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**Lancaster University Management School**  
**Working Paper**  
**2005/054**

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Lucas Introna and Louise Whittaker

The Department of Organisation, Work and Technology  
Lancaster University Management School  
Lancaster LA1 4YX  
UK

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# Power, Cash and Convenience: The political space of the ATM

Lucas D. Introna,  
*Centre for the Study of Technology and Organisation,  
Department of Organisation, Work and Technology  
Lancaster University Management School,  
[l.introna@lancaster.ac.uk](mailto:l.introna@lancaster.ac.uk)*

Louise Whittaker,  
*Wits Business School,  
University of Witwatersrand,  
Johannesburg, South Africa,  
[whittaker.l@wbs.wits.ac.za](mailto:whittaker.l@wbs.wits.ac.za)*

## Abstract

The automatic teller machine (ATM) is currently, and for the foreseeable future, the dominant mode of access to cash for those living in the UK— as such it is a technology central to the lives of most economically active individuals. In this paper we present the ATM as a political space where a multiplicity of relationships — primarily but not exclusively between the customer and the bank — become configured in ways that serve some interests and not others. The paper draws on the work of Winner, Haraway and Latour in discussing the translation of ATMs as it occurs in the UK, with further reference to South Africa and the USA.

In order to make some of the politics of the ATM more visible, we illustrate the political struggles through four interconnected narratives: (a) the talking ATM, (b) the insecure ATM, (c) the charging ATM and (d) the cashless ATM. In each of these descriptive accounts we attempt to show how the ATM becomes (or is) a space that is configured and reconfigured through a multiplicity of political translations resulting in a multiplicity of cybernetic ATM networks. Finally, we briefly discuss how these narratives interrelate to form the political space of the ATM

## Introduction

The first ATM in the world was installed by Barclays Bank in its Enfield branch on the 27<sup>th</sup> of June 1967. It was based on the idea of a ‘dispensing’ machine: one which dispenses an item of a customer’s choice in return for money deposited. However, instead of inserting money to get money dispensed, the customer inserted a ‘token’ in the form of a hole-punched voucher, purchased by the customer from the bank during opening hours. The voucher was inserted in one drawer and the machine dispensed a £10.00 note in another drawer if a correct verification code was entered. The technological breakthrough that made the cash dispenser possible was the technology to match the code on the hole-punched voucher with the code entered by the customer.



**Figure1:** Crowds observing the opening of the De La Rue automatic cash dispenser on 27 June 1967

Networked ATMs operated by magnetic-stripe cash cards were widely introduced in the 1980’s. By 2003 there were approximately 52,500 ATMs in the UK (one ATM for every 1135 people), dispensing £140bn in 2.4bn transactions. Assuming that half of the population maintains a current account then the average person uses an ATM on average 80 times a year, or approximately once a week. It seems clear from these figures that the ATM is a major mode of access to cash, not withstanding of alternative modes of access such as a withdrawal at a Post Office counter or a withdrawal at a supermarket teller (or ‘cash back’). The Association for Payment Clearing Services (APACS) predicts that in 2012 75% of all cash access will be through ATMs as opposed

to 51% in 2002 and 27% in 1992 (APACS 2003). The need for access to cash is clear once one considers that in 2003 63% of personal (as opposed to business) payments were in the form of cash, in spite of the multiplicity of alternative payment methods available (APACS 2003).

It is evident from this brief introduction that the ATM is currently, and for the foreseeable future, the dominant mode of access to cash for those living in the UK—as such it is a technology central to the lives of most economically active individuals. If one adds to this the fact that cash is still a dominant way of paying for goods and that there are relatively few alternative ways to get access to cash (without incurring costs) then the ATM is certainly a very important political site. Moreover in some contexts, for example that of South Africa, many individuals may be unable to access the ATM network at all due to total or functional illiteracy (in 18% to 34 % of the population) or overwhelming physical distance (more than 20km) from the nearest ATM (*Census 2001: Census in Brief*, 2003). In cases such as these, the possibility of being enrolled in the financial sector at all, with attendant economic and social benefits, may be completely excluded. The importance of the ATM network and the way it functions is concomitantly enormous. It seems, therefore, entirely justified to open this ‘black box’ for scrutiny—to ask about the politics of the ATM.

In this paper we hope to make some of the politics of the ATM more visible. First, we will give a brief outline of the theoretical work on the politics of technology that we draw upon. Second, we will illustrate the political struggles through four interconnected narratives: (a) the talking ATM, (b) the insecure ATM, (c) the charging ATM and (d) the cashless ATM. In each of these descriptive accounts we want to attempt to show how the ATM becomes (or is) a space that is configured and reconfigured through a multiplicity of political translations resulting in a multiplicity of cybernetic ATM networks. Finally, we want to discuss how these narratives interrelate to form the political space of the ATM

### **The politics of technology: artefacts, cyborgs and networks**

Winner (Winner 1980, Winner 1986) has argued that artefacts have politics. By this he meant that technology, by its very design, includes certain interests and excludes others, or more generally the fact that “specific features in the design or arrangement of a device or system could provide a convenient means of establishing patterns of power and authority in a given setting” (Winner 1986). The politics of artefacts are mostly an implicit politics rather than an explicit politics. It is mostly not that designers decide (or decide not) to be political. Rather, politics is an implicit part of the mundane process of trying to solve practical problems in a world full of technological, financial and other constraints. Winner summarizes his view well when he claims:

The things we call ‘technologies’ are ways of building order in our world. Many technical devices and systems important in everyday life [such as ATMs] contain possibilities for many different ways of ordering human activity. Consciously or unconsciously, deliberately or inadvertently, societies choose structures for technologies that influence how people are going to work, communicate, travel, consume, and so forth over a very long time. In the processes by which structuring decisions are made, different people are situated differently and possess unequal degrees of power as well as unequal levels of awareness.

We want to extend this argument, or rather make it clearer, in two related ways: first, we want to extend it with Haraway’s notion of the cyborg (Haraway 1991); and second, with Latour’s notion of an actor network (Latour 1991). Both of these extensions serve to further problematize and destabilize the *assumed boundary* between the social and the technical—which is essential if one is to understand the politics of a technology.

For Haraway (Haraway 1991) the cyborg is “a cybernetic organism, a hybrid of machine and organism...it is about transgressed boundaries, potent fusions, and dangerous possibilities which

progressive people might explore as one part of needed political work.” In this view, the ATM is only ‘an ATM’ when we take it as a cyborg; when we see it, the human/machine, become alive through the fusion of an interplay between human/machine activities—the *inserting* of cards (human), *asking* for PIN numbers (machine), *pushing* of keys (human), *giving* options (machine), *following* of a sequence of steps (human), and so forth. Once we remove the boundary it becomes more evident that certain scripts (or sequences of activities) are possible and others not. But it is not ‘us’ over and against ‘them’. It is rather a simultaneous event of control (scripts) and possibilities (access). From the cyborg perspective we see these two perspective at once, according to Haraway, “from one perspective, a cyborg world is about the final imposition of a grid of control on the planet,... from another perspective, a cyborg world might be about lived social and bodily realities in which people are not afraid of their joint kinship with animals and machines, ... The political struggle is to see from both perspectives at once because each reveals *both dominations and possibilities* unimaginable from the other vantage point” (p.154, emphasis added).

The cyborg is never alone. Rather these cyborgs function as nodes, or links, in a dynamic cybernetic network (or actor network) kept in place by a multiplicity of artefacts, agreements, alliances, conventions, translations, procedures, threats, and so forth: in short by relationships of power and discipline (Callon 1986) Some are stable, even irreversible; some are dynamic and fragile. Analytically we can isolate and describe these networks as we will do for the ATM (see also (Law 1991) for further examples). However, as we survey the landscape of networks we cannot locate, in any obvious manner, where they begin nor where they end. Indeed we cannot with any degree of certainty separate the purely social from the purely technical, cause from effect, designer from user, winners from losers, and so on.

In these complex and dynamic cybernetic networks ATMs, users, banks criminals, headphones, cameras, algorithms, etc.—function as political ‘locations’ in and through which values and interests are negotiated and ultimately ‘inscribed’ into the very materiality of the things themselves—thereby rendering these values and interests more or less permanent (Callon 1986, 1991, Latour 1991, Law 1991, Akrich 1992, Introna and Nissenbaum 2000, Introna and Wood 2004). Through these inscriptions, which may be more or less successful, those that encounter and use these inscribed cybernetic networks become, wittingly or unwittingly, enrolled into particular political programmes, or scripts for action. Obviously, most of the actors in the network do not simply accept these inscriptions and enrolments as inevitable or unavoidable. In the flow of everyday life networks often break down and need to be maintained. Furthermore, those that draw upon them use them in unintended ways, ignoring or deliberately ‘misreading’ the script the networks may endeavour to impose. Nevertheless, to the degree that these enrolments are successful, the consequences of such enrolments can result in more or less profound political ‘ideologies’ that ought to be scrutinized.

It is our claim that one of the important networks that order our world is the ATM. We would claim that the designers of the ATM network built the ATM for the average enabled person thereby neglecting a significant, already marginalized, community of (dis)abled people—(dis)abled because the scripts and assumptions built into the network do not recognize them or their legitimate claims. Frequently this is because they are the minority. We want to show that it is the majority and the powerful who build these networks to serve their own interests (able bodied designers, banks, etc). We would claim that it is possible to conceive of the ATM cybernetic network in different (less disabling) ways, which could order the activity of gaining access to cash and the bank in a multiplicity of different ways. That is, the ‘cyborg’ that is the user/ATM can be configured in a multiplicity of ways, each of which has different political implications. In order to make this politics visible we want to describe four different narratives or political programmes: (a) the talking ATM, (b) the insecure ATM, (c) the charging ATM and (d) the cashless ATM.

## The Talking ATM: towards a ‘universal design’

When approaching and interacting with a standard text-based ATM it soon becomes obvious that it makes a whole range of assumptions about the person in front of it. It assumes that the user is able to:

approach it, see the screen, read the content of the screen, insert the banking card, press the buttons (or screen) required for input, hear the input verification signal (beep), remember a personal identification number (PIN), follow the instructions on the screen, remove the card, cash, or receipt, verify that the correct amount of cash was dispensed, and so forth.

In each of these cases it is possible to list a number of reasons why the assumption will not hold up for a number of disabled individuals—or rather, why the assumptions of the designers may dis-able certain potential users. One might respond by arguing that these cases constitute a rather small percentage of the population. However, research by Van der Heiden (Van der Heiden 1990) concluded that between 15% and 20% of the population has a disability that would make it difficult or impossible for them to use a standard ATM. In South Africa, 34% of adults are functionally illiterate and therefore potentially disabled in using the text-based ATM. In all of these instances it would be more accurate to say that a not-insubstantial number of people are dis-abled by the ATM because the ATM makes assumptions about them.

How can those who are dis-abled and therefore excluded get their interests inscribed into the ATM cyborg? We will use the *talking ATM* as a sort of a cyborg metaphor and general spokesperson for *all* those that are disabled by the standard text-based ATM. Through the talking ATM we want to highlight and emphasise the many different, equally important, ways in which users are disabled by the standard ATM. In our description we will describe how the talking ATM got its voice, how it ‘talks’, and how the user ‘listens’

One of the most common exclusions in the standard ATM design is the interest of blind or poorly sighted people. Deborah Kendrick (Kendrick 2001), a blind person, explains what it is like to be confronted with a standard silent ATM:

It was a Sunday afternoon in 1995 when I desperately needed cash for an upcoming event and was nowhere near the single automated teller machine (ATM) whose keypad and sequences I had memorized. My daughter was six years old and a gifted reader. “You’ll have to read the screen to me,” I told her, on our walk to the ATM whose location I had learned from a few inquiries to people in the area. But the ATM was higher than a six-year-old’s eye level, and I had to lift her up after each step of the simple transaction was executed. More than once, our responses were too slow, and that machine made that unmistakable error sound, repetitious beeping, as it spit my card back out of the slot bearing the braille label “Insert card.” Eventually, the transaction was completed, but along with the cash in my hand, I walked away with no small amount of aggravation.

Note that in the silent ATM cyborg the non-human expects the blind human to know it intimately by memorising its scripts, the keypad and the sequence of the transaction, otherwise he or she will be (dis)abled. The solution has been to make the machines talk—the transformation (or rather translation) from a silent ATM to a ‘talking ATM’.

The first talking ATM in the US was installed by a credit union in San Francisco City Hall in 1999—32 years after the first cash dispenser came into use in Barclays Bank, UK. The talking ATM was mostly the result of three political developments: (a) the 1990 Americans With Disabilities Act (ADA) with its associated ATM guidance in 1992—which required banks to make ATMs “accessible to and independently usable by persons with vision impairments”; (b) an ongoing advocacy by activists especially on the basis of the ADA law, which resulted in settlement agreements with a number of banks; (c) the development of reasonably inexpensive text-to-speech

technology. In the UK similar legislation was implemented with the passing of the Disability Discrimination Act in 1995.

The difference between the standard ATM machine and the talking ATM machine is not very obvious at first glance. The only external difference is the rather inconspicuous earphone jack. However the talking ATM cyborg is a completely different animal. Deborah Kendrick (Kendrick 2001) explains her first experience of being enabled, of being recognised and being spoken to:

In March 2001, while attending the CSUN "Technology and Persons with Disabilities" conference in Los Angeles, I took a cab to a nearby Bank of America after banking hours to have my first look at a talking ATM. Equipped with only my own ATM card and a common earphone, I approached the machine. Locating the universal earphone jack, I plugged in and immediately heard a welcome message. The human voice gave me a quick orientation to the braille-labeled keypad and instructed me to find the braille-labeled point for inserting my card. Throughout the transaction, I was prompted by the human voice scripts to select withdrawal from checking or savings, was informed where the desired keys were located, and heard my transaction confirmed each step of the way. On completion, the voice directed me to the spot on the machine where cash could be removed and I could collect my receipt. ... The particular machine I used apologized at transaction's end for not having account balances available verbally at this time. It also apologized for the \$1.50 surcharge to my account, since I am not a Bank of America customer. ... no apologies were needed!



Figure 2: The Talking ATM

In the talking ATM cyborg both the human and the non-human had to be reconfigured. The ATM has to have WAV files for all standard prompts, synthesized speech for variable information such as account balances, and braille labelling. The user must have a set of headphone available to hand. Thus we see how the political interests of the different parties become translated and inscribed into the ATM space:

<i>Cyborg</i>	Before negotiation <i>The silent ATM</i>	After negotiation <i>The talking ATM</i>
<i>Non-human</i>	Standard ATM	ATM with speech files, speech synthesis, jack, and braille labels
<i>Human</i>	Human who carries a memorized set of instructions for some ATMs (mostly disabled)	Human with headphones who is spoken to (enabled)

In our discussion of the talking ATM cyborg we have not brought into the discussion all the multiplicity of actors that have facilitated (or prevented) this translation from a silent ATM to a talking ATM. We could have included in our narrative the role that the interests of various actors played in shaping and reshaping the translation from the silent to the talking ATM cyborg, such as the technology suppliers Diebold or NCR, the National Foundation of the Blind, law makers, and so forth.

Furthermore, in our discussion we have not explicitly attended to the many other 'outsiders' that are still not included in the talking ATM cyborg. For example Gill (Gill 1996) related some of the

activities or scripts required by the silent ATM with a variety of dis-abilities to indicate some of those whose interests are excluded from the silent ATM network (see Figure 3 below). He also indicates that in some cases there are indeed technical possibilities available to become integrated in the ATM cyborg. This is just a small sample of the excluded. Others include those that find the standard silent ATM, so obvious to many, incomprehensible. Hatta and Iiyama (1991) showed that in a group of people aged between 20-68, who are non-users or who use an ATM only once or twice a month, 32% failed when trying to make a deposit, 42% failed when trying to make a withdrawal, and 47% failed when trying to complete a transfer on their first attempt. By their third try most succeeded in making a deposit, but 8% still could not make a withdrawal or transfer funds. In another study Adams and Thieben (1991) found, using individuals over the age of 50 who had never used an ATM before, that even after 20 minutes of training only 40% of the group could use the ATM successfully on every attempt.

	Wheelchair User	Cannot walk without aid	Cannot use fingers	Cannot use one arm	Reduced strength	Reduced co-ordination	Dyslexia	Intell ectually Impaired	Blind	Low vision
Locate cash dispenser								●	●	●
Access to cash dispenser	●	●								
Read instructions							●	●	●	●
Insert card	●	●	●	●	●	●		●	●	●
Read screen	●						●	●	●	●
Use keyboard	●								●	●
Use touchscreen	●						●		●	●
Retrieve money		●								
Read receipt									●	●
Retrieve card	●	●	●	●	●	●			●	

Few problems	Some problems	Many problems
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● Technology available to alleviate the problem

**Figure 3:** Others excluded from the silent ATM network

We should of course not assume that all those who are potentially disabled by the ATM, are in fact unable to use the ATM. Of a semi-literate sample of 63 users in South Africa, for example, 79% were in fact ATM users, who had a more positive (or perhaps less demanding) attitude to ATM use than a sample of 68 literate users, (Thatcher et al. 2005). The question however, then becomes the cost to the user of engaging with the ATM in such circumstances, and the potential security risks that they must adopt in, for example, engaging assistance in the use of the ATM. Interestingly, this same group of semi-literate users were ambivalent (split 31 and 31) about the use of a talking-ATM over a text-based ATM, citing concerns about the many different languages and dialects of

users. This indicates a further language-based area of potential exclusion, since ATM interfaces are in many cases available in South Africa only in English or Afrikaans, which are first languages to only 21.5% of the population (*Census 2001: Census in Brief*, 2003). The extended political implication of excluding illiterate users is perhaps more obvious when we consider that of the 300 semi-literate adults available to the researchers in this study, 150 did not have bank accounts at all. This is reflective of a general non-banked rate for adult South Africans of around 50 percent (The Banking Council South Africa 2004).

Through the narrative of the talking ATM we wanted to make visible the way in which a significant group of people (the minority) has become disabled by the silent ATM cyborg of the majority. We also illustrated how those on the outside can become included by having their interests inscribed into the talking ATM cyborg. Obviously the talking ATM will include some of the excluded minority but certainly not all. There are still many outsiders, for many different reasons. We can only imagine what sort of ATM cyborg might emerge if we take the political issue of including all the excluded into the cyborg—i.e. providing universal access. We now want to turn to a different set of actors and show how their interests are negotiated (or not) through the secure ATM.

### **The Insecure ATM: Towards a safe transaction**

The ATM is a place where one of the most important universal value items can be accessed—namely hard cash. It is therefore not surprising that it is a place where criminals see an opportunity to have their interests inscribed. It was reported that in the UK ATM crime increased by 85% in 2004 resulting in £61 million being stolen from ATM customers (Jones 2004). Across Europe there has been a similar increase resulting in losses of €49 million in 2004. Moving the cash dispensing transaction from the banking hall to the ‘hole in the wall’ outside the bank has also moved the problem of security from inside the bank (where it is predominantly the bank’s problem) to outside the bank (where it is predominantly the customer’s problem). Differently put safety is trans-acted from the bank to the customer. How do criminals try to inscribe their interests into the ATM network? We will consider two ways: card trapping, and card skimming.

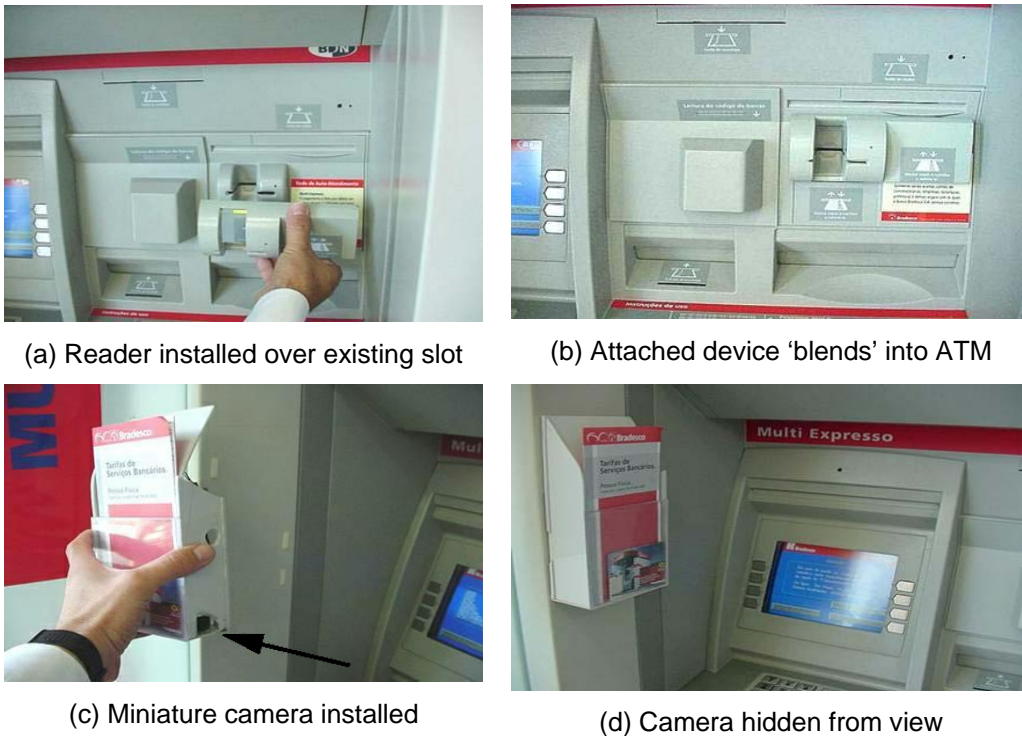
A card trap (often referred to as the ‘Lebanese loop’) is a plastic sleeve which is fed into the ATM slot before a customer approaches to insert a card. The sleeve traps the card and prevents the machine from detecting that a card has been inserted. The criminal normally stands behind the customer and offers help, often in the form of: “this also happened to me last week, I just typed my pin in twice and it returned my card.” The unsuspecting customer types the number in, with the ‘helpful’ person watching close by. After attempting to do this, but finding the card is not returned, the customer gives up, thinking that the machine had ‘swallowed’ the card and that they will need to report it to get it returned. When the unsuspecting customer leaves, the criminal removes the ‘loop’ device along with the card. Knowing the customer’s pin number the fraudster then withdraws the maximum daily cash limit. In Figure 4 we show the simple device and in Appendix 1 we have a full sequence of the translation process as captured by a CCTV camera.



**Figure 4:** The Card Trap

Card skimming is a more sophisticated translation as indicated in Figure 5. A card skimming device is attached to the ATM, over the existing card slot (Figure 5a). A remote miniature camera is mounted in an inconspicuous location (Figure 5c). When the customer inserts their card the skimming device reads the card details and transmits it to a nearby receiver. The card is cloned using the details from the magnetic strip and the cloned card and pin is then used to gain access to the victims account.





**Figure 5:** Fitting a skimming device

In both of these cases the ATM cyborg is translated from a secure ATM to an insecure ATM by a temporary reconfiguration of translation—this is possible by subverting the scripts of the secure ATM. Of course this translation is not always successful. Nevertheless it is important to note that the translation will only be successful if the human part of the cyborg conforms to the new script being used. We can represent this translation as follows:

<i>Cyborg</i>	Before negotiation <i>The secure ATM</i>	After negotiation <i>The insecure ATM</i>
<i>Non-human</i>	Standard ATM	ATM with trap/loop ATM with skim device and camera
<i>Human</i>	A cautious human who is careful in doing the transactions.	An illegitimate actor who inserts/attaches the devices and makes the observations A trusting human who does not notice or discover the new illegitimate scripts (loop, stranger, and skimming devices)

There have been many attempts to prevent this translation from happening. Obviously it is vitally important for the bank that customers trust the ATM. Without the ATM the customers would need to be serviced inside the bank hall, which is very costly. For example the cost of an ATM transaction is less than a third of the cost of a human teller inside the bank (Select Committee on Treasury, 2005). Even without these translations safety is one of the major reasons older people give for not using ATMs. Rogers et al. (Rogers et al. 1997) found that 34% of older adults (aged between 61 to 81 years) indicated that they do not use the ATM because they did not feel safe in doing so. This was the second highest reason they gave for not using the ATM.

How can the insecure ATM be translated back to a secure ATM? Securing the ATM requires changes in the cybernetic network as a whole (humans and non-humans alike). Let us consider some of these. One simple device to secure the ATM cyborg is to inscribe a ‘no-go’ space in front of the ATM to demarcate the zone of privacy that users require to operate the ATM. In a Home Office trial such a zone—a one-meter square box—was painted in front of the ATM in bright white

or yellow lines, sometimes with the words, “ATM zone” on the inside (White 2004). CCTV footage revealed that most people respected the boxes by queuing outside it until it was their turn to use the machine. It was claimed that “the scheme left users feeling safer - checking before and after using their accounts that no one else was in the box and leaving them more able to challenge suspects” (White 2004). Such mechanisms are obviously however, not foolproof, since fraud techniques such as ‘shoulder surfing’ are still used in environments where demarcation zones have been in use for some time, as is the case in South Africa. There are instances where a user will feasibly invite someone, or be invited into the zone, where difficulties with the ATM are experienced or staged. Either way, the action or enrolment of the user is critical to the success of the technical inscription.

A more sophisticated technical inscription is needed to prevent the attachment of skimming devices. For example the ATM technology supplier Wincor Nixdorf has developed an anti-skimming module, installed in the ATM, which uses special sensors to check the entire card slot area for any devices which may have been attached to it. If the sensors detect any suspicious device the machine shuts down immediately. Other manufacturers have developed, for example, technology that rejects ‘cloned’ cards or detects if any object is inserted into the card slot that is not a legitimate card, and so forth.

To secure the ATM humans must also be enrolled. Here is a selection of the typical advice given to customers by banks and law enforcement agencies (in the UK and South Africa) on how they should behave in front of an ATM in order to be secure:

- Minimize time spent at the ATM by having your card out and ready to use when approaching the machine.
- Do not use the ATM if you see anything suspicious such as duct tape on the sides, a hand-lettered sign, alternative card slot, or requests to put the card in a different slot.
- Memorise your PIN. Never write it down or give it to anyone, not even your spouse or a bank employee.
- Do not trust anyone who offers to help you at an ATM.
- Know where the security cameras are located. While many ATMs have cameras, they won’t be positioned to record the keypad.
- Report anything that seems suspicious or strange about the ATM to your bank.
- Call the bank immediately if the machine holds your card.
- Conduct ATM transactions during the day; most ATM crime occurs in the evening.
- Never count cash at the machine or in public. Wait until you are home, in your car or at another secure location.
- Set a daily withdrawal limit that suits your needs. The larger your daily withdrawal limit, the larger your potential loss.
- Only use ATMs in safe, well-lit areas.
- If you need assistance with an ATM transaction, ask a bank employee for help, and not a security guard posted at an ATM.
- Stand close to the ATM and shield the keypad with one hand when entering your PIN. Try using the knuckle of your middle finger to key in the PIN;

Most certainly this is all good advice. Nevertheless, imagine the sort of mindset one would need to enter into if one would heed this advice every time one approached an ATM. We must also be careful to note how the user becomes enrolled into the task of securing the ATM space. In withdrawing cash from the ATM the user is not only saving the bank money, by not using a human teller, the user is also enrolled into taking on the responsibility for securing the ATM more generally. They are in effect being enrolled as temporary ‘guards’ that are expected to report “anything that seems suspicious or strange about the ATM” to their banks. In some cases it is not just the ATM user that is enrolled it is also others that may compromise the ATM space. For

example many states in the USA have laws against panhandling (begging) within a certain distance from an ATM. It typically varies from 8 feet to 20 feet. Thus, one can imagine another box on the ground around the ATM, larger than the previous one, where 'undesirables' are excluded from. This 'invisible' box is as much part of the ATM cybernetic network as the machine in the wall—it functions to inscribe certain scripted behaviours to realize the interest of the majority.

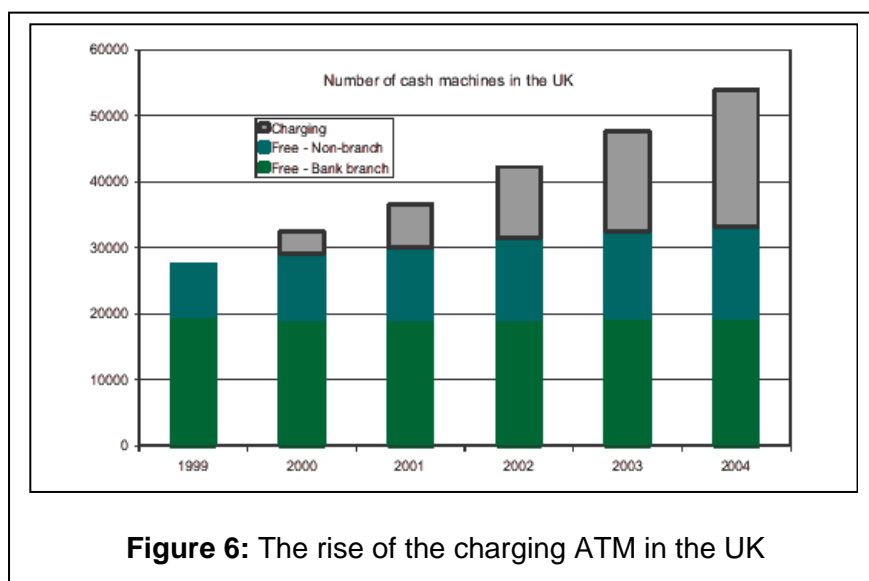
Some people believe that a technological solution to ATM security is the use of biometrics to control access (fingerprint, handprint, iris scan, etc). Biometric based ATMs are already being implemented in Columbia (using fingerprint) and Japan (using palm vein print), and being trialled in a number of other countries. With biometrics, access to the ATM is via the body of the user (finger, hand, eye, etc). From the bank's point of view this will ensure that the ATM transaction is secure, namely that they can be sure that it was the authorized person that did the transaction since 'you are your body and your body never lies'. However, what will the implications be for the security of the body? Will biometric ATMs not merely shift the problem of security from the security of the transaction to the security of the body? Might it be that in successive translations security have progressively become translated in ways that serve the banks interests but not necessarily the users interests—from the banking hall (banks problem) to the ATM space (bank and user's problem) to the body (user's problem). What we observe is the externalization of the security problem by the bank and the internalization of the security problem by the user—inscribed in their flesh as it were. There is much more we can say about security/insecurity. However, we would now want to shift to a new narrative, that of the charging ATM.

### **The Charging ATM: Towards a market for access**

An ATM is a mechanism for making cash available to the customers of banks. This is an essential part of operating a current account of behalf of the customer by the bank. Without an ATM the customer would need to do an 'over the counter' transaction involving a human teller, costing the bank approximately £1.10 (APACS 1996). This is significantly more than an ATM transaction which costs the bank approximately £0.35 (APACS 1996). Thus, for every cash withdrawal transaction the customer does at the ATM the bank in effect saves £ 0.75. It is therefore in the interest of the bank that customers use ATMs. To charge a customer for using the bank's ATM would imply that the bank intends to save money (by having less human tellers) and then also make money by generating income from the ATM. It must be remembered that the initial rationale for the ATM was convenience, not increased efficiency as such. The initial ATMs cost much more than a human teller (Allison 1995). Clearly banks believed that their customers would find this increased access to their cash significant as the 1969 Chemical Bank's advertising campaign announced: "On Sept. 2, our bank will open at 9:00 and never close again!"

As the technology developed it became possible to use the ATMs of other banks as well as the ATMs of your own bank. In the UK this was facilitated through the LINK network. LINK Interchange Network Ltd is the company that operates the cash machine (ATM) network on behalf of its members (banks and independent ATM deployers). This integration into a common network was obviously in the interest of banks as it migrated the customers out of the banking hall where transactions were expensive. It was also in the interest of the customers as it was even easier to gain access to their money. How did the banks deal with this facility? A clearing agency was established that calculated an 'interchange fee' which was charged by the owner of the ATM to the customer's bank for the transaction. For example, if a customer of Bank A uses a cash machine owned by Bank B to make a free cash withdrawal, then Bank A will pay Bank B an 'interchange fee' for this service. If Bank B and Bank A's customers use each other's ATMs at more or less the same level then the interchange fee earned would be equal to the interchange fee paid, thereby none of the banks incur an extra cost for increasing the number of ATMs available to their customers. Indeed it may save the banks costs as they may be able to reduce the availability of human tellers in banking halls. This conclusion may be borne out by the fact that there has been a

steady decrease in bank branches since the early 1990s. If a particular bank can attract more ‘foreign’ transactions and keep their own customers ‘loyal’ then they can reduce the total cost of providing the ATM facility since the cost per transaction decreases as the number of transactions increases. This is because the fixed cost of running the machine (technology, maintenance, etc) is spread over, or absorbed by, a larger number of transactions. This logic has led to a number of important political consequences, we will mention two here:



- First, was the attempt by banks in the UK to introduce a ‘disloyalty’ fee. This meant that if a customer used another bank’s ATM the customer would be charged by their own bank (to cover the interchange fee) while the bank would make money by servicing other bank’s customers. If all banks were to implement a disloyalty fee it would in effect be the same, to the bank, as introducing a fee for the use of the ATM. The actual fees charged were in fact more than the interchange fee, in some cases more than seven times the interchange fee (Treanor 1999). After intense pressure from customers, government and regulatory authorities the banks abandoned this approach in 2000/2001.
- Second, banks are keen to locate their ATMs in places where they will attract the maximum number of transactions, or ‘footfall’ as it is sometimes referred to. This meant that ATMs were increasingly located away from the branch at high density points. As branches were closed and ATMs moved to high density locations (to compete for transactions) some areas emerged where fewer and fewer ATMs were available

We must carefully note what has happened with the ATM. The configuration of the ATM shifted from a technology for convenience (serving the interest mostly of the customer), to a technology for saving costs (serving the interest of the customer and the bank), to a technology for making money (serving the interest mostly of the bank). Moreover in these successive translations a new market was created—a market for access to cash - which is now no longer assumed as part of the service that a bank provides its customers. Thus, when we approach an ATM we not approaching our bank, we are participating in this market for access to cash. In this context ‘convenience’ emerges again but this time as a service to be bought in the market—hence the emergence of the *charging ATM*. This reconfiguration of the ATM is presented as giving customers ‘choice’: “TRM, one of the independent operator companies, told us that they ‘had been deploying cash machines in many locations where there had previously not been a machine. These deployments are driven by consumer demand and simply offer consumers an additional convenient choice of access to cash” (Select Committee on Treasury 2005). From 2000 onwards we see a steady increase in non-branch ATMs and charging ATMs as indicated in Figure 6 (Select Committee on Treasury 2005). This is not incidental. When the banks were not allowed to charge disloyalty fees—i.e. create a cash access market—they started to locate their ATMs in places where it will attract maximum transactions (hence the growth in non-branch ATMs) or they sold their ATMs to independent ATM employers (IAD) who could ‘legitimately’ charge for the convenience they were claiming to provide.

The emergence of the charging ATM (namely the market for access to cash) is the outcome of a number of translations in which the political space of the ATM cyborg was configured and reconfigured to inscribe the interests of various actors and exclude the interest of others. It is to the excluded that we now want to return. Obviously the charging ATM is interested in enrolling people into its script. How does it succeed to do it in a market still full of free ATMs?

As mentioned above, in the market for access, the banks do not want to have ATMs with low transaction volumes. Therefore we find bank owned, and operated, 'free' ATMs competing for transactions in high volume areas such as shopping malls, service stations, etc. opening up low volume spaces where IAD can 'fill the gap in the market'. Where are these gaps? They tend to be in low volume spots such as rural areas or less affluent areas—basically any area where transaction volumes do not 'justify' a free bank ATM. In these areas the charging ATM is not a matter of convenience, but of access.

For the IADs the 'gaps' in the market also need to be made as much as they need to be found. In this context a new actor emerges in the network, the *site owner*. As banks move away from branch locations they need to enroll the site owners (fuel service stations, malls, pubs, shops, and so forth) to allow them to locate their ATM on, or in, their sites. However, when they get to the site they are increasingly likely to meet the IADs, equally keen to locate their ATMs on the site. In the competition for sites it is now a matter of the benefits the ATM owner can offer the site owner. In this market for location the IADs often "offer the site owner financial inducements to replace free cash machines with charging ones" (Select Committee on Treasury 2005). This increases the cost of running the ATM, which may lead to a situation where it becomes too expensive for the bank to operate its free ATM even in the high volume location: "Often only independent operators, who raise income from charging consumers for using their ATMs can economically justify paying ... higher prices for prime sites" (Select Committee on Treasury 2005).

One might agree with the IADs that it is a free market and that they are merely offering the users more choice. However, such 'choice' is only a choice if the user is aware that they are in fact making a choice. This means that the user must be sufficiently informed about the nature of the ATM—and thus able to recognize the difference between a 'charging ATM' and a 'free ATM'. Since April 2004 LINK has accepted self regulation that requires its members to display notices on the machine - the IADs voted against this self-regulation, for obvious reasons. In evidence to the Select Committee on Treasury it was noted that:

Some operators appear to be flouting the spirit of the [LINK] agreement by displaying warnings in a way that makes them difficult to spot. For example, notices displayed in extremely small print, considerably smaller than any other print used in signage on the machine; warning stickers or signs that are of the same colour as the machines background; notices are 'hidden' on the side of the machine or low down below eye level...[even] at knee height.

Whose interests are inscribed in the charging ATM, and whose are excluded? Research by the National Consumer Council has shown that people on lower incomes prefer to manage their money on a daily basis (Cullum 2005). This means that they would tend to make frequent, small withdrawals rather than infrequent large ones. At a charging ATM, a single withdrawal costs £1.50 on average. This means that someone withdrawing £50 per week in five £10 withdrawals would pay more than £30 a month in ATM fees—this would equate to a cost of almost 10% for access. This is a translation that is not only true in the UK but also in America, as expressed by Peebles (2004) in the Harper's Magazine: "Access to cash is not a market-organized choice but is, for poorer Americans, at least, a daily necessity. The unequal burden of ATM fees represents a retreat—one of many, in recent decades—from the modern ideal of social equality"

That access is undoubtedly a policy and political issue is increasingly being recognized in countries such as South Africa, where a body of research and advocacy is emerging, which challenges the cost and difficulties of access to financial services, particularly for poorer individuals (Porteous 2003, Du Preez and Clayton 2004, Porteous 2004). As a direct result, a basic banking account was launched in South Africa in October 2004 in an effort to provide affordable and accessible banking to currently unbanked individuals (The Banking Council South Africa 2004). In the South African case however, as in the American one, the default option is in fact the charging ATM, and only one withdrawal per month is free, even on the ‘basic’ account. Thereafter an access charge of 10% becomes again probable, based on an average cost per withdrawal of R5 (about £0.50).

The charging ATM is the outcome of a complex political process in which a market for access to cash has emerged as the logical outcome of many diverse attempts by different actors to inscribe their interests into the ATM cybernetic network:

<i>Cyborg</i>	Before negotiation <i>The free ATM</i>	After negotiation <i>The charging ATM</i>
<i>Non-human</i>	Standard ATM	ATM with a charge and a more or less clear message
<i>Human</i>	A human expecting access to cash as part of the service of the bank.	A human who must ‘figure out’ what ATM they are using, or who has no choice but to pay for access to his/her money.

The issue of this market for access is particularly pertinent where access itself is problematic in the first instance. Therefore we next want to discuss a specific attempt to promote access in the form of the cashless ATM.

### **The Cashless ATM: An attempt to promote access**

The three narratives that we have presented thus far have an underlying assumption that most adults have a bank account, and that most of these people need to access funds held in that account in some way. As mentioned in the narrative of the talking ATM, however, in South Africa – as in many developing countries – many adults are ‘unbanked’, or excluded (by choice or by force of circumstance) from the formal banking system in its entirety. This means that in South Africa ‘a large pool of funds circulates outside the formal financial system, including but not limited to funds held by stokvels [savings clubs], informal traders and in other forms of short-term savings’ (The Banking Council of South Africa 2004). Obviously we can only speculate to what extent this is attributable to the particular exclusionary nature of the ATM as interface, rather than to the more generally exclusionary nature of banking technology in its broadest sense. However, the financial sector itself has recognised the challenge of access to the ATM in the context of exclusion, and is targeting effective access for previously ‘unbanked’ individuals in its 2003 Empowerment Charter. In this context, effective access includes ‘being within 20kms [now 15] of the nearest service point...includ[ing] ATM and other origination points’ (The National Treasury 2003 p.3). In other words, currently there are individuals in the ‘deeply rural’ areas of the country who are completely excluded from the possibility of ATM use at all.

The requirement to provide effective access has led First National Bank (FNB) to introduce a Mini ATM or cashless ATM. While it is inherent in the idea and origination of the ATM as a type of dispensing machine that it will dispense cash, in the case of the Mini ATM the machine dispenses – in a reversal of the original design - a voucher for cash instead. This voucher is then redeemed for cash by the site-owner, while the full amount of the withdrawal is credited to the site-owners FNB bank account. Mini ATMs are sited in convenience stores. As disclosed by FNB, “These portable devices can easily be installed and don’t require the same infrastructure that is needed on a full service ATM, thereby making this an important element in FNB’s strategy of reaching the previously unbanked in rural South Africa.” (FNB 2005)

The actual ATM is, in size and appearance, more or less equivalent to a point-of-sale device (POS), as shown in Figure 7. The Mini ATM device is placed on a perspex housing. The key difference between the ATMs and POS devices, be they for credit- or debit-cards, is that the charging logic is that of the charging ATM – the user pays, not the site-owner. In fact, the site owner, as is the case for many charging ATMs, receives a commission or rebate for transactions conducted on the Mini ATM. This logic has facilitated the roll-out of Mini ATMs to 1300 site owners in about three years.



**Figure 7: The Cashless ATM**

The design of the Mini ATM is interesting in terms of the cybernetic network, in that it explicitly inscribes a third party in the cyborg of ATM-user, that is the site-owner. Thus the cyborg is now an ATM/user/site-owner cyborg. What was previously an explicitly two-way relationship (any third party receipt of rebates being transparent to the user), is now an explicitly three-way relationship. This is a logic which is deliberately pursued by the bank, not least because it moves the not-inconsiderable (given the prevalence of crime) responsibility and cost for the safe handling of cash to the site-owner. The site-owner is willing to take on this responsibility since it in fact reduces the cash-handling fees for the stores, by keeping the circulation of physical money inside the store. Not only does the cash dispensed to the Mini ATM user not have to be deposited with the bank at closing time, but in many cases, the cash is spent in-store. In addition the Mini ATM in many cases increases footfall through store, and thus turnover. Furthermore, as mentioned, the site-owner receives a sliding-scale rebate on Mini ATM transactions conducted in his/her store. The case of a small retail store in the rural Eastern Cape is described thus by FNB:

One such community is in the Eastern Cape about 60km from Butterworth. The local general dealer store was one of the early adopters of the Mini ATM device and has been successfully supplying the community with cash for several years now...

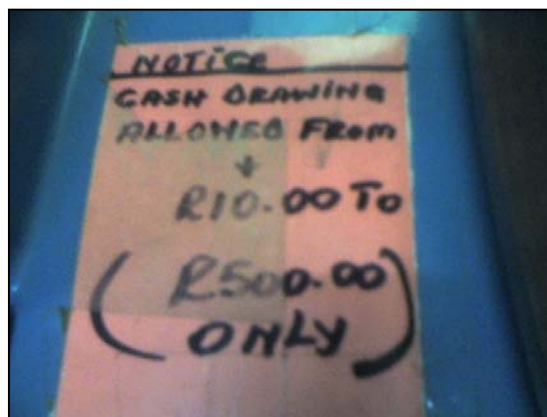
..The owner of this store has reported a significant saving in cash deposit fees since the introduction of the Mini ATM. The store now enjoys added peace of mind from the lower cash holding and is spending 80% less in cash deposit fees – a significant saving for a small business like this. This is an added benefit to the rebate that FNB pays shop owners who install this device...

On a recent visit to this store, the owner was happy to report that more people are purchasing in the store now. “Most people in this rural community live on social grants [R170 per child] and state pensions [R700], many of them supporting six or seven others on this small monthly income. Because of this, we’re very busy at certain times of the month, and generally find that these pensioners will stay in the store and do their monthly shopping for food and supplies,” the shopkeeper explains. (FNB 2005)

However, it is the further unintended means of usage that make the translation from dispensing- to cashless-ATM an even more intriguing cyborg. In many cases, the problem of access is not just a physical one (is there an ATM at all) but an economic or literacy one too. Thus, users of the Mini ATM will not only enrol the site-owner into dispensing cash in exchange for a voucher, they may also enrol the site-owner in the entire transaction by handing over card and pin-number together with a verbal request for cash – an ‘assisted transaction’. This is a reality not readily acknowledged by the bank for obvious legal reasons, but one that occurs nonetheless (and in fairness not only at Mini ATMS). In at least one store observed, the Mini ATM was in fact not physically accessible to customers, but turned away to face the cashier in the store.

This reconfiguration of the cyborg extends to the site-owner responsibility for securing not only cash, but also the pin-number (which we recall, should never be divulged ‘not even to your spouse’). In some respects this points to a fairly serious imbalance in the power relations between the site-owner, who can facilitate access, and the illiterate, or perhaps even simply unsure or naïve, user. But of course, the relations are not uni-directional, and in small communities such as those in which the Mini ATM is typically deployed, the site-owner and his customers are well known to each other, and the site-owner (who is the store owner) relies on these very users for custom. Thus the extended cyborg is configured not just in the multiplicity of relations that is the banking network, but in the network of community relations too.

This is not to minimize the power accorded to the site-owner by the configuration of the Mini ATM. Such is the degree of power conferred that the international banking associations do not allow these devices: international VISA and Mastercard cards, which function on all other devices in the national network, will not function on Mini ATMs. It would be entirely feasible for a shop owner to demand a further commission from the client for access to the cash, whether through compulsory in-store spend, or simply through a deduction in the amount dispensed – although such activity was not observed by the author in any cases. More benignly, as an example of the power of the site-owner, *SSJ General Dealer* in Soweto has, by way of a simple notice to this effect (as shown in Figure 8), limited the amount that he is willing to dispense via the ATM. Another site-owner, Nombu, of *Nombu’s General Dealer*, will not allow her staff to dispense large amounts of cash if she is not at the store. A customer asking for R1000, for example, was told to ‘come back when the madam is here’.



**Figure 8:** Notice on a Mini ATM, SSJ General Dealer, Soweto

This is done for practical business purposes – the store simply may not have the cash float to handle large transactions, particularly early in the day – but it is not a requirement of the bank, or the ATM infrastructure, which will dispense a voucher for any amount up to the user’s daily limit, which may as much as R2000.00.

It is of course, highly unusual for such large amounts to be requested. In fact, in the instance of the request for R1000 described by Nombu, the user was attempting fraud on a stolen card. On average, the transactions on the Mini ATM vary from R20 to R40. In all cases, the customer pays standard ATM fees, which are different depending on the bank. FNB has fixed the price of Mini ATM fees at R1.50, and is attempting to persuade the other banks in the national network to provide fixed-fee pricing (not ad valorem) on Mini ATM transactions, but this has not yet been achieved. The cost of the transaction is not indicated during the transaction, or even on the slip, as this is seen as a security risk, as it is in all POS transactions. The user needs to request a statement – which may incur a transaction fee - in order to see transaction fees. Thus the Mini ATM provides access, but on terms dictated by the bank, and by the site-owner, and at a cost. A non-FNB user on the Mini ATM could quite feasibly pay R5 per transaction or more, depending on the terms and conditions of his/her account. What is more, these terms and conditions are complex and may be difficult for a person who is not even sufficiently functionally literate to use the ATM, to understand. In a recent survey of bank charges, it took a team of accountants from Deloitte and Touche 40 hours to ascertain the monthly bank charges that would apply to a set of 8 transactions across 6 different banks (Finance Week, 2005). It is probably reasonable to state that even the average user has difficulty grasping the pricing structure of bank usage in South Africa.



It would in these circumstances, be tempting to judge the Mini ATM, along with other ATM networks in the South African context, as simply being exploitative, in the way in which it brings together bank, site-owner and user in a very unequal set of relations. This would however, be oversimplifying the situation. The reality is that we must also balance the cyborg of the Mini ATM, the cash-less ATM, against the alternatives. FNB is obviously selling the benefits of Mini ATMs in communities such as the Eastern Cape community mentioned earlier:

Previously this community had to travel more than 60km to Butterworth, their nearest town, to collect their pensions and do their shopping. Not only is the Mini ATM solution more accessible, but it also keeps the money circulating in the local community, which is great news for the economy of this area. (FNB 2005)

Nonetheless, we cannot discount these benefits. The Mini ATM too is the outcome of a complex political process, both overt – in the form of the Financial Services Charter, and covert – as in the idiosyncratic control of the ATM by site owners. The interests of the bank, site owner and user are translated in the Mini ATM cybernetic network as follows:

<i>Cyborg</i>	Before negotiation <i>The dispensing ATM</i>	After negotiation <i>The cashless ATM</i>
<i>Non-human</i>	Standard ATM	Mini ATM
<i>Human</i>	A human who accesses cash from the ATM	A human who takes a slip of paper to exchange for cash
<i>Non-human</i>		Cash till in store
<i>Human</i>		Site owner who manages transactions Site owner or teller who may assist transactions Teller who dispenses cash

We must continue to explore the ways in which this cyborg is translated in practice, and what this means for all parties involved. In the next section the different narratives will be brought together to illustrate some of the complexities of the politics of the ATM network space.

## The ATM political space

In our four narratives above we have tried to show how different interests are negotiated and inscribed into the ATM network—to reveal it as a political space rather than mere as a ‘piece of technology’. It is a space (re)configured through non-human things such as speech files, plugs, headphones, no-go boxes, detection devices, messages, stickers and so forth. It is also a space (re)configured through human behavioural prescriptions such as remembering your headphones, being suspicious, “using the knuckle of your middle finger”, being cautious, reading messages, and so forth. In this political space “different people [actors] are situated differently and possess unequal degrees of power as well as unequal levels of awareness” (Winner 1986). Some interests have become inscribed and some not. The talking ATM includes the interests of blind people but not the interest of other ‘disabled’ people. They remain on the outside. Of course some ought to remain outside. The anti-skimming device excludes the interests of criminals and most people would agree that this is a good thing.

In these narratives we have also seen how many translations lead to unintended consequences, which become new possibilities for (re)negotiation and inscription. For example, from the banks point of view we could see the successive translations of the ATM cyborg as follows:

- Possibility to give customers access to cash outside of banking hours (cash dispenser)

- Which becomes the possibility to reduce human tellers (less people in the banking hall)
- Which becomes the possibility to reduce cost of access to cash ('foreign' transactions in the LINK network)
- Which becomes the possibility to generate revenue (the market for cash access)
- And so forth

With the development of fifth generation *web-enabled* ATMs the ATM is being conceived of as a 'mall in the wall' (Rawe et al. 2002). The mall in the wall is not only the outcome of the development of technology. It is also and simultaneously the outcome of actors trying to get their interests inscribed into the ATM political space.

The four narratives—or political programmes one might say—are presented above as different political 'locations': access, security, cost. Obviously these political programmes occur simultaneously in, and through, the ATM space. In some instances they support each other and in some cases they contradict each other. For example the usage of fingerprints for identification may not only inscribe the responsibility for security on the very body of the user, but it also has the potential to exclude those who have poor quality fingerprints, as have many individuals who have endured a lifetime of physical labour. Advice to set lower daily limits or to draw smaller amounts of money may be a good prescription for security but it would not make sense if the only access you have to an ATM is a charging ATM. Furthermore, each of these narratives is incomplete, just a rough outline sketch of the full picture. There are also other narratives, such as the personal ATM, which can be described. In the personal ATM the ATM becomes 'my ATM' as described by an ATM designer (McGill 2003):

“My overriding philosophy on the future of the ATM industry in general and remote delivery of financial services is that success will come to those who more accurately emulate the human experience...that would involve things such as tailored greetings, ergonomic machines, more logical flow of screens, more functionality, and audio and visual links to customer service representatives and product specialists.”

Unfortunately this is beyond the scope of what can be done in one paper. However we believe we have demonstrated our central claim, namely that the ATM space is a complex, subtle and important political space that needs ongoing scrutiny. Certainly, if technology is indeed society made durable (Latour 1991), then the technology of the ATM does reflect the interests, inclusions and exclusions that permeate the 'market' for access to cash. The legitimacy of these interests should be, we believe, up for debate. This paper is merely a start.

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**Appendix 1: Card Trapping:** The temporary inscription of illegitimate interests into the ATM network

