on the third road allowed us to trace the Peruvian aspirations for an inter-oceanic connection since the 1920s to the present time.

Research Results

Findings in relation to research aims 1 and 2 outlined above:

Building upon previous research we set out to examine the importance of connectivity as a justification for and means of achieving social change. Our focus on diverse knowledge practices revealed three specific dimensions of connectivity operating across the road building projects:

(i) Territorial connectivity (the integration of designated geographical spaces to form larger regional and/or national territories; (ii) Social connectivity (the achievement of improved social connection across these spaces); and (iii) Technical connectivity (the development of technical standards across these spaces such that the territorial and social connectivity can be achieved).

These three dimensions of connectivity were engineered through standardization, processes which entail both the creation and enforcement of 'standards', through the imposition of value, and the exclusion of the 'non-standard'. Our research shows how roads themselves emerge as standard social forms that hold together diverse and often incompatible desires. Focusing on the complex social contexts through which territorial, social and technical standardisations emerge and are reinforced around the long-term Peruvian project of road building, we also show the *specific* standardisations and erasures provoked by the road. The focus on practices of standardization thus enables us to illustrate how globalizing processes (the effective

imposition of standards) both produce and emerge through specific, non-standard practices.

Roads as territorial connectors rely on standardisations of space into socially and administratively defined domains, which in turn enable mobilities that come to constitute the very fabric of a cohesive and integrated nation. National road construction in Peru has had powerful integrative effects. Road building provokes the nomadic movement of professional engineers whose projects bring employment and skills to 'peripheral' regions. Peasant communities have also experienced new kinds of mobility in their colonization of newly accessible lands where they are encouraged to create wealth through entrepreneurial endeavour. However, such mobilities are equally liable to be cast as destructive of the social fabric, with engineering works threatening more fragile gendered economies. The influx of significant populations of single men (often in numbers far exceeding those of the local settlements) brings fear of social unrest associated with sexual transgression and discriminatory employment practices. Likewise, the mobility of peasant communities is easily recast as displacement, and economic migrants are seen as dangerous outsiders unrestrained by established social norms or responsibilities of stable moral 'community'. To claim that social cohesion can be achieved through projects of territorial and technical connection thus requires the promoters of such projects to draw stable distinctions between cohesive and disruptive forces. We found that in the process, the social 'standards' that groups attribute to themselves and see others as lacking are rendered incommensurable by the deeply asymmetrical historical relations through which they were created and produced. This is illustrated in relation to three domains of practice and discourse: (1) Technical Expertise (2) Economic Development and (3) Territorial Agency.

Technical Expertise: We traced the moral dimensions of technical practice, looking at the possibilities and the limits of expert knowledge, and the values imposed in processes of technical standardization. From our ethnography of the engineering company it became clear that the expertise of engineers is constituted not merely in their mastery of particular modes of calculation that enable the material transformation of the environmentⁱⁱⁱ, but also in their ability to mediate between their technical (and thus implicitly non-socio-cultural or universal) standards and those of the non-experts with whom they engage in order to build the road. This distinction between the expert and the non-expert operates across the professions represented within the confines of the company (for example between designers, topographers, soil analysts, lawyers, accountants, safety officers, etc.) as much as between the 'company' and 'local people'. Technical expertise is a mode of power^{iv}, but through an appeal to universal value it can appear non-impositional, even emancipatory as it provides a means of social improvement. Our ethnography of health and safety procedures, for example, shows how the attempts to impose a rational regime of risk prevention, both magnifies the sense of risk (now inherent in every thought and action) and concurrently minimises the desired sense of personal responsibility (where employees at all levels comply with risk prevention measures to demonstrate their dispositions to be good employees - and be seen to conform - rather than assuming that such practices actually 'make sense'). Similarly our analysis of laboratory practices reveal how the social and material components of 'land' are separated and reconfigured in ways that categorically distinguish the relevant from the irrelevant material agencies. The properties and capacities of the soil become subject to the

knowledge practices of experts, and that which cannot be accounted for in such ways (the inherent sociality and historicity of the material world manifest in ubiquitous hauntings and spectral presences) is dismissed as ignorant superstition.

Economic Development: These charged forces of non-rational apprehension are also evident in the realm of economic relations, manifest most blatantly in the sense of the inevitability of widespread 'corruption' and financial scandal surrounding public works. Contemporary road-building is about making money. Private construction companies, in partnership with the state (and in alliance with various levels of state bureaucracy) legitimately generate profits from such works. It is however generally understood, and expected - although nowhere condoned - that profits are also generated illegitimately. Roads are sites of theft - of the resources of governments, private companies, communities and individual citizens. Our ethnographic research has tracked how people situate themselves in relation to corruption practices, and how legitimacy and illegitimacy are negotiated as values. We have also analysed how anti-corruption 'standards' engage with the same politics of 'expertise' as those discussed above - creating blind-spots of reason through which certain cultural practices are claimed as universally valid, while others are effectively criminalised. The power to criminalise or to pass as legitimate is differentially distributed.

Territorial Agency: The sense of social injustice that pervades road-building (as suggested in the previous two paragraphs) is also manifest in the politics and negotiations surrounding the land itself. We explored the diverse relationships to land manifest by the state, the construction companies, local communities and migrants. Roads are sites of highly contested land-holding, and the relationships of specific persons to the land vary hugely. Histories of land-holding are very important, both in relation to specific sites, and in relation to sites of 'origin'. The land through which roads are built is intrinsically the site of changing values (both monetary and affective). Land becomes the subject of attention - analysis, exploration, exploitation, preservation, ownership. Land appeared in our ethnography in diverse guises, as a resource to be exploited or preserved, as the site of pilgrimage or of memory, as resistant materiality to be tamed, as a voracious and animated force that can cause accidents and requires sacrifice, and constant attention. Roads are built through explicit engagements with the promise of economic development - whether through conservation for tourism, or resource extraction. In the regions we studied the sense of resource frontier was intrinsic to the sedimented histories of road-side dwelling - and we have tracked the histories of rubber, gold, timber, cattle, agriculture, tourism and most recently bio-diversity that connect local communities to global histories. Our intention is to write these histories to show the mutual engagement of Andean and Amazonian conceptions of place and agency in relation to the punctual presence of modernity and the subsequent cycles of abandonment. Our focused ethnographic and archival research allows us to describe how the forces of capital and of the state appear and disappear in the regions 'connected' by roads to centres of power.

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ⁱⁱ Marcus, G (1998) *Ethnography Through Thick and Thin*. Princeton: Princeton University Press

ⁱⁱⁱ Mukerji, C (1997) *Territorial Ambitions and the Gardens of Versailles*. Cambridge: Cambridge University Press.

^{iv} Mitchell, T (2002) *Rule of Experts : Egypt, Techno-Politics, Modernity*. Berkeley: University of California Press.