

Legibility, Privacy and Creativity: Linked Data in a Surveillance Society

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Abstract. This paper looks at the issue of privacy and anonymity through the prism of Scott's concept of *legibility* i.e. the desire of the state to obtain an ever more accurate mapping of its domain and the actors in its domain. We argue that privacy was absent in village life in the past, and it has arisen as a temporary phenomenon arising from the lack of appropriate technology to make all life in the city legible. Cities have been the loci of creativity for the major part of human civilisation. There is something specific about the illegibility of cities which facilitates creativity and innovation. By providing the technology to catalogue and classify all objects and ideas around us, this leads to a consideration of semantic web technologies, Linked Data and the Internet of Things as unwittingly furthering this ever greater legibility. There is a danger that the over description of a domain will lead to a loss in creativity and innovation. We conclude by arguing that our prime concern must be to preserve illegibility because the survival of some form, any form, of civilisation depends upon it.

Keywords: legibility, privacy, innovation, creativity, semantic web, linked data

1 Introduction

“Slipping through the raindrops” - this is an expression the mother of one of the authors uses to explain her desire to be invisible to the state. She wants as little to do with officialdom as possible whether it comes in the form of pensions, taxes, building regulations or anything else. She operates largely in a gift economy and avoids showing herself, making herself visible, to the state wherever possible. At the age of 74, her attitude comes from experiences stretching back to the Second World War and beyond. And yet this is largely an illusion, or wishful thinking, as she has a passport, a bank account, a telephone number, and more recently a mobile phone. She shops from Amazon, has a Yahoo email account, and because she uses Firefox almost all her Internet searches are performed through Google. She is entirely visible to the state, and to corporate extensions of the state, should they wish to know more about her or actually focus the technology at their disposal upon her.

In this paper, we will build upon James C. Scott's concept of legibility, specifically the continuous desire of the state to increase the legibility of the actors

with which it interacts. We will argue that Linked Data, and similarly the Internet of Things, are in fact further steps along the continuum of increasing the legibility of human and non-human entities in the world to the state and state-like actors. We will argue that the process is neither surprising nor objectively negative. Looking back at the history of state sponsored interventions which increase legibility, we can identify concomitant reductions of freedom and increases in freedom.

Privacy and anonymity, while distinct, have historically been an anomaly, the result of the coincidence of the creation of large cities and the lack of appropriate technological means for the state to track all people and activities in its area of concern. In the village there is no privacy. In McLuhan's "Global Village" yet again there will be none. Privacy is merely a specific type of freedom, the freedom to act or think in a manner that may or may not be approved of in wider society without its knowledge. Facebook and similar technologies have shown how easily people ignore their privacy, often due to lack of awareness, making public some of their most private and intimate thoughts and actions on the medium. Of far greater concern than the loss of privacy is the loss of the illegible. The illegible is the space where things have not been named, where ambiguity and vagueness can be found, where ideas and artefacts can be mixed, re-mixed, re-created, *ab initio*. Copyrights and patents are part of the ever increasing attempts by the state to make legible the creative impulse, the intellectual innovations which could affect or change society. Digital Rights Management, as many authors have argued [6], is an extension of that control into the digital world exactly there where illegibility (in this case in file sharing) has made itself manifest.

The core technological innovation of the Semantic Web/Linked Data stack lies in the idea of Uniform Resource Identifiers (URIs). These are fundamentally names for entities in the digital universe, and in the real world. Their immense power lies, first, in the granularity – there is no technical impediment to having URIs for every person, every tree, every sheep, every tomato we eat. The second power lies in the act of stating that x is the same as y (owl:SameAs, or owl:EquivalentClass). Conceptually this is no different from an ID card or passport allowing the state to connect your employment with your taxes or military service. This simple act of identifying "same as" lies at the heart of Google's unification of different services and the single sign on. In the rest of this paper we will attempt to make the case a) that privacy, however desirable, is a historical anomaly; b) that each increase in legibility has reduced freedoms in some spheres but increased them in others, some of which we have come to consider desirable or even as rights; and c) that the real challenge is not lack of privacy but rather the loss of illegibility because creativity and innovation depend on this.

2 Legibility

The concept of *legibility* was proposed by the anthropologist and political scientist James C. Scott in his book *Seeing like a State* [18]. Legibility, for Scott,

reflects the attempt by the state to “arrange the population in ways that simplified the classic state functions of taxation, conscription and prevention of rebellion”, usually by means of a map (e.g. cadastral maps), model or other abstraction that allows a “synoptic” view of the land and the people in it. To this need for making society more legible, he ascribes a wide range of initiatives across time and space including the methods of Prussian scientific forestry, the creation of standard measuring systems and the assignment of surnames. The need for legibility lies in the need for the state to be able to make effective interventions whether positive or negative, in the provision of social welfare or the taking of plunder. In order to make such effective interventions, a synoptic view is needed, a view which simplifies the landscape being surveyed (whether real or metaphorical) sufficiently to make these interventions possible. Simplification goes hand in hand with this “ongoing project of legibility” of the state, a project which Scott considers is never seen as complete. Simplification for the purposes of greater legibility consists of seeking out facts with the following characteristics: First, the state seeks only facts in which it is interested i.e. *utilitarian* facts. Second, it is interested in *documentary* facts whether numerical or verbal. Third, the state seeks facts which are typically *static* i.e. valid at some point in time and place, rather than processes or narratives. Fourth, the state seeks *aggregate* facts such as traffic statistics or population wide facts. Finally, the state is interested in *standardised* facts, not facts which are true of only one individual [18].

Legibility has greatly increased over time. This is one of the central themes of Scott’s work. When the state had limited power and resources, its ability to track, measure, count or map what its subjects were doing was limited. Many actions by the state were steps towards greater legibility for the fundamental purposes of taxation, conscription and control. These included the appointment of provincial governors in Ancient Rome, the building of roads, the use of a single currency, the obligation to have a surname, the establishment of cadastral maps, the imposition of one language across a whole realm, the establishment of a census, social security numbers, passports, identity cards and video surveillance. A great many technological advances contributed to the legibility project of the state. This did not mean that these advances did not also have a positive impact, as we will discuss below.

The relevance of the notion of legibility to privacy lies in that privacy is essentially a specific form of illegibility. Privacy exists either because the state is unable (for legal, cultural, or technological reasons) to capture the relevant information, or because it is uninterested. The state has long sought to know our names or dates of birth, but as yet the state is largely uninterested in what we ate last night. Private information entails first the existence of some sort of information to keep private (i.e. it must be documentary in some sense), and secondly entails some sort of state or other entity against which the individual seeks to keep their privacy i.e. not provide the information. In a similar manner, we can see surveillance as an attempt by the state to increase legibility without the overt awareness or agreement of the individuals concerned.

The history of the growth of the state, and correspondingly the legibility of society, has largely gone hand in hand with the growth of technology. A great deal of technological progress, if it has not been driven by the intent to increase legibility, has had such an effect. Thus the Roman road network was a means for the state to control, collect information and intervene where necessary across the empire. Equally the process of mapping such continents as Africa and South America were part and parcel of making them legible for conquest, colonisation and taxation.

There is an interesting contradiction in the growth of cities. On the one hand, many states and empires sought to settle nomadic communities (a topic discussed at length by Scott) in order to make them more legible, and yet as ever more people congregated to the cities so “illegible” activities occurred, whether Socrates speaking with the Athenian youth, the crowds of Roman, Byzantine and Medieval cities, or later on the “revolutions” of ‘68. It is important, for example, to understand Baron Haussmann’s restructuring of Paris as a desire to ensure rapid and easy access for the army to all parts of Paris, to eliminate the illegible and politically dangerous slums and working class districts [18]. He succeeded in achieving this to a large extent, except for the region of Montmartre (Bellevue) which led to the Paris Commune and a subsequent very violent suppression. A very similar dynamic is currently being played out in the pacification of Brazilian favelas [25]. Throughout history, cities have both enabled and frustrated the ambitions for greater legibility.

3 Privacy and Anonymity

Privacy is a modern phenomenon, above all a phenomenon to be found in the city. Privacy in any meaningful sense is absent from the village or nomadic community. Anyone who has lived in a village for any length of time can vouch for this experience. Every action, every conversation, every purchase, every dalliance is logged, commented upon and evaluated by the ever present gossip mill. We should not forget also that rumour was not just “idle curiosity” but provides a nexus for social control, social welfare and social cohesion [5,11].

The experience of privacy and anonymity arises due to the atomisation (and social alienation) of the modern industrial city. Even older pre-industrial cities do not have very much privacy because the village is often re-created in a specific quarter of the town (such being the case in many parts of Athens to this day). However, large modern industrial cities with a mix of incomers from various regions have provided opportunities for real privacy in that other people are too busy with industrial life to care too much about the strange man who incessantly paints in the attic, the couple who have strange sexual proclivities, or the old person who dies alone undiscovered. Even if they are observed, they are usually not interfered with without due cause. The 20th and early 21st centuries have seen a gradual erosion of this anonymity provided by the city.

In certain regards, the experience of privacy arises in the gap between the state creating or enabling the growth of the city on the one hand, and the absence of any appropriate technology to ensure the legibility of all citizens in the city.

The growth of telecommunications, the Internet, and especially the explosion of social media together with such technologies as free video conferencing have radically shrunk the globe, or at least the manner in which it is experienced by its inhabitants. Today we communicate via Skype for free, videoconference with relatives and colleagues across the world, and share photographs and videos via a variety of social media and video sharing websites. McLuhan's "global village" is truly global. And somehow it has become a village in unexpected ways including our loss of privacy. People make public their own lives on social media in a way unprecedented, and often intentionally or inadvertently make other people's private lives public. People have shared an immense range of personal information on social media sites such as Facebook ranging from their current relationship status, through images and videos of themselves and their friends drunk, to whether they had sex the night before.

Some people are surprised at the way people expose parts of their lives using such technologies. However, there has been a constant adaptation to the changes wrought by technology. There are two aspects of importance here. One is that as technology has progressed so more facts become documented and thus legible. The "fact" you made a telephone call used to have to be obtained by interviewing the telephone operator, and now is just logged amongst millions of other electronic data an individual leaves as detritus in their wake. Second what was seen as normal at one stage in technological development becomes strange or abnormal at another.

It would appear that there is an inverse relationship between the the legibility desired by the state and personal privacy. More legibility equals less privacy. If no records were kept of the telephone conversations you had beyond last week, any state actor such as the police would be entirely dependent on personal memory to recall any conversations, and who spoke to whom when. Now every email we send, every website we visit, every search we perform on a search engine, every conversation over video conferencing, every electronic purchase, and even every act of window shopping is recorded first by the respective organisation, and then, as we have long suspected and recently had confirmed, these records are frequently passed on for further perusal by state spying agencies [8] ³.

Much has been made of the need to preserve anonymity, especially in the context of the large scale collection of data. The fundamental idea is that aggregated or "anonymised" data is being made available by mobile phone, web analytics and financial services companies, as well as many others, to third parties for various types of analysis and data mining. Unfortunately politicians still think this is feasible - Vivienne Redding recently stated "Anonymous data is easy to deal with. There is no risk." ⁴. The reality as many writers have noted is that anonymisation of data is unrealistic since it is easy to take such data and identify individuals. Whether it is mobile data logs, or even just the sensor

³ This text was begun before the revelations of Snowden concerning the NSA and the Prism project, and was completed subsequently.

⁴ Speech given on 26 March 2013 http://europa.eu/rapid/press-release_SPEECH-13-269_en.htm

traces of a mobile, whether the search queries or video rentals, all such data can be used to re-identify people [15,16] As far back 1999, Scott McNealy said “You have zero privacy anyway, ... get over it” [22].

4 Types of Freedom

Privacy is currently seen as a human right. The notion of human rights has gradually become an important legal concept in the last 200 years, largely due to the influence of the the Enlightenment, and the American and French Revolutions. It is important to remember the relative newness of the concept of “human rights” historically. There is no history of a “right to privacy” until very recently. The important point is that privacy is a specific form of freedom. As noted above, it is a freedom from legibility. Privacy and “illegibility” are not equivalent in that there are various forms of the absence of legibility which are not about privacy. The freedom to be a nomadic tribe or a travelling gypsy is not focussed on privacy. The freedom to save seeds and grow your own varieties of fruit and vegetables has little to do with privacy. Both are forms of illegibility.

If we are able to see privacy as just one type of freedom that human being have had or have acquired, then we are able to see technology providing certain types of freedom at certain times at the cost of other types of freedom. A great many technological developments in human history have changed the range and opportunities of human beings, change what they are free to do, or not to do. Road networks, for example, allow increased freedom of movement, and equally rapid responses to political challenges. Freedoms were lost and gained.

We now have the freedom to communicate with almost anyone around the world, often if not always, at zero cost. This is an immense freedom, but has been associated with a concurrent loss of privacy in that every telephone call we make is logged and the contents recorded. A freedom gained vs. a freedom lost. It is now impossible to make a mechanical switched call that leaves no electronic trace.

Freedom is not an objective state of affairs since freedom is always relative to the tools and power an individual or community have. Each technological development has afforded certain freedoms and opportunities, while unsuspectingly it has taken away others. A good counter-intuitive example is that of the growth of the railway system in India in the 19th century under colonial rule, and how it *increased* the incidence of famines in the countryside rather than reduced them [4]. Although there was a freedom provided - to sell into the world market, and if needed to buy from the world market - in reality presence of a railway line made it easier for landowners to sell wheat on the international markets at a higher price and thus the local peasantry starved. Areas with no railway lines suffered less (ibid.). In an entirely different context, the ability to copy digital files has transformed (and continues to transform) the music and film industries. On the one hand huge freedom has arisen to create and access digital content, on the other hand this has decreased the power and control of the music industry (though not its profits). This area includes a relatively rare case where technol-

ogy decreases legibility, specifically in the creation of bit torrent, the sharing of music and other files has become less legible to the state and its proxies.

Perhaps the one of the most important “freedoms” is the freedom to be creative, to innovate or imagine the “other”. We have noted above the importance of cities in this regard. There is an extensive literature, especially in the business and management research domain, on the role of cities and clusters in encouraging, facilitating or being dependent on innovation. The obvious and common explanation for the phenomena is the need for people to congregate face to face, for ideas, skills and opportunities to come together, for there to be an appropriate mixture [7,23].

However, there is another way of looking at the phenomenon of cities as loci of innovation and creativity. We have argued above that cities are concentrated centres of the illegible. We could thus argue that it is the illegible which enables the creativity and innovation. Cities provide opportunities for illegible activities, for un-codified spaces where spontaneity and creativity can emerge. The combination of people meeting face to face and the absence of the constraints associated with the village (or any other village-like structure) make it possible to envisage the “other”, the alternative to that which is at present in existence or known [17]. In effect, it could be argued that it is by providing illegibility that the city enables the outpouring of arts, literature, engineering and technology as a whole. This “hidden variable” would also provide a step towards understanding why there is such variability between different cities in their capacity for innovation and creation.

One argument in favour of such an interpretation, that is of emphasising the illegible as the driving force or enabler, is the phenomenon we have observed on the Internet in the last 20-30 years. As the Internet has grown, so there has been an outpouring of creative ideas in how to use it and innovative services and products. One needs only to mention email, the World Wide Web, Linux, wikis, search engines and social media to make this point. Many of the innovations associated with the internet have been “invented” in cities (hence the fame of Silicon Valley) which would support the former hypothesis, but equally many ideas and projects have developed away from cities and are largely the result of the facility to communicate/create a community **and** we would argue to experiment. The famous *wild west* atmosphere of the Internet both celebrated and maligned is a quintessentially *illegible* space allowing the opportunity for creativity, innovation and the envisioning of the other.

5 The Semantic Web, Linked Data and the Internet of Things

The Semantic Web vision consists of imagining a machine readable “web of data” where software agents could negotiate on our behalf to book tickets[19] or perhaps even recommend girlfriends. In parallel, but in many ways closely related, there has been the vision of an Internet of Things (IoT), largely involving the ability to address and communicate at a machine level with everyday

objects such as fridges and cars [2], and to easily scan and identify objects with such technologies such as RFID [13]. Although there are many aspects to the Semantic Web and IoT technology stacks, the aspect that interests us here is that in both cases one core aspect lies in the “naming of things”. The concept of Unique Resource Identifiers (URIs) and unique IP addresses are both examples of a vastly more sophisticated technology for the cataloguing, classifying and naming of both individual real world objects and abstract ideas. In the Semantic Web vision, both objects in the real world (buildings, cars, and people) and in the abstract world (concepts, categories, classes, individual ideas) have unique “pointers”, individual names. The Internet of Things vision is a poor cousin, in one sense, because all it provides are unique identifiers for real world objects addressable with an IP address. Its ambition in this regard is not quite as all encompassing as the Semantic Web.

Much work has been undertaken in the Semantic Web research and development world to create rigorous, usable ontologies, and while the notion of an overarching universal ontology has been long recognised as an unachievable ambition [21], the use of “namespaces” has enabled a whole industry to develop in creating formal definitions of a variety of sub-domains. The variety of sub-domains and corresponding namespaces has led to a great deal of effort being undertaken in ontology mapping and matching [14,20] because in many ways this becomes the fundamental challenge for the greater uptake and utility of the technology. The need for this and the awareness of this challenge has greatly increased with the appearance of Linked Data, which has made a large amount of data available, formatted so as to be compatible with the Semantic Web technology stack [3].

Linked Data, and its close relative Open Data, represents a vision where more and more information is available about all human activity and processes. Politically, it is the positive, acceptable face of a completely transparent surveillance society. The act of linking the data, whether manually or automatically, crucially increases the utility and power of the technology stack. Let us imagine a world of total transparency where all information about an individual is available through the Linked Data Cloud. We would be able to navigate across from the person’s name to all their activities, friends, social and political activities, holidays and reading habits. As we write this, it becomes clear that there is a very short distance, just a handful of *sameAs* or *equivalentClass* statements for this to be true. In the light of the Snowden revelations, it probably is already true within the NSA data base.

The Semantic Web and IoT are particularly powerful, in contrast with previous technologies because of the level of granularity they provide in their descriptive power. It is possible to provide a URI for every item that we can think of. This means that every item in our physical and abstract worlds can be classified and characterised. Every item and idea will have some sort of **is a type of** classification. If we look at such technologies as **standards**, in the same way that weights and measures, roads, and common languages are all standards, we can see that they will provide immensely powerful infrastructure. The fundamental business case for technologies like these is that they facilitate exchange

- both of information and of goods - and thus make it easier to lead our lives and run businesses. Standards, whether informal or formal, are fundamental to human social activity and by extension to business activity.

Standards like Schema.org, GoodRelations, FOAF, and Dublin Core, as well as a myriad of candidate vocabularies and ontologies waiting in the wings, provide “formal conceptualisations of a domain”. By agreeing on a particular vocabulary, the technologies make certain things possible which could not happen before. Like all significant technological innovations, the Semantic Web and the Internet of Things provides very specific but substantial types of freedoms. They may make it possible to track and trace every item of food we consume, reduce the incidence of food safety emergencies, enable hyper-local food networks, and re-fashion the food supply chain in a similar manner to the way the music industry has been transformed. It is in this light, that we would propose to see the Semantic Web and Linked Data stack, as well as the Internet of Things, as part of the “ongoing project” by the state to make all items and actors more legible. This is not to ascribe agency to the state, but rather to see this as part of an ongoing trajectory reflecting a certain momentum on the part of the state and the expansionary dynamics of human technological progress.

Fundamentally, these technologies will provide another layer of infrastructure, much like the Internet or the mobile phone network, which we will come to rely on, come to enjoy the freedoms they provide. We will in all likelihood come to accommodate ourselves to the reductions in other freedoms they result in.

6 Ethical Dilemmas and Unintended Consequences

Each individual is leaving an ever increasing digital footprint, no matter what they do in their lives. An individual’s telephone calls are logged and the actual conversations recorded. We are yet to absorb the implications of this for doctor/-patient and lawyer/client confidentiality [10]. Whenever one calls a call centre, people are warned the conversation is recorded. Every action online is tracked, whether by your ISP, the target website or the NSA. This includes not just web addresses but also every click you make, every item of data you enter, piece of text you read or video you watch. Within the digital domain, fundamentally the only kind of privacy that exists is privacy due to obscurity - what you do or who you are is of so little interest that you never trigger one of the relevant algorithms to provoke interest. This loss of privacy is not limited to the digital domain, as extensive video and satellite surveillance shows.

Historically, the push against greater state legibility appears to be associated with the establishment of “principles” or “rights”, but moral and legal principles do not obviously and easily translate into reality. Slavery was abolished throughout the world in the 19th century and yet it still continues on a large scale in many parts of the world, including in Europe. Thus, if any principles concerning privacy or the much vaunted European Commission’s desire to allow the “right to be forgotten” are to have any long term effect, then a concerted effort needs to be made across civil society. What needs to concern us is the unintended

consequence of a society based on total surveillance on the one hand, but also total classification or knowledge representation, on the other hand.

The unintended consequences of a society with total surveillance are many. Some are obvious such as the loss of trust which pervades such a society [12] and the tendency to conformity [1]. The unintended consequences of a society with total classification (i.e. where every object or idea with a digital footprint will inevitably be classified and characterised) is not so obvious to us. It will on the one hand give people the illusion of knowing about “things”, rather than perhaps be exposed to the initial amazement of an idea, experience or object in itself. If we wear Google Glass, or some similar technology, there will be very little in our environment which is unknown, unlabelled, unclassified. Everything will be legible to the eye, everything will be legible both to the individual *and the state*. In many ways, this will be taken for granted and/or seen as desirable by a great proportion of the population.

Perhaps less obvious will be the loss of creativity and innovation. If we are correct to argue that creativity and innovation needs certain types of freedom, freedoms that we have historically found most often in cities, then the loss of these freedoms will have a substantial impact on our ability as a society to be creative. Village and tribal societies are incredibly stable, with very little of the accoutrements we associate with high civilisation. Cities are the centres of innovation in all the arts and technology. Total surveillance will inevitably, as algorithms improve and as classification schemas and ontologies achieve greater comprehensiveness, provide a total classification and categorisation of human activity. Based on the parallel with the village, such a “global digital village” will lack the empty spaces, the chaotic spaces for complex interactions, for conversations and inquiry, for agitation and discovery, that have inspired writers, artists and inventors.

The loss of the illegible encompassed the loss of privacy, but has much deeper costs, less obvious ones, but costs which will undermine civilisation and society more deeply. The loss of creativity and innovation lays open a society to make it unable to adapt, change and keep alive its political, social and economic infrastructure. Taken from this perspective, the addition of Semantic Web technologies and the Internet of Things are in Tainter’s terms an additional layer of complexity with insufficient benefit [24]. The best recent example has been the collapse of Soviet Russia, a society which invested huge resources in tracking, tracing and cataloguing all its citizens activities. The Soviet surveillance state, with its concomitant absence of trust, resulted in a society which could excel at a handful of things (mathematics, chess, gymnastics) and not much else, even though its intellectual and cultural foundations were equal to any Western country. By extension, Gupta has argued that if the cyber-security is taken to mean total lockdown of the Internet, we will lose that very creativity and innovative potential which is one of its most important characteristics [9]. Total security with the concomitant classification and analysis of every action on the internet may provide a secure environment but will be entirely stifling to the entrepreneurial

activity which has brought about so many interesting and important innovations on the Internet and by extension to society as a whole.

7 Conclusion

In this paper we have drawn a broad narrative arc. We have argued that ever increasing legibility is a normal trajectory for the state in all its forms. Legibility is often expressed in standards and infrastructure which provides certain freedoms as well as enabling the power of the state (examples include roads and passports). We have suggested that privacy is a phenomenon absent from village society and rather occurs in cities where the technology needed by the state has not caught up so as to provide the full legibility it desires. Thus privacy is a temporary phenomenon, a particular type of freedom. If we look further at cities, we see them as fundamental locations for creativity and innovation, and much of what we recognise as civilisations arises therefrom. Finally we moved to a consideration of Semantic Web technologies and the Internet of Things, which we have characterised as yet another set of technologies which increase the legibility of human endeavour. At the same time, we recognise its potential to provide other “freedoms” or at least other types of opportunities for action. We have drawn this together to argue that the ever increasing cataloguing and classification of the world and human activity may have a negative consequence in the reduction of the illegible. We need the illegible because it is the nexus of of creativity and innovation in all areas - the arts, the sciences and technology. The loss of the illegible includes the loss of privacy and anonymity but has far more dangerous consequences for society and our civilisation as whole.

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