

Two Essays on Security Apparatus

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The Wall is an Apparatus

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Unlike many other Indian cities, Kolkata where I live in is not a walled city. It is difficult to imagine for a Kolkata citizen what it means living in a walled city. Of course, other walled cities in India such as Delhi, Agra, Hyderabad, are today walled cities only by name. The broken fragments of walls remain as the relics of distant pasts – in some cases not so distant, for it will be good to remember that barely one hundred and fifty years ago the colonial troops had to bombard the walls of Delhi and hang on the wall the bodies of two young princes shot dead, to bring the mutineer city under submission. Today the walled part of such a city is usually the older part, a melange of rickshaws, cars, cows, horses, carriages, street vendors, and hurriedly passing men and women, and unhurried shopkeepers with bygone ways of selling. Streets now join the characteristically narrow lanes that criss-cross the older parts and connect them to the modern parts, yet these older parts with broken walls retain the character of inner cities, unruly, ungovernable, fearsome to rulers, with their bazaars still producing unsettling rumours. If you live there you still get a feeling that this is a walled city, desperately trying to ward off the land sharks and property developers, ineffectively most of the time, the famous gates of the wall telling you the routes to the fabulous centres of wealth, commerce, and merchandise. A Damascus Gate or a Kashmiri Gate tells you not only of the ruins but also brings back for you memories of mobility and traffic. These erstwhile walled cities of the East are not like modern Rome, where the wall has been made into a part of the modern urban aesthetics, a heritage. They are like Jerusalem, signifying the division of the city in two planets – the planet of ruins and the planet of a swanky future.

Kolkata as I have said is not a walled city, it was initially a town of ditches, canals, river, and other water bodies performing collectively the function of the several walls, in fact mud walls, marking off once upon a time the European part from the part inhabited by the native, also one quarter of the city from another. The ditch was later covered, water bodies mostly disappeared. Shanties appeared on the canal roads. These and other roads began functioning as the *cordon sanitaire*, playing the role of walls to tell us the parallel stories of wealth and stability, and filth and ruins. There was of course in Kolkata the Fort William, the major cantonment of the colonial army, from where the army marched up to Peshawar, the ramparts of the Fort still evoking the memory of a closed city.

Yet this is not the only memory the wall evokes. The wall can act as double periphery. The outer wall as in Delhi figured the periphery of the town, the inner wall of the Fort figuring the seat of royal or imperial power. Wall separates, wall defends, wall prevents; wall also connects the towers from where you can see and watch. Thus the wall can act as the periphery of a city which may have a walled fort within. The wall will have gates and openings, and therefore sentries and watch posts. What can be then the features of this institution called the wall? Does it indicate certain symbolic practices? Symbols of separation, or symbols of announcements as would be the Berlin Wall, the

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Democracy Wall in Beijing, or the old walls of many a university, including Calcutta University, covered with graffiti and posters, or symbols of control and discipline? What then are the elective affinities? We must remember that with these affinities the wall which begins its life as an object, an apparatus, becomes a subject.

Construction of Wall an Event

It is quite conceivable that a wall after coming up – for instance the Great Wall of China or the Hadrian's Wall – where it was not one day and where one day it will be only in ruins, is always on the edge of its own dissolution, because it has no structural base and survives only on its state of multiple beings. It had originated as an event and not in a structure supported from within its being. Let us take the Hadrian's Wall in Britain, massive in planning, terrifying in scale, and daring in its execution. It was dotted with several forts, outposts, turrets, and supply depots. It took three Roman legions and six years for the wall to come up. The result was three hundred years of Roman supremacy and two thousand years of confused legacy. Until the first century AD frontiers were not needed for Rome which ruled the world it knew. But expansion of the empire brought in the unknown, and so by 122 AD when Hadrian got to the North, security considerations emerged. Hadrian consolidated the Roman Frontier, both along coasts and rivers, but also by establishing man-made borders, of which the Wall remains the foremost and best-known.¹

Yet the wall was soon considered insufficient, and therefore another wall, and then other walls were soon constructed, as you find in modern Nicosia where the old Venetian wall is supplemented by the modern partitioning wall, the entire area of crossing resembling a bazaar. At once an apparatus of border control, also the result of the drawing of a stunningly rigid line, the border in form of the wall would soon become as I indicated at the beginning a frontier which would be a busy, noisy, multi-cultural zone occupied by officials, revenue personnel, soldiers, and civilians from all over the empire or kingdom. Beyond would still be the barbarians, while the inside would be the civilized world. We can see here a process of double displacement. The border that was to replace the frontier with the erection of the wall again becomes the frontier; second, the division of civility and barbarity is both pre-supposed and constituted in one single act of erecting the wall, confusing its own rationale and logic. Before the wall there were only particular wills. After the wall the pure referent of division becomes the general will of rule. As in the case of the Israeli wall, once the general division is constituted it is precisely its being (the division of the civil and the barbarian) which is presupposed in the constitution. The variety of existences is erased. In this way the erection of the wall as an event erases all other connections and becomes the “primitive truth”. We have four consequences:

- (a) The wall is the event, which now replaces the state of anarchy;
- (b) The wall now interposes itself between the society, which is anarchic, and the polity, which is organized as a body (body politic);
- (c) The decision to rule through this procedure or apparatus becomes the general procedure of rule;
- (d) And yet, while as event the wall erases earlier histories, the wall itself becomes a site of displacements, an apparatus, which is neither an object nor a subject, but the indicator of a void, the in-between.

¹ Nic Fields and Donato Spedalieri, *Hadrian's Wall, 122-410* (Oxford: Osprey Publishing, 2003) ; also Alistair Moffat, *The Wall – Rome's Greatest Frontier* (Edinburgh: Birlinn Ltd., 2009)

It is this last point that contains all the difficulties. The will to rule through a procedure, which is actually an event and therefore an apparatus of a unique nature, affects an entire set of relations. These relations involve people, the real body of politics, which will now organise the spiritual commonwealth. This is evident in the way in which the fence on the Pakistan-India border (in Jammu and Kashmir, Rajasthan, or Punjab) impacts on the people inside. The reason is that the specific form in which the border finds itself – the wall or in this case the fence – cannot be represented by the general will of society, but only by the particular will to rule. Power can therefore be transferred to this apparatus, but not general will. The event of establishing the wall is therefore an act of usurping will. The effect of the event is a disjunction between two forms of politics – politics as procedure and politics as the body. In organizing politics as a body the will to rule now distorts this nature of politics and makes it politics as procedure. In place of politics the usurper is the wall. The event is thus an intervention. Now the intriguing thing is that this intervention may be backed by a consensus among the legislators, who may decide to set up the wall as a mode of security and division. We can now see the impasse. The impasse is better revealed by the complexity of the problem of security, which this particular procedure of rule does not appear to completely master.

The complexity arises from the fact that while a decision to set up a wall may have legislative backing it is in the nature of an executive decision to impose a particular identity on a people, or population groups, and therefore can never become an act of general will. It is typically therefore an act of government, an arbitrary action drawn from a decision that has subtracted from the political procedure of collective deliberation. This in-discernible nature of the decision allows interruption of laws and thus presages the dictatorship of the government, and not rule by general will. The dictatorial interruption of laws surfaces from a disjunction between the general will and a particular decision or the event. The event makes laws irrelevant, which keep on struggling against their own fixity. The question to which we return then is – what then is in the nature of this particular procedure, which executes the will to rule through setting up walls? The wall no longer remains an act of civil construction, an architectural act, but marked with the contingency of an event that will bring one day its irrelevance and ruin. In the mode of what is known as the wall, the apparatus brings to us what we can term as the *governmental will*, forever shaky, uncertain, and unknown in terms of its own destiny. We may therefore ask: How can democracy accommodate the wall? Is the wall then only a specific institution of the middle and the ancient ages, which a modern democracy may try to adapt, but an adaptation that results invariably in mess and legal anachronism?

Procedure of Rule

Wendy Brown in *Walled States, Waning Sovereignty* discusses the phenomenon of construction of walls, barbed wires, etc. as measures taken by democracies suffering from a perpetual sense of insecurity. She links the phenomenon with the waning of sovereignty in this epoch of globalisation. But she also sees in it the age old connection between land, enclosures, and sovereignty, and places the phenomenon in the context of the desire to remain clean. In her words, “Why do late modern subjects desire nation state walls and what do walls promise to secure, protect, rehabilitate, contain, or keep at bay?”² Brown speaks of the inefficacy of the walls, but deals with at length with a psycho-analysis of defence against immigration, travelling diseases, “forces beyond control, large, corrosive”.³

² Wendy Brown, *Walled States, Waning Sovereignty* (New York: Zone Books, 2010), p. 107

³ *Ibid.*, p. 133

And this desire to defend is set against the nation states' own record of aggression and efforts to find secure place on earth. There is much to gain from Brown's insights. Yet more research requires to be done from three perspectives: from the point of the wall as an institution (as against sovereign democracy as an institution seeking to wall itself against outside), the genealogy of its emergence as a modern apparatus (as against an explanation leaning on psycho-analysis), and from the point of the unruly, mobile subject (as against the subject of the nation-state invoked by Brown). These two or three angles of analysis will take us to a deeper understanding of wall as an apparatus, its specific nature, limits, and the kinds of politics it provokes.

In any case to understand the nature of wall as an institution we have to recall the war model of politics. The specific nature of the apparatus called the wall draws from the model of the army. In erecting the wall according to a civil construction plan, what are taken into account are considerations of *logistics* – therefore of movement of men and vehicles, communication, civil supplies, storage, terrain, facilities of entry and exit, and finally points of watch and gaze, therefore of construction of depots and towers, routes of policing and patrol – considerations uppermost in army planning. Yet having organized the wall accordingly, these considerations vanish before this superimposing reality of the wall, which is a different experience altogether.

This also resembles war. As experience war is different from all that precedes it, hence the construction of a wall can be called an event, which cancels its own mode of presentation. Thus the wall may be constructed to stop immigrants. But once it is there, the experience of the wall (on both sides) transcends the specific question of immigration, exactly as a war may transcend a specific goal for which it has been launched (this is what we call limited war). Again, just as war aims to force a decision, the wall also as procedure aims at forcing a decision, realizing the in-discernible goal of organizing politics as a collective human body, and erasing the existence of the unequal. These three aspects (its nature as event, its overwhelming experience, and its nature as procedure to force a decision) make the wall a unique apparatus of security. Security, the wall reveals, is primarily a matter of logistics and logistical planning.

Is this surprising? Possibly it is not. In considering the modern wall as reflection of the long shadow of the military model on politics, we have to remember that “politics, as a technique of internal peace and order” had always “sought to implement the mechanism of the perfect army, of the disciplined mass, of the docile useful troop, of the regiment in the camp and in the field, on manoeuvres and on exercises.” And to continue with Foucault (indeed from his *Discipline and Punish* we draw insight on this case), if there is a politics-war series that passes through strategy, there is an army-politics series that passes through tactics. If strategy makes it possible to understand warfare as a way of conducting politics between states; tactics makes it possible to understand the army as a principle for maintaining the absence of warfare in civil society.⁴

The paradox is – how will the government combine considerations of security and of communication and circulation? As we know the new science of urban planning when it came into being aimed at utmost freedom of circulation of men, money, information, and goods, and therefore freed the city of the wall. Yet these meant the emergence of risks, and thus of a risk society – the other name of free society. Democracy has tried to combine risk and freedom, a combination that goes by the name of security. Laws are thus constituted and judged accordingly. The entire society is planned as urban society with the regions beyond the great metropolitan centres transforming as suburbs requiring high speed trains, greater aerial transportation, digitalised high speed

⁴ Michel Foucault, *Discipline and Punish – The Birth of the Prison*, trans. Alan Sheridan (New York: Vintage, 1995)

communication, and greater vigil by the police. Yet it was precisely in this so-called period of opening up that controlled regimes of movement were instituted. Immigrants in cities were documented. Aliens were recorded, and sometimes rounded up, in various ways. Xenophobic language developed in the form of neo-racism and characterized democratic politics. The passport system came into being, with that the visa regimes. In some cases the wall only shifted. In place of national system of control, a continental system was established with what we know today of setting up the “fortress Europe” and the FRONTEX system of apprehending the likely intruders early before the immigrants had actually entered the fortress. Now two developments characterize the scenario.

First, the old strategy of combining control and freedom becomes desperate. Attempts are made to accommodate the immigrants on a scientific and rational basis (needs of economy, bio-mixing, crime control, etc.), while retaining the control system in place. Flexibility and rigidity accompany each other.

Second, the emergence of third world urban economies takes the risk factor beyond calculation. These mega cities, such as Mumbai, Nairobi, Bangkok, Sao Paolo, Mexico, each sprawling over nearly one hundred kilometres with hinterland of several hundred kilometres more, characterised by vast geographies of mobility, and involving populations of more than ten million in each case, produce local economies, marked by subaltern global linkages, and considered as havens of crime, illegal flows, terror, and future immigrants. How does the government introduce that so-called flexi-rigid system of interaction, communication, and transportation in such a city? Everywhere attempts are made to make the system virtual with improved modes of telecommunications, cyber-connections, and monetary disbursal and control tools such as the ATM machines. These cities become the laboratory of new modes of social control. Oren Yiftachel, the geographer, tells us how some cities use the method of the wall and other apartheid creating devices to plan land use in a particular manner.⁵ He terms the consequence of such a policy as one of creating “grey cities” where around lines of division grey spaces emerge, as in the city of Nicosia or Jerusalem – between the whiteness of legality, approval, and safety, and the blackness of eviction, destruction, and death. These spaces are neither integrated, nor eliminated; they form the semi-permanent margins of today’s urban regions. Grey spaces contain a multitude of groups, bodies, housing, lands, economies, and discourses, lying literally “in the shadow” of the formal, planned city, polity, and economy. Grey spaces make the return of the colonial relations possible. Thus identities are transformed into absolutes; dominant interests mark out spatial areas; segregation becomes hierarchical, and forced. Caught in between the contradictory existence of a modern democratic, egalitarian, republican city of a thriving public sphere, and the old colonial city of marked out spaces formed on the basis of rules of the identity game, the aim is: how to regulate crime, local economies, cash flows, human physical movements, and yet retain a public sphere, while reorganizing the city into quarters, as in the olden days? (Incidentally anyone familiar with the Indian rural scene would know how the big and tall mud wall separates at times different segments of a village caste wise or wealth wise; at times how a mud wall can give particular identity to a village or function as protection rampart to the country rebels. It functioned so in case of the Golden Temple during Operation Blue Star in Amritsar, 1984)

The flexi-rigid strategy of controlling population movements that produces the neo-science of urban management on the lines of old organization of the city also re-produces the apparatus of the wall. Identity is shaped by space. Space determines the two parallel techniques and organizations of supervision – open area supervision and fenced or walled mode of supervision. Consider how

⁵ Oren Yiftachel, “Theoretical Notes on Grey Cities”, *Planning Theory*, 8 (1), 2009, pp. 88-100

cyber inner cities are coming up within big cities, known in India as *cyberabads* or cyber *moballas*. Shining highways and raised motor paths begin from the airport, ending up by connecting the IT centres with great information centres abroad. Gangs of footloose construction workers will move on to the next construction site when the cyber-city has come into existence. The cyber city is the new inner city, where life goes on in a self-sufficient way, and whose residents will move on to their next places of assignments, or back to their homes without touching the dirt and anarchy of the city. This is the great spatial dream, now sought to be re-enacted on country-scale. We have to see the wall in this context of the new imagination of space.

Yet in this new imagination of space remains the spectre of anarchy and illegality. Emma Tarlow's account of the police firings and killings of several scores of people in the walled city in Delhi during the National Emergency in India (1975-77) during governmental attempts to suppress rumours and impose birth control measures on the resident Muslim population there and clean the roads of pavement dwellers and the city of shanties tells us of the continuing spectre.⁶ Similar is the spectre overwhelming the Israeli government, which has to deal with illegalities in the occupied West Bank towns of Ramallah, Jericho, Nablus, Bethlehem, and thinks that constructing the wall is the best way to deal with anarchy. In fact the wall becomes on one hand the occasion for constructing tunnels, new bazaars growing up in the vicinity, new gossip centres flourishing, and new points for smuggling arms, human beings, and drugs, and on the other hand a challenge and new temptation for the border guards and frontier security forces to launch anticipatory raids and conduct hot pursuits. Anarchy returns in this way. Take the case of the walled city of Ahmedabad in the western part of India.

Ahmedabad, founded in 1411 A.D. on the banks of the river Sabarmati, is the site of possibly the most infamous communal carnage in independent India and is the classic instance of a torn city. It is one of the eight mega cities in the country. Muslims constitute 15 percent of the population, more than the all-India figure of about 13 percent, but declining since the partition of India when it was 20 percent. Geographically divided by the river into eastern and the western parts the two parts of the city are connected by five bridges. The old walled city is one of the four distinct regions of today's Ahmedabad. Historically, it was an important centre of trade being situated at the intersection of key trade routes with the North, East, West and South of the country. The old walled city covered an area of two square miles, and the walls were completed in 1487. Among the first few settlements in the city were the Badra Fort, Amir Settlements (around the area of the city which is now known as Gandhi Road) Shahi Maidan, Teen Darwaza and the Jumma Masjid that was built in the 15th century. The second wall, which had ten gates, was constructed by the Mughals. After 1532, settlements began to proliferate within the walled area. Subsequently, the city expanded spatially to include Puras (suburbs) outside the walled city. The city's founder Ahmed Shah encouraged merchants, weavers and skilled craftsmen to settle in Ahmedabad. With the decline of trade and fortunes of rule in Delhi and control of the area changing hands, the city waned. The process of exclusion started with the decline, and was reinforced by the segmented city structure, earlier based on class lines, but later on the basis of religion. Within the walled city residential, commercial, and religious spaces jostled with each other for space. Above all, the residential pattern of the city was characterised by two distinct kinds of housing clusters, namely, for the Hindus and Muslims, with the former living in caste-defined clusters known as the *pols* and the latter in *moballas*. These along with some other factors led to subsequent bio-political divisions in the city. The communal carnage of

⁶ Emma Tarlow, *Unsettling Memories – Narratives of India's Emergency* (New Delhi: Oxford University Press, 2007)

2001 happening along race-community lines derived much of its fury from the divided nature of the city, which had expanded in the last two decades and reproduced the earlier divisions. The river now acted very much like the wall.⁷

Apart from producing anarchy, this way of organizing the body also produces corporatism, whose result is no less uncertain. By marking out territory by erecting the wall, also reproducing this institution of the wall in various forms and ways to mark out relations within the country and between the countries, the governmental logic ends up in homogenizing all who will be outside the wall, also all who will be inside the wall. Radicals, conservatives, secularists, fundamentalists, reformists, those advocating status quo, smugglers, immigrants, refugees – all who are outside as grouped as one; similar process happens inside the space the wall has demarcated. This has happened in Israel-Palestine, something of this kind has happened in Kashmir valley also now fenced in two parts. Taking advantage of the wall, corporatist groups whose aim is to disallow other voices from emerging. They are ruthless; they are equally happy as the government, which has set up the wall. Religion, culture, race, and ethnicity emerge as crucial tools of mobilization in as much as the earlier tools of class, economy, state, and local community recede in effectiveness. The earlier history of linkages vanishes, and the new history of corporatism takes over. Paul Gilroy's *There Ain't No Black in the Union Jack* (1987) tells us of the emergence of corporate black existence in place of earlier broad anti-race struggles due to governmental policy on culture in Great Britain. Gilroy's narrative however is not in the context of a wall, but in the context of a so-called multi-cultural policy of the government. But the result is the same. This new governmentality on one hand follows multi-cultural policies to marginalize the classic anti-state opposition, and facilitates the emergence of the corporate social groups within the country, on the other hand it sets up the wall and the fence and the border guards to lump together all who are outside– a policy that can only facilitate a similar emergence. The consequences are to say the least unpredictable for governmental rationality. In these cases if the wall does not represent today the ruins of the past, suggestive of old battles, deaths, cities, empires, and trade routes, it resembles the old walls at least in one respect, the apparatus that prevents the barbarians, that has as its part drawbridges to be pulled in immediately once the barbarians are about to reach the gates.

The close relation between the wall as an apparatus and the existence of identity politics is becoming clear through its countless reproduction all over the world. Following the fall of the Berlin Wall (1989), old identities collapsed. However the past twenty years have not only seen commemorations of the event year after year, the same period has seen the reappearance of the wall in several places around new identities. After 1989, new walls have been built. They cut across Palestinian olive-groves; stretch along the US-Mexican border; isolate the cities (such as Ceuta and Melilla) from their hinterland; ghettoise the Baghdad “green zone”; they segregate rich residential areas in Sao Paulo, Mumbai and many other cities worldwide. They were aimed to protect; instead, they divide, exclude and frustrate. Virtual walls have proliferated too. Yet if time changed in Berlin, in many other places old walls remained. Time has not changed, or changed very little, say in a city like Srebrenica, where according to one observer, “time had stopped running there fifteen years ago and remained frozen since. The “international community” tried to repair the clock: it financed expensive forensic investigations; set up sophisticated laboratories to track and compare tiny samples of DNA,

⁷ More on the settlement pattern of the city and its relation with riots, Anasua Basu Ray Chaudhury, “Sabarmati Creating a New Divide?”, *Economic and Political Weekly*, 24 February, 2007; also from Neera Chandoke, *Civil Society in Conflict Cities – The Case of Ahmedabad*, Working Paper 84, London School of Economics, London: 2007

to attribute fragments of bones, reconstitute bodies and allow families to bury their loved ones. It was a costly investment; it did help, but not enough. For the widows and orphans of Srebrenica, the page has not been turned as yet.” The wall remains. Then, the same observer continued, “as the fires were gradually extinguished and the new borders set, the propensity of Europe to draw lessons from the Balkan tragedy faded away. The new democratic consensus made the fundamental debate of ideas almost obsolete and the analysis of conflict focused on the “deep-rooted and immutable” issues of cultural and ethnic identity. In a vicious circle of self-fulfilling prophecy, ethnicity and identity indeed started being looked at as hard facts in politics rather than fictional categories. The shift was reinforced by the economic crisis, raising unemployment and social marginalisation of ever larger groups of people - the existential uncertainty of impoverished and disempowered consumers who once used to be citizens. They sought refuge and shelter in identity. The temptation to resort to identity-politics remains latent... It takes different forms, from the harassment of Roma communities in parts of the “new Europe” to the “criminalisation” of illegal immigrants in “old Europe” (and their occasional forceful repatriation to war-zones such as Afghanistan. Europe still radiates the image of a land of peace, relative prosperity and tolerance. But strange monsters resurface from its past and stain that image.”⁸ Fortress Europe thus presents a complex picture.

The observer could have added to his comments that prison walls too have proliferated in this period. If the city has wall, prison too has wall. It is difficult to say which image is stronger. We have in Bengali a famous narrative of the jail written by an ex-prison staff member, where stories, actual reminiscences of convicts, tell us about how they felt about the wall.⁹ In these narratives the wall figures in the entire life narratives of the convicts – the walls they try to keep on escaping. But in more political field we have new prison walls. Classic is the Israeli instance, where more and more Palestinians find themselves behind walls, leading to movements such as “Stop the Wall”, which has called for a campaign called, “Free Jamal and the Anti-Wall Prisoners”. One report on the wall there says,

Over 150 local activists protested Friday in al-Ma’sara and the neighbouring villages against the construction of the illegal Apartheid Wall and settlements on the lands of the nine intertwined villages to the south of Bethlehem. Protestors walked through the villages towards the construction site of the Wall, but as every Friday for the past few years, they were intercepted by dozens of soldiers who had again cut off the main road with a barbwire fence.

Protestors waved flags and chanted slogans through a mobile sound system, while some accompanied the demonstration on horses in an expression of pride of the ongoing popular resistance in the face of increasing crackdowns.

Women from the villages held posters of their imprisoned sons and detained activists from the Bethlehem districts, leading chants demanding the release of all political prisoners. Senior Palestinian officials gave speeches expressing their support for the Popular Committee’s commitment to resisting Israeli colonial policies and its success in mobilizing continuous support from local, international, and Israeli activists.

Friday’s demonstration, which commemorated the foundation of the Fateh movement, comes following threats issued two days ago to the Popular Committee warning that its members would be blacklisted and arrested if the protests in al-Ma’sara continued in 2010. Therefore, the soldiers, who had taken position behind the barbwire, appeared more tense than usual. One soldier repeatedly

⁸ Comment by an ex-Yugoslavian diplomat, Goran Fejic, <http://www.opendemocracy.net/goran-fejic/trial-and-wall/> (accessed on 3 Jan 2010)

⁹ Jarasandha, *Louhakatapat*, first collected edition, (Kolkata: Dey’s Publishing, 1375 B.S).

aimed his weapon at the protestors from a hill overlooking the street. At one point soldiers pushed into the crowd, when children attempted to remove the barbed wire.

As the aggression increased, the Israeli army fired tear gas and sound bombs at the crowd and five military vehicles entered deep into the village of al-Ma'sara. Soldiers continued to shoot tear gas for an hour and remained at the entrance of the village until later in the afternoon.

One child was hit by a sound bomb and had to be carried away while soldiers were still shooting. Several protestors suffered gas inhalation, and other injuries were reported.¹⁰

We can now see the implications of calling the wall an apparatus. Given the variety of ways in which the wall has functioned in history it is easy to term it as a heterotopic site following Foucault's famous description of "heterotopia". In this essay I check the temptation, and try to present the wall as an apparatus not simply from a functional point of view, but from the point of structure of power – urban, royal, national, imperial, monarchical, princely, civilizational, etc. The idea of heterotopia does not convey to us the particularity of a site, its nature as an institution, as an arrangement, and therefore as an element of a particular configuration of power. As against utopia heterotopia tells us a lot about social reality. Thus as against the utopian thinking that the wall can prevent the barbarians from coming, it is useful to remember that the wall is already the site of many ideas and activities. Yet its nature as an apparatus cannot be neglected.

Wall and its Subjects

However, given the fact that the institution of the wall is proliferating in this late modern period of rule and politics, this also means that the more an apparatus pervades and disseminates its power over various fields of life, the more government will find itself faced with an elusive element escaping its grasp – all the more because the government wants to surrender to the illusory power of the apparatus precisely to get to terms with this elusive element. But then, how is this elusive element created? This elusive element originates from the twin process of subjectification that the wall as an apparatus unleashes (subjection and subjectivation) - in the process bringing to light the appearance of the ungovernable, which is "the beginning and at the same time the vanishing point of all politics".¹¹

Of course Foucault himself was aware that it was the possibility of manifold use of a thing, which lent it the specific character of an apparatus. In an interview, titled "Confessions of the Flesh", he said in responding to the query, "What is a Dispositif (Apparatus)",

What I'm trying to pick out with this term is, firstly, a thoroughly heterogenous ensemble consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions—in short, the said as much as the unsaid. Such are the elements of the apparatus. The apparatus itself is the system of relations that can be established between these elements.

Secondly, what I am trying to identify in this apparatus is precisely the nature of the connection that can exist between these heterogenous elements. Thus, a particular discourse can figure at one time as the programme of an institution, and at another it can function as a means of justifying or masking a practice which itself remains silent, or as a secondary re-interpretation of this practice, opening out for it a new field of rationality.

¹⁰ <http://stopthewall.org/latestnews/2151.shtml> / (accessed on 3 January 2010)

¹¹ Giorgio Agamben, *What is an Apparatus?* Trans. David Kishik and Stefan Pedatella (Stanford University Press, 2009), p. 24

In short, between these elements, whether discursive or non-discursive, there is a sort of interplay of shifts of position and modifications of function which can also vary very widely.

Thirdly, I understand by the term “apparatus” a sort of—shall we say—formation which has as its major function at a given historical moment that of responding to an *urgent need*. The apparatus thus has a dominant strategic function. This may have been, for example, the assimilation of a floating population found to be burdensome for an essentially mercantilist economy: there was a strategic imperative acting here as the matrix for an apparatus which gradually undertook the control or subjection of madness, sexual illness and neurosis.¹²

At this point we must take recourse to the language of the poet to understand the emergence of the element that eludes and defies the apparatus known as the wall. Readers of Bertolt Brecht know that Brecht’s poems resonate with the reality of the wall and at the same time the presence of the ungovernable in that context. In the famous poem “German War Primer”, Brecht says,

ON THE WALL WAS CHALKED:

They want war.
The man who wrote it
Has already fallen

THOSE AT THE TOP SAY:

This way to glory
Those down below say:
This way to the grave

And then in “Questions from a Worker Who Reads”,

Who built Thebes of the seven gates?
In the books you will find the names of kings.
Did the kings haul up the lumps of rock?
And Babylon, many times demolished
Who raised it up so many times? In what houses
of gold-glittering Lima did the builders live?
Where, the evening that the Wall of China was finished
Did the masons go? Great Rome
Is full of triumphal arches. Who erected them?
...
Every page a victory
Who cooked the feast for the victors?
Every ten years a great man?
Who paid the bill?

So many reports
So many questions.

In the “Mask of Evil”

On my wall hangs a Japanese carving,

¹² *Power / Knowledge: Selected Interviews and Other Writings*, ed. Colin Gordon (New York: Vintage, 1980), pp. 194-228

The mask of an evil demon, decorated with gold lacquer.
Sympathetically I observe
The swollen veins of the forehead, indicating
What a strain it is to be evil.

And finally, in the “Unconquerable Inscription” (1934), recounted and translated many times over after the poem was composed,

During the war
In a cell of the Italian prison in San Carlo
Full of imprisoned soldiers, drunks and thieves
A socialist soldier, with an indelible pencil, scratched on the wall:
Long live Lenin!
High above, in the semi-dark cell, hardly visible, but
Written in large letters.
As the warders saw it, they sent for a painter with a bucket of lime.
And with a long stemmed brush he whitewashed the threatening inscription.
Since, however, with his lime, he painted over the letters only
Stood above in the cell, now in chalk:
Long live Lenin!
Next another painter daubed over the whole stretch with a broad brush
So that for hours it disappeared, but towards morning
As the lime dried, the inscription underneath was again conspicuous:
Long live Lenin!
Then dispatched the warder a bricklayer with a chisel against the inscription
And he scratched out letter by letter, one hour long
And as he was done, now colourless, but up above in the wall
But deeply carved, stood the unconquerable inscription:
Long live Lenin!
Now, said the soldier, get rid of the wall!¹³

I want to end this essay on why I term the wall as an apparatus with two comments pertaining to this nature of today’s wall. The first comment is on the post-colonial nature of the re-emergence of the wall as the method of making a distance with others and notifying the world of this act of marking the distance; the second is on the unsure nature of this act of setting up the wall in the domain of law, given the fact that the wall is by itself neither an act of war nor of day to day to rule, and is exceptional that has been made routine, or sought to be made routine, or only symbolizes the routine.

Now on the post-colonial nature of the re-emergence of the wall in today’s world, it is clear that while the walls in the earlier ages performed the role of preventing conquests of cities or holding off the invaders (remember that the countryside would remain open and would mean nothing in terms of occupation and conquering the seat of power), today walls of all kinds with high military purpose have broken down. Earlier walls were *defensive* in nature, including the famous Maginot Line. As we know the Maginot Line was to be a wall made of a line of concrete fortifications, tank

¹³ The first three poems can be accessed at <http://www.poemhunter.com/bertolt-brecht/poems/page-1/?search=the+wall> and the fourth poem at <http://www.revolutionarydemocracy.org/rdv10n2/brecht.htm> (Accessed on 16 January 2010)

obstacles, artillery constellations, machine gun posts, and other defence posts, which the French had constructed along its borders with Germany and Italy (with Italy the Alpine Line), in the light of the experiences from the First World War. Its aim was to make the line of fortifications function like a wall. Yet as we know, typically as the wall was breached in the old days, in this case too, the German army flanked the line, attacked the fortification system with unique assault methods. The surrender of the fort Eben Emael led to invasion and occupation of France. Today in contrast the wall is imposed as an *offensive* tool – as a war against the outsider. We have here the military model, but re-adapted for a non-military goal, the governmental goal of population management. Today the big aim is to prevent immigration from the once-colonised countries – the unruly bodies making their mark on the civilised world. In the past often the weak depended on the mechanism of the wall to prevent the mighty invader from outside. Today, the strong everywhere sets up the wall in order to distance from the weak. Moreover, the distance has to be notified. The wall is the mechanism for notifying the distance. The purpose is disciplinary, and the war model is adapted in this case for the purpose of discipline, control, and governance. We have to remember however that this does not ensure doing away with anarchy. The post-colonial predicament is therefore global. And, just like the mixed nature of the problematic the solution is a mix of the past and the present, also a mix of war and politics.

This nature of the wall, the nature of a partitioning instrument, if you allow me to use the word, its *habitus*, has effect on its standing in law, and this is my second remark. In any case municipal law never had much to do with acts of invasion, aggression, occupation, and distanciation. We were always taught, INTER ARMA ENIM SILENT LEGES. In times of war the laws fall mute. Now of course laws of war are there, though violated at will in most serious and deadly wars. At least some laws are there, though not primarily in municipal domain, to be invoked in war. Likewise we have laws of how to conduct politics. The constitution, electoral laws, parliamentary acts, judicial strictures – all to certain extent regulate conduct of politics. But what do we do with an institution that is neither one of war nor of peace and politics? What do we do with an institution that is more in the nature of an apparatus, of a product of governmental reasoning, and therefore a matter of administrative decision as to how to use the middle ground, how to set up a divider?

We can recall here the memorable story on the Partition in the Indian sub-continent, “Toba Tek Singh” by Sadat Hosen Manto. In that story, the lunatic by the name Bishan, becomes known as Toba Tek Singh after the name of a village, which was his and which he now searches for as his destination in that calamitous time when lunatics were to be also divided between India and Pakistan. Being a Hindu or Sikh, he is not allowed to go to his village as it had come under the Pakistan segment. Manto ended the story with these lines, “Just before sunrise, Bishan Singh let out a horrible scream. As everybody rushed towards him, the man who had stood erect on his legs for fifteen years, now pitched face-forward on to the ground. On one side, behind barbed wire, stood together the lunatics of India and on the other side, behind more barbed wire, stood the lunatics of Pakistan. In between, on a bit of earth which had no name, lay Toba Tek Singh.” Law could say nothing in that hour of the void.¹⁴

One more instance: By erecting the wall, the Israeli state without declaring war against the Palestinians engages in a war-like exercise. It is a political step that is in the model of war without engaging in actual war. Hence law does not know how to deal with this apparatus. To outlaw the wall is to revise the laws of sovereignty altogether. This is improbable in today’s condition. To approve it

¹⁴ The full story on - <http://www.sacw.net/partition/tobateksingh.html> (accessed on 3 January 2101)

on the other hand is a violation of human rights. Laws cannot approve of that violation either. It is this void, in which today's mobile, unruly bodies are shaping up as subjects of a post-colonial world.

And in this connection, and possibly not a small point: Wasn't Gramsci's famous notebooks written within prison walls, and did he know that the future would not remember the walls closing in on him, but the notebooks he wrote in darkness, possibly to himself, in anonymity?

Tracking and Tracing: New Technologies of Governance and the Logistics Industries

Anja Kanngieser *

What you don't need is more information. You need information you can use. (Chief Executive of GS1, the standardisation body for barcodes and RFID, in Nusca, 2011)

A 'political anatomy', which [is] also a 'mechanics of power' [defines] how one may have a hold over others' bodies, not only so that they may do what one wishes, but so that they may operate as one wishes, with the techniques, the speed and the efficiency that one determines. (Foucault, 1977: 138)

The rise of complex and networked global supply chains have coincided with a calibration of technologies used to monitor not only the consignments within those chains, but also the workers and machines that move them. Over the past decade, supply chain management has been employing Information and Communications Technology (ICT) hardware and software to optimise performance and production. Through the logistics of transit and warehousing, Just-In-Time processing is demanding the capacity to determine and, as much as possible, standardise the speed, rhythm and flow of commodities. In this state, the promotion of a particular kind of regulatory power is exercised on the level of life through the regulation and increased velocity of each working moment. The management of bodies and commodities now encompasses the entire spectrum of movement, from the minute gestures of box packers and the pathways of cranes in the warehouse, to the rest breaks of freight drivers, the call content and duration of call centre workers, and the passage of commodities shipped around the globe.

This paper will introduce and analyse some of the most pervasive mechanisms used to govern workers along the nodes of the supply chain, namely RFID tagging, GPS telematics and voice directed order picking. Looking at these three contemporary technologies, the paper discusses how they function, their historical-technical contexts and some of the effects they are having on the bodies and conditions of workers. Two sites are primarily drawn on, the United Kingdom and the United States of America. A third site, India, is touched upon in the outsourcing and off shoring of business processing, being one of the conduits through which data collected from workplace monitoring is administrated. The UK and the USA have been chosen largely for the strong responses articulated by trade unionists, workers and legal and political scholars. Such constituencies are determining a counter narrative to the transnational corporations and industry enterprises applauding these apparatuses for their high return on investment. They have also been chosen due to the significant role they have played in the development, dissemination and normalisation of tracking and tracing cultures.

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While the focus of this paper will be limited to technical aspects of logistics workplace surveillance, specifically the devices and the infrastructures themselves, it is hoped to elicit further theoretical exploration. Unsurprisingly, Foucault's accounts of liberal regimes of power and the evolution of the military and logistical sciences find resonance. Of key interest here is how developments in bio-techno-disciplinary techniques are reconfiguring the spatial and temporal existence of bodies, what Foucault referred to as the 'temporal elaboration of the act' (1977: 151), through a 'positive economy' (ibid: 154) of time that seeks the intensification and maximisation of efficiencies. The forms of subjectivation arising from these bio-techno-labour complexes, although touched upon in this paper, require more elaboration.

Larger questions about borders, capital and geographical fragmentation and representation can be framed. Security cultures, logistics and the co-constitution of social political regimes and technologies of control need to be further considered for their impact upon the spaces and mobilities of labour, as geographer Deborah Cowen indicates (2010). The expansions and contractions of national and international borders through the global logistics industries, such as the maritime border, have reshaped citizenship and labour rights, in part through the conflicting demands of national security and trade. In conjunction, the growing collusion between private-public realms – the intervention of private enterprise in sovereign decision making, and the participation of public bodies in market economies – has radically recast the traditional zones of geographical, political and economic territories. The effects of these global processes, as Cowen (ibid) shows, plays out on multiple levels from the geo-economic, to the cultural, to the anatomical. This has consequences for how we understand geographical representation, complicating binaries such as North and South, East and West, for as Brett Neilson and Sandro Mezzadra (forthcoming) note 'poor countries, like rich ones, are not only increasingly differentiated from each other but also increasingly differentiated from within'.

A cognisance of this diversity and differentiation is insightfully illustrated by geographer Anna Tsing, through what she refers to 'supply chain capitalism' (2009), which has been helpful in explaining the relationships between macro and micro levels of supply chain organisation. What Tsing's work makes clear are the spatial and temporal, economic, technological and affective linkages endemic to the contemporary era of logistics and trade, especially through systems of outsourcing and subcontracting. Most compelling is her identification of the capitalist conflation between super-exploitation and self-exploitation brought to logistics through chains of independent contracting (ibid: 158-159). The integration of desire, affect and difference into the core of supply chain governance has resulted in regimes of subjectivation reproduced as much by individual and collective aspiration (the worker's self-conception as entrepreneur, for instance, through contract labour) as by technological innovation. An awareness of how this takes place across the body, desire and capital is crucial to understanding not only how such technologies of control become instantiated and accepted, but also how workers negotiate the conditions and constraints they entail.

Frameworks such as those offered by Foucault (1977), Cowen (2010) and Tsing (2009) help us to consider the wider contexts surrounding the technological histories and developments of the hardware and software adopted by employers to monitor employees within the logistics industries. What is often displaced within theoretical analysis is the technical aspect of the technologies used, the mechanics of the devices, so to speak, such as RFID tagging, voice pick and GPS telematics, to which I will shortly turn. This is left to the worlds of commerce and industry, or the sciences. However, by bringing the registers of technology, industry, military and science to questions of labour, governance and the reproduction of subjects, it is possible to discover how logistics workers

are being disciplined within the broader arena of national and international security, migration and biopolitical power.

Radio Frequency Identification

A techno-historical exposition of worker surveillance and discipline may begin with RFID or Radio Frequency Identification, as it is perhaps the most prolific and multi-purpose technology for tracking and tracing contemporarily available. RFID is a system of electronic tagging, which can both be used to identify and trace animate and inanimate objects and beings, and store information. The technologies used for RFID evolved from centuries of research into electromagnetic theory and waves (radio waves), beginning in the 1600's with observations and mathematical study on electricity, magnetism and optics (Landt, 2005). The 1800's witnessed significant developments in the comprehension of electromagnetic energies. The first confirmation of the transmission and reception of radio waves was in 1887 by German physicist Heinrich Rudolf Hertz, contemporaneous to the work of Aleksandr Popov. In 1896 Guglielmo Marconi initiated transoceanic radiotelegraphy followed by Ernst F.W. Alexanderson's continuous wave generation of radio signals in 1906 (Landt, 2001). This signified the beginning of modern radio communications, and also marked the inception of radar. The combination of radio broadcast technologies and radar led to the instantiation of RFID. A notable early innovation was its use by the British Royal Air Force during the Second World War to differentiate friendly from enemy aircraft (Dept of Commerce, 2005).¹⁵

The first paper exploring RFID was Harry Stockman's 'Communication by means of reflected power' (1948). This anticipated the further experiments with RFID technologies in the 1950's. The late 1960's saw the first commercial applications of RFID, by corporations such as Sensormatic and Checkpoint, in the form of EAS (electronic article surveillance) used to tag clothing against theft, which was expanded in the 1970's (Roberti, 2007). It was during the research and development boom in the 1970's that applications such as the tracking of animals, vehicles and factory automation came to the fore. At the same time, tag size was decreasing and improvements in functionality allowed for the mass implementation of these technologies in the 1980's, resulting in the mainstreaming of RFID (Landt, 2005). In the USA tagging was deployed predominantly for transportation and personnel access, while in Europe interest remained with the tracking of animals, as well as in industry and business. A significant factor in this global expansion was the coincidental advancement of the personal computer, which was crucial to the assemblage and analysis of the data being produced (*ibid*).

Quite notable for the logistics industries and transportation was the implementation of RFID in tollways, first seen in Norway in 1987 and expanded across the USA and Europe in the late 1980's/ 1990's (Bidgoli, 2010: 242). This necessitated protocols for the standardisation of RFID,

¹⁵ Interestingly, it has also been argued that In 1946 Léon Theremin invented an espionage tool for the Soviet Union, which retransmitted incident radio waves with audio information. Sound waves vibrated a diaphragm, which slightly altered the shape of the resonator, which modulated the reflected radio frequency. Even though this device was a passive covert listening device, not an identification tag, it has been attributed as a predecessor to RFID technology. See Global Venture, http://www.globalventurelabels.com/index.php?option=com_content&task=view&id=43&Itemid=63, accessed 2 May 2011. See also Department of Commerce (2005) Frequency identification: Opportunities and challenges in implementation 5, http://www.technology.gov/reports/2005/RFID_April.pdf, accessed 28 April 2010.

especially in the pan-European context, but also more globally.¹⁶ Toll and rail applications quickly followed in the Asia-Pacific, South America, Europe and South Africa. The multiple use of a single tag (i.e. for toll collection, entry to gated communities, parking lots and so forth) ensued, linking together different business ventures (Landt, 2005). It was in the 1990's that a breakthrough occurred which saw the integration of RFID into supply chain management and article location, namely the shift to microwave tags with a single integrated circuit, resulting in a reduction in size and cost at the same time as an increase in functionality and reliability (Hunt et al, 2007). This led to the re-exploration of RFID as a means to manage commercial items alongside barcodes. The use of RFID to individually identify an item surpassed the limitation of the barcode to identify only the brand and type of item, as did its ability to be read through surfaces, requiring no line of sight, on a mass scale. The continued physical contraction and reformatting of the tag, of late seen in the new adhesive 'smart labels', has had unparalleled consequences for the inventory and management of goods along the supply chain, as Wal-Mart's logistics juggernaut shows (Supply Chain Digest, 2009; Brunn, 2006).

So how does RFID work, and how does it affect logistics and workers? RFID has three main elements, an electronic tag (transponder), a reader (interrogator) and a software interface/database. The tag is made up of a microchip or tiny integrated circuit and is encrypted with an exclusive identification number or code. It can hold up to about 2KB of data (Association for Automatic Identification and Mobility, n.d.). Each tag has an antenna attached to it, which allows the tag to communicate with the receiver, and it can also power the tag. The antenna transmits information to the reader via radio waves. The reading device also contains an antenna, which receives the information from the tag as it comes into radio range. As the reader receives the information it transfers it to a back-end logistics system, or database, which manages the data from the tag (Want, 2006; Glover and Bhatt, 2006).

There are two kinds of RFID tag: passive and active, the difference being their power source. Passive tags require no external energy input, which means that they have a virtually unlimited lifespan, but are contingent upon communication from the reader; passive RFID tags are activated only when they are in the proximity (up to several meters) or 'read range' of a reader broadcasting a radio frequency signal. Active RFID tags contain a power source, such as a battery, and a transmitter. They broadcast a continuous signal, and can be read up to a distance of 100 meters (Active Wave, n.d.). Because of significant price and size variations – passive tags costing around \$0.07-\$0.11 (USD), with the aim of dropping prices to \$0.05 (USD) per unit, and active tags costing up to hundreds of dollars – their applications are vastly different (Swedberg, 2010). Passive tags have been predominantly used for the securitisation of goods in the retail supply chain and for personnel control. Active tags are increasing in popularity, especially as a means of locating and auditing inventory, assets and people in real time. They have been deployed in a variety of sectors, including healthcare to monitor hospital equipment and patients including the elderly, by the US military to follow supplies in Iraq as well as to track troops, in antiterrorism activities such as their inclusion in passports, in prisons to guard inmates and in the logistics industries to track containers, fleet and freight (Cox, 2007; IDTechEx, 2005; Axxess, 2008; Booth-Thomas, 2003). In supply chains, RFID tagging occurs on three levels of granularity: pallet level, case level and item level (Gaukler and Seifert, 2007). The implications for management is clear – RFID allows for the pinpointing of

¹⁶ As with much global standardisation, this has encountered various issues and permutations, see Finkenzeller (2003), Gerst et al (2005), Adhiarna and Jae-Jeung (2009), Casagras (2010).

consignments as they pass through the entire production and distribution process, from the factory floor to the consumer.

As one might imagine, the use of wireless technology like RFID and RTLS (Real Time Location Systems) has had significant effects in the workplace. Tags have been embedded in workers accessories, such as ID cards, clothing, badges and wristbands, both to authorise access and to oversee the use and movement of items and people around the premises (Pagnattaro, 2008: 241-243). Over the past several years, stories have emerged of employers requiring employees to embed tags, such as the VeriChip, under their skin. The oft-cited example of the Mexican Attorney General implanting himself and 160 of his staff with rice-sized RFID chips in 2004 to regulate mobility in his offices stands as a good indicator of how even relatively early on the use of RFID has crossed into techno-biometric terrains (Weissert, 2004).

While RFID tags are themselves privacy neutral, much has been written on the legal issues surrounding their application (Roth, 2006; Ball, 2010; Reid, 2005; Weinberg, 2008; Balkovich et al, 2005; Smith, 2007). A number of key questions have become clear: What information is gathered and how will it be used? How long will data be stored and who has access to it? What notice will be given to employees? What weight will be given to consent and due process? How will identity be verified against theft or misuse of tags? What safeguards will be put in place to protect workers from the access to their private information by law enforcement?¹⁷ According to Marisa Pagnattaro (2008) the predominant concerns about RFID as a means to track employees can be categorised in three ways: ‘surveillance by any person with access to the reader or database, “profiling” or maintaining a profile on a “target” based on the information gathered, and actions that may be taken based on information collected by using an RFID device’ (244). It is unsurprising that concerns are voiced around data mining, spy ware and spy chips, and the possibility for exploitation of employees and the public. As Kristie Bell points out ‘recent research has highlighted that the uses of these data are not made clear to employees, policies outlining their use are not in place, and information practices are not subject to any third-party audits or checks’ (2010: 91).

These concerns are founded given the increasing introduction of automated and RFID systems to intervene in the everyday governance of workers, especially in the public services and logistics. There have already been calls for the heavy legislation, even banning, of RFID and GPS to track staff by the UK GMB general workers union on the basis that it is dehumanising (McCue, 2005). A 2005 Rand report showed that RFID was used not to simply allocate access but to store very specific data on employee’s whereabouts and activities. This information pertains both to the entire staff and the individual; information on individuals was used by companies to investigate infractions of work rules, for example the misreporting of the amount of time spent working, and, in one instance, overseeing employees in an newly acquired company to check that they were adhering to the time patterns practiced at the parent company (Balkovich et al, 2005).

Such evidence has shown that RFID tagging is linked very explicitly to centralised database time and attendance recording. Corporations such as Wasp Time, Control Module and Active Wave offer entire management and security packages including tracking tags to be worn by employees, and readers. The dual applications ‘TrackmaX’ and ‘TimemaX’ advertised by the Dubai based company, Absolute, are an example of perhaps the most comprehensive and pervasive developments in these

¹⁷ Questions such as these were raised in a statement by US Senator Patrick Leahy in 2004 in *The dawn of micro monitoring: Its promise, and its challenges to privacy and security*, remarks at the Georgetown University Law Center. Conference on Video surveillance: Legal and technological challenges, 23 March, <http://leahy.senate.gov/press/200403/032304.html>, accessed 26 April 2010.

technologies designed to record, track, report and schedule workers. TrackmaX uses RFID to monitor the movement of people around 'schools, hospitals, hotels, offices, airports and construction sites' (Absolute, n.d.). In concrete terms this means not only being able to identify who employees are and where they are located at any given time, but also whom they are in contact with, when and where. It can further register how long they take to move around the premises and prohibit movement to designated zones. TimemaX functions in conjunction with TrackmaX (and a third application, EquipmaX, to track equipment) to provide time tracking software and hardware. It additionally operates as an employee database automating 'day-to-day tasks such as tracking work hours and calculating benefits accrued' (Absolute, n.d.). Both TimemaX and TrackmaX interface with the payroll system.

What such systems do through the intense refinement of 'labour management analysis' is severely decrease the margin for human error, anonymity, decision and mobility. For the employer this means optimised productivity, limitation of legal liabilities, and decreased costs, as tighter controls are exercised over their staff. Applications such as TimemaX and TrackmaX are specifically conceived to inhibit tardiness, absenteeism, 'unwarranted' overtime, and to regulate the time taken for seemingly mundane and administrative tasks through the digitalisation of clerical duties. This has a number of significant consequences for employee behaviour and psychic, emotional and physical wellbeing. Firstly, the automation of roles designating sick leave, vacation and benefits means that the complex realities of specific situations are reduced to a fixed set of conditions. Secondly, the possibility for breaches of confidentiality and manipulation of data is high, as is the encroachment upon individual's private activities (such as movements within showering rooms, toilets, changing rooms, break rooms etc) through the elimination of 'practical obscurity' (Roth, 2006). Thirdly, the constant supervision of workers and the real time flow of data on labour productivity means that there is greater potential for employers to penalise workers immediately rather than accommodating change over an accumulated period of time. In combination with the increased precariousness of life and labour, partially through casualised and flexible contracts and limited workplace organisation, this contributes to an even further decimation of worker security in the logistics and service industries. If workers can be observed at each moment it is at the employers discretion to designate what constitutes a reasonable pace or a slow pace, reasonable movement or excessive movement. This kind of system also encourages new modes of individualism and alienation, not only through the elimination of tactics such as 'buddy clocking' in which workers clock in for each other (Pagnattaro, 2008: 242), but also through the generation of frequent detailed reports on staff activity, and tailored incentives that encourage employees to compete with their workmates for bonuses and wage increases.

Voice Directed Order Picking

This capacity for employers to control the velocities and temporalities of the laboring body is critical to all three surveillance mechanisms being examined here. Like RFID, Voice Directed Order Picking or voice picking primarily operates to manage the passage and pace of workers through the workplace with the aim of maximising efficiencies. Voice picking is a system for instructing workers via the use of headsets and microphones. It consists of a series of automated verbal commands issued from a company's warehouse management system, which recognises the response from the worker through speech recognition and speech synthesis software and converts it into data. It is commonly used in warehousing for order picking, goods reception, pallet storage and inventory.

The attempts to produce synthesised speech applications spans the past two centuries, developed through advances such as Wolfgang von Kempelen's 'Acoustic-Mechanical Speech Machine' in 1791, which was able to enunciate individual as well as a select combination of sounds (Flanagan, 1972/ 1973). Von Kempelen's speaking machine was reconstructed by Charles Wheatstone in the mid 1800's, which evolved the articulation of vowel and consonant sounds (Shroeder, 1993). During this time Alexander Graham Bell was also conducting experiments with speech machines. Bell Laboratories were crucial to the evolution of speech synthesising technologies, with their invention of the VOCODER/ VODER (voice coder) in the mid 1930's, introduced by Homer Dudley at the 1939 New York World's Fair (Klatt, 1987). Over the next few decades, speech technology was picked up by the U.S. Department of Defense and DARPA (Defense Advanced Research Project Agency) in conjunction with the further experiments being conducted by Bell Laboratories, who argued that it would ultimately require artificial intelligence to be successful. The first full text-to-speech system for English was launched in 1968 by the Electrotechnical Laboratory in Japan (ibid). In 1971 DARPA commissioned SUR (speech understanding research), the largest project in the history of development, and in 1976 the Harpy was developed by the Carnegie Mellon University, which could recognise a one thousand word vocabulary and connected speech. This was to be the basis for further innovation; the first commercially viable speech recognition software was launched in the late 1970's and 1980's but it was not until the late 1990's that it was mainstreamed (Juang and Rabiner, 2005). By this stage problems associated with real-time, accurate, continuous speech recognition as well as security and vocabulary range were more feasibly addressed, and prohibitive costing for the technology decreased.¹⁸

Over the past decade this software has been consolidated within global supply chains, as well as within communications, automotive and computing industries. Distribution centres in the grocery and food sectors were the first to utilise speech recognition and synthesising programs (Willis, 1998). Early adoption was evinced by Wal-Mart's VOF (voice order filling) in 1998. Voice directed work has also been integrated into third-party logistics, manufacturing and healthcare (Sweeny, 2011). Like RFID and GPS, these systems have been incorporated to maximise speed and minimise error in production and distribution.

Akin to RFID, voice picking works on the radio frequency band and similarly relies on wireless technologies. Workers are supplied with a belt-worn voice terminal (wearable mobile computer), with a headset and microphone. The voice terminal communicates with the warehouse management software via radio frequencies over wireless LAN's (local area networks). The warehouse management system transmits entire 'pick lists' to the employee's terminal, which converts it into computer generated speech commands. After accessing their individual terminals with a spoken password, the worker is directed to their pick location via the speech software, where they verify their location by reading aloud a unique number or 'check digit', attached to each pick slot. Their speech is translated into text for confirmation by the computer. When this number is registered the system then directs the worker to the number of picks required at that location. If the check digits do not correspond to the number registered with the back-end data, the system directs the worker to correct their location. The quantity picked is disclosed only when the location is

¹⁸ A related trajectory has been the development of voice pattern biometrics (Markowitz, 2000; Gómez-Vilda et al, 2009; Jastrow, 2007) within larger biometrics industries (Nanavati, 2002), which have discussed the innovations in biometrics to identify the unique cadences, tones and sounds of individual voices. This has been already linked to issues around citizenship and mobility (Ploeg and Sprenkels, 2011; Costin et al, 2006), and national and corporate security (Keane, 2010; O'Neil 2005; Woodward, 2001; Conti, 2007)

verified. Some configurations may also require further verbal confirmation of pick quantity. The worker is then directed to the next location and so on; in this way she is continuously monitored in every task (Miller, 2004). While the device is primarily used to communicate pick lists and locations, uses beyond this are gaining more traction, including replenishments, storage, cross-docking, maintenance, loading, receiving, and returns-processing (Klie, 2009: 30).

Voice picking has both been highly promoted in the management of facility inventory and criticised by unions and worker organisations. Order picking comprises one of the core components of warehousing, and as such directly makes up a large part of the labour budget, which is effected by the high turnover rate of employees and the often-seasonal nature of factory labour. Prior to using automated voice systems order picking was done through manual data entry and recording, and the use of barcodes. However, issues of human and machinic efficiency, such as the tracking of paper pick lists, mis-picking, and problems with barcoding such as barcode standardisation, effects of degradation, heat, moisture, and bending as well as malfunctioning laser readers (Napolitano, 2009) led to the seeking of alternatives. Paper-based methods and barcoding also meant that workers determined their own pace. By closely supervising workers through vocal instruction and evaluating duration spent on each activity through real-time confirmation, employers can now control the pace at which employees must work, and as with RFID tracking, this pace is arbitrated by the employer (Miller, 2004: 4).

This has been cause for dissent by workers and unions since 2005 at the UK store Asda (a subsidiary of the anti-union Wal-Mart corporation). It has been argued that due to the productivity pressures placed on workers, 'battery farm' style conditions have been established, which threaten worker's physical and mental health and safety. The union has identified three areas of complaint: firstly, the expected speed of pick rates, secondly, the risk of repetitive strain injury associated with increased pick rates, and thirdly, the tracking of workers. The demanded increase in productivity has been criticised as unrealistic by unions. In 2006 it was found that an operator at the Grangemouth distribution depot in Scotland had jammed the pedal of his truck to keep it moving without him inside, and had subsequently crashed into the storage racking. This tactic was used by the operator to eliminate the time taken entering and exiting the truck while he was rushing between shelves and boxes. Given that the truck weighed around one tonne, the potential for fatality was high had a worker been standing at the racks (Labournet, 2006). Incidents such as this were taken as evidence by the GMB (General, Municipal, Boilermakers and Allied Trade Union) that Asda's increase in the target daily pick rate from 1,100 to 1,400 boxes was unsafe. While boxes have variations in weight and shape, the original pick rate meant that individual workers were already moving between approximately two and ten tonnes of product by hand daily, with each box weighing between five to twenty kilos at a rate of around two and five boxes per minute. According to the GMB representative for Asda's distribution depot, 'asking an Asda worker to shift 1,400 boxes a day is equivalent of asking someone to workout in a gym for eight hours a day every working day. It is equivalent of Asda asking their staff to work themselves to death' (Logistics Manager, 2006).

After assessment by Health and Safety experts, such as the Chartered Society of Physiotherapists, it was further ascertained that by raising the pick target, employers were also raising risks of long-term musculoskeletal damage through repetitive movements in the back and hips (Labournet, 2006). The use of wearable IT devices such as 'ring-style bar code scanners and wrist-mounted computer terminals' used in distribution centres in conjunction with voice picking systems, were also argued to lead to strain in the hands and wrists (Meczes, 2006). Given the economic scale of work related injury and illness numbering in the billions each year in the UK, this was no slight

cause for concern. Medical practitioners further flagged mental health issues surrounding the use of voice pick technologies to monitor and track workers, specifically the high levels of stress and anxiety experienced (*ibid*), a conjecture affirmed by numerous scholars writing on mental health and surveillance (Ball, 2010; Ball, 2005; Aiello and Kolb, 1995; Carayon, 1993; Stanton and Barnes-Farrell, 1996; Thompson 2003, Zweig, 2005). In 2006 the GMB issued a yes/ no questionnaire trying to gauge workers responses to the implementation of voice picking systems, including statements and questions such as: ‘voice pick makes me feel like a robot’, ‘I prefer voice pick to paper pick’, ‘do you feel voice pick is used to monitor your movements?’ and ‘wearing the battery pack and headset cause me discomfort’ (GMB, 2006). According to the GMB, workers did not respond well to the introduction of the new technology, a claim countered by employers, logistics and warehousing trade associations and technology and software corporations (Meczes, 2006). This counter claim was unsurprising given the stakes involved, voice picking being celebrated as a technology that has lifted the accuracy of item picking from 99.3 to 99.8% or higher, increased productivity through hands free picking, eliminated paper labels, sped up training of new employees and allowed for real-time inventory (KOM, 2002).

As with RFID, one means to assuage workers apprehensions has been the introduction of bonus systems for workers who pick to, or above, the target rate. But as has been pointed out, such systems directly illustrate the use of these technologies to track how long workers take on particular tasks (Meczes, 2006). By concatenating the technology to wage systems, workers are allocated a set amount of time to move between point A and point B, and any surplus means docking bonus pay. This is the same in the case of toilet and rest breaks.

Despite the allegations being made against the working conditions under voice pick systems, proponents still claim that voice picking offers the most humane approach to communicating commands through the use of audio (Sweeny, 2011). This of course fails to address the fact that the ‘voice’ here is digitally generated, and is set to respond to recognisable stimuli via a series of inputted codes. There is a final point to be made here, which traces out differentials of race, class and pathology through the biometrics of the voice in speech recognition. In a workforce that is significantly migrant, precarious and itinerant, the ability for software to accommodate diversities of speech and language is imperative. Two kinds of voice recognition systems are used in warehouse operations: speaker-dependent, which require speakers to ‘train’ the application to identify their unique utterances by repeating characters, numbers and words over time, and speaker-independent, which do not require calibration relying rather on a pre-existing archive of voice patterns from which statistical models are derived. Both are contingent on assumptions that may conflict with the realities of the distribution centre or factory labour force. Speech-independent systems, while theoretically being adaptable to anyone within minutes of activation, are necessarily limited in their capacity to accommodate any vocal or sonic ‘anomalies’ outside of the parameters of the software, including external noise. Speaker-dependent systems, while being far more exact in their ability to assimilate pathologies, accents, dialects and even multiple languages, require duration for their programming and are thus incompatible with high turnover rates (Klie, 2009).

The potential for discrimination and manipulation through such technologies is as deliberately obfuscated by industry cohorts as it is in evidence, and it cannot be unanticipated that future contestation will emerge, especially within sectors that maintain a union presence. Indeed, it has been specifically in response to voice picking and GPS that the most documented conflicts have occurred to date, which is in itself notable given the relatively recent instigation of these disciplinary technologies and the general destabilisation of collective worker organising. Like voice picking, GPS

(the Global Positioning System) is a mode of invasive technology that requires the training and compliance of workers in a more visible and concerted way than RFID, which might in part account for some of the tensions surrounding its deployment in the logistics sectors.

The Global Positioning System

GPS is a solar-powered global navigation satellite system that pinpoints temporal (speed and time) and spatial (longitude, latitude, elevation) location. It was originally developed for military purposes by the US Department of Defense and made its official debut during the 1991 Gulf War to target bombs and guide missiles, as well as being used for land, sea and air navigation.

The evolution of GPS derived from early advances in physics after the 1930's, specifically research being done on the atomic clock preceding the Second World War, and the development of technologies such as satellite launching and control, solid-state devices, microwave communication, radio navigation and micro chipping, among others (Taubes, 1997: 3). The realisation of GPS as a means for navigation not contingent on celestial bodies occurred during the late 1950's. After the launch of the Sputnik by the Soviet Union in 1957, it became apparent to researchers that like natural stars, 'artificial' stars could be used to calculate geographical location. This was enabled through observing the radio frequency Doppler shift incurred by the satellite's movement (Richharia, 1999). Because the satellite's orbit could be tracked from the ground, positions on the ground could also be ascertained via the signals being broadcast from the satellite. Throughout the 1960's and 1970's the US military further experimented with GPS technologies, especially in underwater warfare to track the location of ballistic missile submarines. Major development began in 1973, with the objective to construct an all-weather, continuous positioning system (Parkinson, 1994). The first functioning GPS satellite, built by the Rockwell Corporation, was launched in 1978, and the final system reached its formal completion in 1995 succeeding the launching of 24 NAVSTAR (Navigation System for Timing and Ranging) satellites into space by the US Airforce (James, 2009).

The transition into commercial and international applications began in 1983, pronounced by Ronald Reagan following the downing of a Korean Air flight by Soviet fighter jets after it crossed into Soviet air space (Pace et al, 1995). The market was led by the geographical surveying sectors during the mid 1980's. The first hand held GPS device was released in 1989, and civilian demand for GPS surged after its importance to Operation Desert Storm during the Persian Gulf War was made public (ibid). Commercial deployment in industries such as aviation, logistics, maritime, aeronautics, automotives, construction, agriculture and meteorology became popular. As costs of receivers decreased manufacturing for private GPS use in telematics and navigation grew, especially in combination with integrated technologies in computing. Because of its still prevalent significance to the military domain in both peacekeeping and combat contexts, the Department of Defense (and thereby the National Command Authority) retains a voice in the operation and management of GPS, and a joint task force between the Department of Defense and the Department of Transportation has been established to help regulate policy affecting civilian access (ibid).

GPS has particular relevance to the logistics industries, particularly with regard to the tracking and tracing of goods and hardware, including containers and transportation. GPS works through transmitting data from satellites in space, to earth-bound receivers that notify them of their location to within a distance of three to fifteen meters. The system consists of three components: space (satellites, transmitted signals), control (grounded facilities, telemetry and computation) and user (applications equipment and devices available to the users) (Kaplan, 1996). Several constellations

of satellites have been deployed over the past forty years, and at present around thirty are orbiting the earth, with more planned by international satellite systems such as the Russian GLONASS (Broadcom, 2011). Satellites circle the earth around 20 km from the surface, and make two orbits per day. Their orbit location is defined by their initial velocity and launch position, fixed through gravitational pull. A GPS reading is made from locating three or more of these satellites via radio signal (L1 and L2), calculating the distance between them and then determining its own location (Langley, 1991). This calculation is based on the mathematical technique of trilateration or triangulation – finding an unknown point based on the formation of a triangle from two or more known points. The more satellites that are included in this equation, the higher the accuracy of the reading. Each satellite contains an atomic clock and transmits a unique radio frequency, at a rate of around 300, 000 kms/ second: the speed of light in a vacuum. These frequencies arrive at the receiver at different times, depending on its distance from the transmitting satellite. The receiver requires the time taken for transmission travel, the location of the satellite and the accurate time determined by the atomic clock to locate its position. When coupled with mobile systems such as GIS (Geography Information Systems) – the ‘what’ to GPS’s ‘where’ – and advanced Internet applications, the data that localises and traces goods and people is made transparent and highly specific.

One of the ways that GPS has been assimilated into the logistics industries and supply chain management is through telematics or ICT’s (Information and Communications Technology), the convergence of telecommunications and informatics. In this context telematics includes the sending and receiving of spatial and temporal location data, as well as the storage of such information. Automotive navigation systems stand as a central example. In logistics GPS telematics are combined with technologies such as cell site tracking, wireless tracking and, of course, RFID. By 2010 55% of UK logistics companies were using inland vehicle-tracking systems, a significant leap from 25% in 2008. The most common reasons given for the installation of telematic devices was to increase productivity and to maintain environmental standards (Loughran, 2010).

The implementation of GPS technology within sectors of logistics, particularly in freight and fleet management, as well as consignment delivery (i.e. UPS and FedEx)¹⁹, has prompted contestation. As mentioned, the instantiation of tracking and tracing devices within fleet management has been leveraged through two key arguments, ostensibly to meet environmental standards and the capacity to increase productivity. Time based technology allows employers to access continuous, up to the minute data on vehicle speed, RPM’s, route reportage, time-stamp arrivals and departures as well as geo-fencing addresses; they furthermore capture information on driver activity and the movements of ancillary equipment (Clancy, 2009). This means that employers can supervise how drivers are driving and moving within the vehicle. Over the past five years increased attention has been paid to the environmental impacts of the logistics industries, especially in the transportation sections of the supply chain. This has witnessed what is referred to as ‘eco-tracking’ policies targeting fuel emissions (as well as the coincidental reduction in fuel consumption), and ‘green-band driving’ or ‘eco-routing’ (m.logistics, 2010). Under these auspices, companies are using devices to check elements such as engine idling time and how often the truck is placed in reverse, and to eliminate ‘unnecessary’ movements within driver routes through a combination of GPS and route planning

¹⁹ Transportation of consignments overland is the primary mode in Europe, holding a market share of 45% of total freight transport; sea accounts for 41%, followed by rail at 8%, inland waterways at 4% and pipeline at 3% (Mondragon et al, 2009; Brown et al, 2006).

software. UPS, for example, has now reduced left turns in their delivery routes, which equates to 29 million miles off driving per year, saving 3.3 million gallons of fuel and minimising emission by over 31, 000 metric tonnes of CO₂ (Scarpati, 2011).

The potential environmental benefits of such monitoring are not to be negated. The ambivalence lies, of course, in the fact that telematics lead to comprehensive accounts of the vehicle's, and driver's, activities. When the power to monitor seatbelt use, the exact location and duration of rest breaks, and to dictate routes is exercised, then opposition will occur. This ties in closely to the other predominant argument for telematics: productivity and customer demand. In combination with vehicle-GPS, employees are tracked via cell phone GPS and PDA's. Various industry reports and sites are recounting narratives of workers 'misusing' company time and resources, and have embraced GPS as a means of detecting truancy and falsification of activities (Blish and Stiller, 2009; Nietermeyer, 2010; Ly, 2011). The other side, however, is that 'objective' digital data is still interpreted subjectively, as was evinced by an event recounted to me by a UK Unite union researcher during an interview at the Unite London offices on 10 May 2011. The event concerned a UK worker whose employer suspected that drivers were taking unauthorised breaks outside bakeries. The employer instructed the operators to notify him of all instances where drivers were parked within a particular radius of such businesses. Disciplinary action was begun against the worker on this presumptive basis, and it was not until the union assessed his delivery reports that it was made clear that the delivery location legitimately fell within the confines of the bakery radius, and that no breach had actually occurred.

A further contention is that automatic route planning (both geographically and temporally) does not accommodate the realities faced by drivers. From a preliminary email survey I sent out through Unite to their members in May 2011, one driver responded to the question 'can you recall any examples you have heard about where the monitoring by employers has had negative outcomes on workers?' with,

Yes, members refusing a trip because they know it is unachievable. However, the print out (before they leave) is showing it can be done in the allocated time. One member received final written [author note: final written warning before dismissal] for refusing a 'reasonable request'. At times the perimeters set by Paragon [author note: a planning management application] are unachievable, may be road conditions, time of day, delays or even the way a driver feels can change his day, I am persistently resisting this robotic technology.

Another driver answered the same question with the comment that:

It was done as a joke, but the traffic office rung a member when he stopped to go to the toilet, asking him why he stopped. It was raised to more senior managers at the time and hopefully that will stop in future.

It is clear from such experiences that the apprehension logistics workers may have about the pervasive nature of these technologies, and the disciplinary ramifications that follow their use, are not ungrounded. Protocols such as working time directive compliance, means that management is updated each time a driver's status changes, and each time the status of the vehicle changes, meaning that managers know in real-time every moment that a driver is available for labour (Banner, 2007).

The invasive aspects of tracking and tracing workers has already been the subject of legal and employee rights scholarship (Canoni, 2004; Marshall and Friedman, 2007; Cohen and Cohen, 2007; Baglione et al, 2009; Kushner, 2004), despite, or perhaps because of, its comparatively recent inception. While employers are claiming that devices are not used to survey workers during non-work hours, or invading privacy, the technologies are so ubiquitous that data is produced regardless. This is partially because employers do not always inform workers of how to turn devices off, nor do they necessarily inform them of how the data is to be used (Marshall and Friedman, 2007).

The ambiguity surrounding the mining and exploitation of data deserves much analysis over the coming years, and it is critical that not only the legalities are addressed in this process, but also that the technicalities of the devices themselves are demystified by those having to comply with their instruction. In addition, larger geo-economic and political questions are raised surrounding the administration and capture of data, partially through the outsourcing and off shoring of administrative tasks to enterprises being rapidly established in the so-called Global South, to which I will now briefly turn.

Business Process Outsourcing and Human Resource Outsourcing: India

Surveillance cuts across borders – it embodies the techniques and sensibilities of an essentially transnational response to problems of governance (Backer, 2008: 105).

The three systems I have addressed in this paper are part of larger technological systems implemented in the logistics industries. Such systems are producing unimaginable amounts of data on a minute-by-minute basis. An interesting aspect to this is the analysis and management of that data. While large quantities of data are apprehended and managed through algorithms, there has also been a burgeoning industry in human data analysis, partially through Business Process Outsourcing (BPO) and Human Resource Outsourcing (HRO).

Since the late 1990's there has been a proliferation of HRO to Asian and Pacific Rim countries propelled by transnational corporations and international production networks seeking to lower costs and improve customer services (Chiang et al, 2010). Many studies have examined the reasons and factors that underpin a company's outsourcing activities (Greer et al, 1999; Klaas, Gainey, McClendon and Yang 2005; Smith, Vozikis and Varaksina 2006; Miles and Snow 1984; Khatri and Budhwar 2002), and the history of such outsourcing (Gospel and Sako, 2010). Advances in ICT's and Internet Enabled Services (ITES) have meant that global outsourcing of 24-7 back-office business tasks and programming has become more viable and profitable, especially given the stark disparity in wage allocation for such tasks between the Global North and the Global South (Orfreno et al, 2007).

Outsourcing of low and high-skill services and administration to countries such as India, a dominant player in the field accounting for around 80% of the offshore market, has been most commonly associated with call centre or contact centre work (Orfreno et al, 2007; The Economist, 2004). However, the outsourcing industry has moved far beyond these parameters, and is now being viewed in India as the central engine of development (Srinivasan, 2006).²⁰ New service lines in areas

²⁰ That said, there is a lack of these industries outside of the urban context, inaccessible to a large percentage of the population. As Meredith (2007) comments, 'While Indian university graduates line up for jobs that can propel them into newly vibrant middle class, for India's rural and urban poor, change has been interminably delayed. Expectations, like incomes, are rising across India, and not just for those working in call centres. Even as the New India cohort thrives, much of the rest of India is making much slower gains or even being left

such as finance, medicine and remote education (referred to as Financial Process Outsourcing and Knowledge Process Outsourcing) have been emerging in correspondence with greater outsourcing of staff management from America and Europe (Kuruvilla and Ranganathan, 2008). This has seen a shift of BPO up the value chain, and the development of a highly educated service class. The rapid expansion of BPO in India has also witnessed consolidation within the industry between software support, services and BPO, for instance within logistics in supply chain management and transportation (ibid).

A quick scan of service providers such as Accenture²¹, Black Mountain²² and PeopleStrong²³, illustrate the breadth of the externalisation of administrative activity and their customer base. General services such as payroll management, benefits administration, talent management, cost management, human resource information systems, recruitment and selection, underwriting management, help lines and call centre support, employee communication services, forecasting, data management, training, labour compliance and vendor management, sit alongside organisation-specific processes. While such sites are opaque about what such services entail precisely, it is not too far a reach to hypothesise that at least some of the data being produced by monitoring systems in the Global North is being processed in these offshore facilities in the Global South.

To continue the thread of my analysis what is most interesting, but wholly unsurprising, are the similar working conditions faced by data analysts and HRO and BPO workers in India themselves, especially the demands placed on the time of labour. This is extensively covered by Shehzad Nadeem (2009) in his research on time arbitrage and Indian workers, specifically how transnational corporations are using time arbitrage to maximise their operations across global time zones. According to Nadeem the alteration of geo-spatial and temporal borders through globalisation has critically impacted on the workplaces of the 'new economy'. Rather than unfettering time, globalisation and the information economy has led to complex temporal orientations, including compressions and extensions, which are no less disciplined than before, despite their 'flexibility' (Nadeem, 2009; Thrift, 2000). Time arbitrage, or 'the exploitation of time discrepancies between geographical labour markets to make a profit' (2009: 21) works on two levels, the geographical, which is seen in the use of time differences to achieve 24 hour service provision, and on the level of labour process, seen in the multiplication or acceleration of labour hours. In the case of India, this has resulted in extended working hours, an intensification of working pace and temporal displacement, leading to problems in social, physical and mental health (Nadeem, 2009; Combs et al, 2010). More specifically, as he differentiates, the time of IT professionals is extended (through longer hours, often unpaid), while the time of BPO workers is compressed (through close monitoring).

What is clear is the influence of technologically induced efficiency. The rate and amount of work in BPO is a significant site of contestation.²⁴ Disparities between conditions in the Global

behind, creating social and political tensions that cloud India's impressive strides forward. The lowest paid workers in the off shoring industry those working in the call centres earn median wages of \$275 a month. But most Indians still earn less than \$60 a month or just \$2 a day'. (125)

²¹ <http://www.accenture.com/in-en/Pages/index.aspx>, accessed 26 April 2010.

²² <http://www.blackmountainhr.com/>, accessed 26 April 2010.

²³ <http://www.peoplestrong.com/>, accessed 26 April 2010.

²⁴ Attrition rates reflect this conflict: (IT) (30- 35%), business process outsourcing (BPO) (35-40%), insurance (35-40%), retail and fast moving consumer goods (FMCG) (20-30%), and manufacturing and engineering (10-15%). See Chatterjee (2006).

North and South in these service industries are abundantly evident; in one example of a call centre using automated dialling machines, it was noted that while workers in America may have 45 seconds to a minute between calls, Indian workers have only five to ten seconds, thus eliminating any possible 'idle' time (Nadeem, 2009: 25). Similarly, complaints have been made about monitoring and surveillance, and its effects on time-discipline, especially with regards to toilet breaks and rest breaks, which are timed and may require permission from supervisors (ibid; Sharma, 2005).

Conclusion

While much more can be said on this and such narratives are not exceptions to the rule, what I would like to comment upon in conclusion are the overlaps along the supply chain, the circuits of surveillance and technologies used to monitor workers – and those that are monitoring workers themselves – and the provision of almost endless feedback loops of data and disciplinary information. Given the pervasive nature of tracking and tracing technologies, and the effects that they engender, it is possible to contend that surveillance and monitoring are now crucial to the exercise of power within global supply chains and logistics industries. It has been proposed that surveillance has become not only a technique of governance, but its substitute: surveillance as a regulatory mechanism, replete with assumptions and objectives beyond mere data collection (Backer, 2008). This has become all the more apparent in an era of outsourcing and subcontracting, especially when, as legal scholar Larry Cata Backer (2008) suggests, private institutions and corporations are undertaking sovereign functions and public bodies are engaging in the market. In this condition, the power to decide what information can be gathered, analysed, judged and justified to serve a particular purpose indicates that debates on how technologies such as RFID, GPS and voice picking are used need also to comprehend the lines of race, gender, class, education, and physical ability that they map out.

In this paper I have focused on the technical and historical contexts of hardware and software ICT's, along with some of the effects they are having in the monitoring and disciplining of workers in the UK, USA and, very briefly, India. It has been my objective, in part, to concentrate on material that is often isolated within industry or scientific realms, namely the actual mechanics of the machines interfacing some of the dominant surveillance systems, in order to contribute a technological perspective to wider debates on how tracking and tracing is not only changing the local geographies of workplaces but also national and transnational spaces. The geo-economic aspect is imperative. If we are able to conceive of the transversals that such technologies indicate, as Tsing (2009) and Cowen (2010) do, from the minute gestures of a worker's hand or voice to the performance of corporate policy and global trade, we can get a better grasp on the multifaceted economic, political and cultural iterations along the supply chain, paying attention to the differentiations that exist not only between rich countries, and between poor countries, but within those countries themselves.

The way that information is processed through the technologies that I have examined reconfigures space and time in the actual sites of logistical labour, and also by off-shoring business processing and human resource functions, how and where information is administrated and managed remotely.

What is thus of interest is how these surveillance technologies and the governmentalities they produce, and are reproduced through, at the same time articulate new lines of power across national and international borders, while retaining aspects of more traditional economic and political hierarchies across the Global North and South. One thing is certain: we are witnessing how the demands of Just-In-Time lean production – increased efficiency and productivity, ubiquitous regulatory mechanisms, casualised and subcontracted staff, flexible temporality, decreased collective organisation, and the aspirations of entrepreneurship that Tsing notes (2009) – are playing out in a variety of labouring sites along the chain, from the factory floor, to the carrier, to the warehouse and finally the handover to the consumer herself. It is here that we can find points of commonality amidst considerable difference; precisely why the expanding instigations of disciplinary techniques along the transnational nodes and networks of the supply chain require all the more attention in their complexity.

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