



Digital Infrastructures and Economy, International Symposium

DIGITAL LIFE RESEARCH PROGRAM

DATE

Wednesday and Thursday,
4–5 November 2015

VENUE

Day 1: EZ.G.36, Female Orphan School
(west wing)

Day 2: EB3.17

Western Sydney University,
Parramatta South Campus

ORGANISERS

Ned Rossiter, Juan Francisco Salazar
and Liam Magee

PROGRAM

4 November – Symposium Day 1

- 10am Tea/coffee, registration
- 10.20–10.30am **Welcome**
Professor Paul James, Director, ICS
- 10.30am **Introductory Comments**
Ned Rossiter, Liam Magee, Juan Francisco Salazar
- 10.45am–12.15pm **Gaudí, Cerdà and Big Data: Pre and Post Digital Infrastructure Challenges and Opportunities'**
Mark Burry
- 12.15–1.15pm Lunch
- 1.15–2pm **'Satellites as Human Rights Infrastructure'**
Tanya Notley
- 2–3.30pm **'Infrastructures of Survival: New Relations of Inclusion and Exclusion in the Digital Reform of Health and Emergency Services'**
Justine Humphry
- 3.30–4pm Afternoon tea/coffee
- 4–5.30pm **'Consumer Databases as Practical Accomplishments'**
Tomás Ariztía

5 November – Symposium Day 2

- 10am Coffee
- 10.15–11.45am **'Social Architecture for Distributed Capital: Robin Hood 2.0'**
Akseli Virtanen
- 11.45am–1.15pm **'There is no Blockchain without Bitcoin: Toward a New Mode of Accounting (for) in Distributed Networked Economies'**
Laura Lotti
- 1.15–2pm Lunch
- 2–3.30 **'Managed by Machines? Enterprise Software, Corporate Power, Algorithmic Management'**
Armin Beverungen
- 3.30–4pm Afternoon tea/coffee
- 4–5.30pm **'Polar Infrastructures'**
Juan Francisco Salazar
- 5.30–6pm **Closing panel**

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SUMMARY

Digital media technologies of Internet communication and software coupled with supporting infrastructures of storage and transmission have resulted in the production, sharing and distribution of knowledge and culture on scales previously unseen in the history of human life. More recently, the rise of big data analytics associated with sensor technologies and the biometric monitoring of social, urban, industrial and ecological systems has seen the empirical being redefined by algorithmic operations. It is no surprise that finance capital and new economies of exchange are closely tied to many of these developments. Spot rates, for example, are hedged against the delivery times of shipping containers in the maritime industries. Health industries are flourishing with the widespread adoption of consumer self-tracking devices and the scramble for standards designed to subsume life into measures optimised for the sale of medical products. The quantified self has become the exemplary subject around which the design and distribution of a wide array of knowledges across life and labour is organized.

Within this maelstrom of change, knowledge orientates itself across public and private institutions, unbound from the university and its attendant ecologies of knowledge production. But while users have come to play a central role in the reorganization of how knowledge is created, distributed and valorised, their influence on the infrastructures structuring and sustaining these knowledges has been especially limited. At the same time, the infrastructural dimension of digital economies is receiving increasing attention, from the shift to low-latency networks and centralized storage systems to the logistical technologies ensuring the synchronization of networked activities.

Within such contexts, it makes sense to move outward from the user, now situated and redefined as a node of multiple infrastructures. Yet rather than focusing on this networked self, or the urban equivalent of Sassen's global city, this international symposium maps these overlapping infrastructures that constitute users as a new kind of economic and epistemological subject. Such an undertaking is no longer a matter of making visible the invisible. What needs to happen is an exploration of how the digital economy changes the way we understand and constitute infrastructure. To effectively address such concerns, the need to develop a conceptual idiom capable of comprehending the scope of digital infrastructures and their economies becomes all the more apparent: from anonymous grassroots activists in support of independent media to hackers able to control industrial infrastructures, from the anonymity of high-frequency trading that complicates the analyses of financial crises to the anonymity of users who prefer to cooperate in their exodus from the world of corporate communications infrastructures.

Cutting across sociology, media theory, cultural research, anthropology, science and technology studies, economic geography, computer science, urbanism and design, this two-day international symposium and masterclasses address topics such as the following:

- Media infrastructures
- Cultural infrastructures
- Logistical infrastructures
- Management infrastructures
- Knowledge infrastructures
- Finance infrastructures
- Transactional infrastructures
- Health infrastructures
- Human rights infrastructures
- Polar infrastructures
- Post-planetary infrastructures



ABSTRACTS AND SPEAKER BIOGRAPHIES

Associate Professor Tomás Ariztía, Universidad Diego Portales 'Consumer Databases as Practical Accomplishments'

This paper focuses on describing how digital datasets are produced and mobilized in data intensive financial business. More concretely, it describes the practices and devices that take part in the production of a customer database. We do so by relying on the material coming out of an eight month experimental ethnography that involved following the process of manufacturing and analyzing a transactional dataset from a financial retail company in Chile. During this experiment, we actively engaged in the process of creating, modifying and data mining a big set of customer digital transactional data. By doing so, we explored and mapped the different operations through which social entities are shaped and mobilized inside and through the dataset. We take here a mostly pragmatic approach in which customer 'data' is understood as a practical accomplishment involving a careful orchestration and manipulation through expert practices and devices. Opposite to traditional views in the data industry, where datasets are often described as 'raw data', we argue that customer datasets might be defined as the outcome of multiple moments of qualification and valuation.

At the empirical level, the paper describes the first stage of a process of data mining that commonly involves the 'preparation and cleaning' of transactional datasets for further analysis. This first moment is often defined in terms of the production of a *workable* customer dataset that can be used as an input for data analytics. It also involves using SQL queries and data programming through different programming language, software and frameworks (SPSS, SAS, PYTHON or Google BigQuery, among others). We focus on analyzing two specific types of practices and devices, which define constitutive aspects of this process. The first type deals mainly with *making relations*. It involves the practical work of creating and modifying links between preexistent data entities, which also result in the creation of new entities. We discuss here how the practices and devices for *making relations* are mediated by – and organized through– several digital infrastructures such as programming languages (SQL, Python) or data mining frameworks (BigQuery, SAS). These digital infrastructures work mainly as (digital) spaces through which new entities are created, therefore defining the scope of possibilities and framing the version of how the social might exist in the database (for example, which aspects of the consumer are to be considered, which are discarded). Against this backdrop, we then describe how digital and material devices – such as algorithms, drafts and screenshots – take a central part in how new relations are made and maintained inside the dataset. We finally discuss how these operations *making relations* can be understood as a practice of qualification that involves the deployment of a (very

mundane) politics of value, where some data qualities are chosen and valued while others remain hidden.

The second type of practices and devices identified relate to the practical operation of *testing and valuing* the dataset. We discuss how valuation practices and devices involves orchestrating different types of *trials* where the value(s) of a given entity or collective in the dataset is effectuated. More concretely describe how the datasets are subject to different trials where different grammars of value are mobilized. Among others, we describe how the datasets are tested in terms of their formal elegance, reality, coherence and commercial value. These different trials involve mobilizing a diverse array of valuation devices such as the use of excel filters, zoom or the confrontation of data with 'real life' experiences. Along this process, data entities are selected and discarded in relation to their worth.

After examining these two type of practices and devices (for *making relations* and for *valuation*), the paper concludes discussing the *ontological politics* at work in data practices. From here, customer datasets can be seen as a digital object through which some particular versions of the social are enacted. We finish discussing the gains and problems of taking a more pragmatic approach to researching digital infrastructures and objects and the need of more research that focuses on unpacking the myriad of practices and devices that make (digital) data exist.

Tomás Ariztía is Associate Professor at the Department of Sociology at Diego Portales University, Chile. His research is concerned with Consumption Studies – particularly Social Studies of Marketing, Sustainable Consumption and energy – and Sociology of knowledge. He is particularly interested on how consumers are mobilized in marketing knowledge practices. He has conducted fieldwork in advertising agencies and marketing departments and is currently involved in a three year research project focused on comparing Big Data, Design Thinking and Market Research as different knowledge grammars through which social entities are enacted in markets. Recently he edited the book *Produciendo lo social: usos de las ciencias sociales en el Chile reciente* (Ediciones UDP, 2012), which explored the connections between social sciences and the production of social worlds.

<http://www.icso.cl/investigadores/tomas-ariztia-larrain/>

Dr Armin Beverungen, Leuphana University Lüneburg 'Managed by Machines? Enterprise Software, Corporate Power, Algorithmic Management'

Sensors that track and trace anything and everyone that moves. Real-time datasets ready for in-memory computing at your fingertips. One app with minimalist interfaces to draw in your database query and visualise analytics. In front of the screen:

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a white collar man. Welcome to the fantasy of the omnipotent manager, courtesy of enterprise software producer SAP. Here automation and algorithmicization are embraced to sustain corporate power throughout supply chains. Yet why does corporate power still require managers? Despite some fantasies of full automation, managers persist. Even though algorithmic management distributes decision, cognition and control capacities within the computational system, the manager is reinstated and reconfigured as its primary subject. What potential subject is there to oppose him?

Armin Beverungen works at the Digital Cultures Research Lab at Leuphana University Lüneburg, Germany (<http://cdc.leuphana.de/dcrl>). He holds a PhD from the University of Leicester and was previously a PostDoc Researcher at the Hybrid Publishing Lab at Leuphana and a Senior Lecturer at the University of the West of England, UK. He works at the interstices of media and organization theory, and is a member of the editorial collective of *ephemera: theory & politics in organization*.

<http://www.leuphana.de/armin-beverungen.html>

Professor Mark Burry, University of Melbourne **'Gaudí, Cerdà and Big Data: Pre and Post Digital Infrastructure Challenges and Opportunities'**

Engineer Idefons Cerdà was the master planner for Barcelona's characteristic grid. He also coined the word 'urbanisation' having conducted an extensive survey of the city of Barcelona and a three volume set of statistics – mid Eighteenth Century analogue big data, to make his case for a planned expansion to the city. Architect Antoni Gaudí bequeathed his successors the incomplete designs for his great basilica, the Sagrada Família, but grounded on a geometrical schema that completes the puzzle of his final intentions. This presentation will make the links between the engineer and the architect, pre and post digital big data, and discuss the underlying infrastructure and economic implications for those concerned with the design of our urban futures.

Mark Burry is a practising architect who has published internationally on two main themes: the life, work and theories of the architect Antoni Gaudí, and putting theory into practice with regard to 'challenging' architecture. He has been Senior Architect to the Sagrada Família Basilica Foundation since 1979 pioneering distant collaboration with his colleagues based on-site in Barcelona. In December 2014 Mark Burry joined the University of Melbourne as Professor of Urban Futures at the Faculty of Architecture, Building and Planning. In this position he is developing the Faculty's capacity to consolidate research in urban futures by drawing together and augmenting expertise in urban visualisation, urban analytics, and urban policy. Through this appointment he is building on his prior investigations in the context of urban research returning to a more architecturally

driven research dialogue. He is contributing to continuing work on the Grand Challenges at the University of Melbourne (understanding our place and purpose, fostering health and wellbeing, and supporting sustainability and resilience) through an urban perspective, cross-Faculty linkages, and the development of broader research and industry connections. Prior to his new appointment he has been the Founding Director of the RMIT University's Design Research Institute (DRI), established in 2008 as a whole-of-university collaboration across RMIT University's entire design research community ranging from hard-core sciences and technology to applied arts. In 2001 he founded RMIT University's state-of-the-art Spatial Information Architecture Laboratory (SIAL) in Melbourne Australia, established as a holistic transdisciplinary spatial design research environment.

<https://msd.unimelb.edu.au/people/mark-burry>

Dr Justine Humphry, Western Sydney University

'Infrastructures of Survival: New Relations of Inclusion and Exclusion in the Digital Reform of Health and Emergency Services'

In this paper I trace the rise of 'infrastructures of survival' and explore the resulting kinds of subjectivities, and relations of inclusion and exclusion. The digital reform of a wide range of health and emergency services has recently taken on new momentum with the introduction of numerous cross sector initiatives to promote the digitisation of Australian services, including the National EHealth Strategy (2008), the National Digital Economy Strategy (2011) and the Australian Public Service Mobile Roadmap (2013). Specific initiatives such as the New South Wales Rural Fire Service 'Fires Near Me' app and the federal government 'Emergency +' app use online and mobile platforms with geo-location to deliver real time emergency and support responses and track information on users' transactions and digital movements. This development is not simply a new mode of service delivery. It represents a new paradigm of self-managed care instituted through networked, and increasingly mobile, 'infrastructures of survival'. While much of the rhetoric behind digital service reform emphasises the potential to empower users, the interactions and engagement resulting from this process are oftentimes highly controlled and costly. Drawing on research on homelessness and mobile/internet use as well as a collaboration on anti-pokie apps, I examine how infrastructures of survival interrupt and re-configure everyday spaces and institute new kinds of subject-state relations, bringing about new dynamics and experiences of inclusion and exclusion.

Justine Humphry is a Lecturer in Cultural and Social Analysis at Western Sydney University. Her research is on digital media and mobile cultures of use with a focus on the transformation of everyday spaces and relations, new work forms and practices, and the relationship of the digital to social inclusion/exclusion. Justine

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has presented and published her research widely, including in the edited book *Routledge Companion to Mobile Media* and in journals such as *Media, Culture & Society*, *M/C Journal* and the *Australian Journal of Telecommunications and the Digital Economy*. She was previously a Research Fellow in Digital Media and Lecturer in Digital Cultures at the University of Sydney.

http://www.uws.edu.au/ics/people/researchers/justine_humphry

Laura Lotti, University of New South Wales

‘There is no Blockchain without Bitcoin: Toward a New Mode of Accounting (for) in Distributed Networked Economies’

This presentation argues that Bitcoin offers an important starting point for the redesign of the financial ecosystem, for it radically challenges assumptions about the functional organization of the present monetary architecture (i.e. fiat money) and exposes its impact on the operative logic of power apparatuses in networked economies. Yet, as ‘blockchain technology’ is increasingly gaining momentum among banking powerhouses and fintech contingents, the novelty of Bitcoin has been neutralized by institutional powers that have made of it a commodity to be accumulated and traded for a price on a par with other liquid assets. *Contra* these tendencies, I propose that recognizing the singularity and inseparability of Bitcoin and blockchain – as a means and measure of exchange – may provide the foundations not only for a redesign of the global financial architecture but also, and more importantly, for the realization of distributed commons. This implies the acknowledgment and redefinition of the political dimension of the value of money.

Laura Lotti is a PhD candidate at the School of the Arts and Media, University of New South Wales. She holds a BSc and an MSc in Economics from Bocconi University, Milan, and a MA in Digital Media from Goldsmiths, University of London. Her research investigates the relations between financial and digital architectures at the intersection of economic calculation, algorithmic computation, and collective formations.

<https://unsw.academia.edu/LauraLotti>

Dr Tanya Notley, Western Sydney University

‘Satellites as Human Rights Infrastructure’

The observation of earth via satellite began when the first artificial satellite was sent into space by the Soviet Union in 1957 during the Cold War. Named Sputnik (‘fellow traveller of the Earth’), the 83kg capsule was credited with starting a ‘space race’ (Wang, 2008) – a race initially driven by government and military objectives. Despite more than 50 years of space technology and space industry development, public access to data collected by satellites has, until recently, been very limited. In the past decade, however,

citizens and rights advocacy groups have begun utilising satellite-collected images to interrogate justice issues; to document, prevent and verify rights abuses; and to imagine and propose social change. Yet while other communication technologies have received substantial critical analysis regarding their value as human rights, social justice, activism and resistance technologies, satellites have received comparatively scant attention.

This presentation will examine the uses of satellite-collected images in human rights contexts in order to open up a discussion regarding the opportunities, challenges and risks Earth Observation Satellites pose as an emerging component of human rights infrastructure. I ask: what frictions arise when we co-opt existing technologies and infrastructures for entirely different purposes from which they were designed? What kind of ethical frameworks, capacities, skills and knowledge may be required to transform satellites into effective human rights infrastructure – or prevent them from become tools for human rights abuse?

Tanya Notley is a Lecturer in Convergent Media Studies at Western Sydney University. Tanya’s research is focused on understanding how communication technology and network use impacts upon the natural environment, social and cultural participation, public accountability and transparency, education and learning, human rights and social justice. Tanya is an adviser to and collaborates with a number of human rights organisations whose work focuses on the use of information and communication technologies and she has published widely on topics relating to human rights and technology in both academic and practitioner-focused publications.

http://www.westernsydney.edu.au/staff_profiles/uws_profiles/doctor_tanya_notley

Associate Professor Juan Francisco Salazar, Western Sydney University

‘Polar Infrastructures’

Antarctica is undoubtedly different to the rest of the planet. It continues to be mobilised in the popular imagination as the driest, coldest, highest, and most remote land on the planet. It is quasi-extraterrestrial in its extreme ecology and lack of sustenance for human life. Despite being anything but lifeless, sterile or still, as it was constructed for a long period of time, Antarctica’s off-limit condition continues to mark the ways in which the ‘status of humanity on Antarctic ice is at once highly assumed and under-theorized’ (Glasberg 2012, xxii) Yet life in Antarctica is not distinctly isolated or intensely hazardous. Unless something goes wrong with the infrastructure, that is. A satellite glitch can mean no off-continent connectivity; a malfunction in any of the life support systems can mean trouble with the water purification system or problems with the heating system that powers the



research station which you call home; and extreme weather conditions can signpost the nature of logistics dependency of this place, determining when people, food or other supplies can go in and when they can come out. But as I shall argue in this paper, infrastructures not only become visible in the public sphere when they break down. In Antarctica infrastructures are most notably invested with broader geo-political significance and not always maintain transparency in their use. Polar infrastructures are essential to the conduct of scientific research in the polar regions.

In this paper I argue that in Antarctica, infrastructures not only enact particular modes of governance, but, as built networks that facilitate circulation of goods, people, and data, they are also crucial in two other related domains: first, for the establishment and subsistence of semi-permanent settlements where infrastructures are deeply implicated in the making and unmaking of experiences of community and belonging in Antarctica; and second, as a mode of intra-planetary terraforming and as proxy for outer space exploration. Both Antarctica and Outer Space have been defined within international regimes as spaces outside the territory of nation-states and beyond the normative inhabitable zones of the human species. Bringing into relation the extraterritorial with the extraterrestrial, I use the figure of the extreme as a way of shaping an analytic of limits and ever-opening horizons – epistemological and physical (Valentine et al., 2013) to incite new understandings of how we think about life in Antarctica and its role in future modes of trans-planetary exchange. Drawing on current work on ‘anthropology of infrastructures’ and grounded on three ethnographic fieldworks undertaken in the Antarctic Peninsula during the summer seasons of 2012, 2013 and 2014, the aim of this paper is to shift the attention from the study of Antarctica as ideational form subject to particular politics of representation, to the emergent socialities and subjectivities in the Antarctic and the complex world-making role played by infrastructures.

Juan Francisco Salazar is a media anthropologist, Associate Professor in media studies at the School of Humanities and Communication Arts, and research fellow at the Institute for Culture and Society, Western Sydney University. His research interests and expertise move around media anthropology; visual/digital ethnographies; citizens’ media; Indigenous media and communication rights in Chile and Latin America; documentary cinemas; environmental humanities; future studies; Antarctica. He is a co-author of the book *Screen Media Arts: An Introduction to Concepts and Practices* (with Hart Cohen and Iqbal Barkat, Oxford University Press, 2008), and is currently co-editing the volume *Anthropology and Futures: Researching Uncertain Worlds* (Bloomsbury) with Sarah Pink, Andrew Irving and Johannes Sjöberg. Since 2012 he is a member of the executive committee of the Humanities and Social Sciences Expert Group of the Scientific Committee for Antarctic Research (SCAR) (<http://antarctica-ssag.org/>). In 2015 his feature length documentary

film *Nightfall on Gaia*, shot in the Antarctic Peninsula, has been exhibited at international film festivals in Bristol, Bogotá, Sydney and Copenhagen.

http://www.westernsydney.edu.au/ics/people/researchers/juan_francisco_salazar

Dr Akseli Virtanen, Robin Hood Minor Asset Management Cooperative

‘Social Architecture for Distributed Capital: Robin Hood 2.0’

What if finance was a place of creation? What if an experience of finance was not characterized by limitation, scarcity, austerity, powerlessness and frustration, but by unfolding of possibilities, options, connections and creativity? What if we had P2P financial services that corresponded to the needs of workers, makers, co-creators, peers, crowds becoming new kind of economic operators? What if finance was about making our monetary and other assets – like knowledge, abilities, skills, networks – liquid, effortlessly moving, connecting, communicating and opening the field of possible? What if finance was a natural part of our way of life, enabling and opening things up, a practice of speculating and arbitraging together on a gap, opening, opportunity that is rippling out. What if you and I commanded the powers of finance? What would that mean?

Robin Hood is engineering new P2P financial (both money market and capital market) instruments which together with the organizational possibilities opened by the blockchain technologies will free finance to be social, cooperative to be unlimited, assets to be networked and capital to be distributed. What is distributed capital? It is closer to poetry than economy in any old sense of the word. It means everyone is able to enter it from their own angle, capital as a concept of heterogeneity, difference and dissensus, many different together without a need for symbiosis, or for becoming like the other (not a community, but a multitude), creating value by acting and conjoining together, not maybe even knowing where the others are moving. When capital gets distributed on a distributed platform it becomes nomadic: not division or distribution of something pre-existing in a space, but a new distribution of the economic space itself. Robin Hood gives people tools to create economic space.

Akseli Virtanen is a theorist of new political economy, born in Finland and currently based in Santa Cruz, California. He is a co-founder of the Robin Hood Asset Management Cooperative, an activist hedge fund, currently in the process of taking on a new more monstrous form as a financial platform of the future. Akseli’s recent books include *Arbitrary Power: A Contribution Towards a Critique of Biopolitical Economy* (n-1 Edições, forthcoming 2015).

<http://www.robinhoodcoop.org/>