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Computer Technology – a Political Player in Social Policy Processes

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ABSTRACT

The absence of considerations of technology in policy studies reinforces the popular notion that technology is a neutral tool. Through an analysis of the role played by computers in the policy processes of Australia's Department of Social Security, this paper argues that computers are political players in policy processes. Findings indicate that computers make aspects of the social domain knowable and therefore governable. The use of computers makes previously infeasible policies possible. Computers also operate as bureaucrats and as agents of client surveillance. Increased policy change, reduced discretion and increasingly targeted and complex policies can be attributed to the use of computer technology. If policy processes are to be adequately understood and analysed, then the role of technology in those processes must be considered.

In a clever revision of Machiavelli's *The Prince*, Bruno Latour (1988) considers how today's 'Princes' achieve their political aims. Machiavelli's Prince maintained his position of power through simultaneously fighting enemies and enlisting allies. 'Machiavelli', Latour explains, 'builds his plots by keeping men [sic] in check through the handling of other men who are in turn kept in line by other men. Thus his world is a *social* one' (1988, p. 21, emphasis in original). Latour argues that the technological elements of the Prince's maintenance of power have been omitted, and that this consideration has become all the more significant as technology has proliferated since Machiavelli. Today's 'Princes' entwine both human

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and non-human allies to achieve their goals. Therefore, if social analysis is to be sophisticated, we need to 'give the analyst at least *as much* intelligence and deviousness as the Prince has' (1988, p. 28). Analysts need to study both the social and the technical elements of the Prince's politics.

This article considers the role computer technology plays in social policy processes of Australia's Department of Social Security. The use of computers makes them allies enlisted in political processes. The paper consists of four parts. The first part explores the notion that technologies are political players. The second part outlines the empirical study on which the paper is based. This is followed by a consideration of the political role that computers play in the processes of policy development, policy administration and policy initiation and debate in Australian social security policy. The final section illustrates how the use of computers has substantively changed both social security policy processes and social security policy in Australia.

TECHNOLOGIES AS POLITICAL PLAYERS

Some widespread notions of technology hold that technology is a politically neutral tool. It just does the job. Technology can be used either for good or ill. Further, technology itself is unrelated to the 'good' or 'bad' outcomes of its use. In some ways this attitude makes sense. For example, hammers can be used to construct houses for the poor or to bludgeon someone to death. It is the act which is morally evaluated, and not the hammer. For how can the hammer be morally good if it can also be used for ill deeds?

Latour's contemporary reworking of Machiavelli could be read in this 'technology as neutral tool' manner. Unfortunately, such a reading misses the point being made by Latour. Technology provides the very means by which political aspirations can become effective. Technologies do things and this is precisely why 'Princes' employ them. Their use provides 'Princes' with greater avenues for action from which to realise political aspirations. Technologies are, therefore, allies in political projects, and it is the activity of technologies which provides much of the glue to hold such projects together (Latour, 1992). In short, the perspective that technologies are neutral is politically naive. It is this naivety that has left social and political analysts to neglect technologies within their analyses, and explains the absence of a consideration of technology in policy studies.

While there are good reasons for understanding technologies as politically neutral, there are also significant ways in which technologies are *not* politically neutral. In a paper entitled 'Do artifacts have politics?', Langdon Winner (1986, pp. 19–39) seeks to draw attention to the ways

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technologies are not political. Perhaps his most vivid example is his story of Robert Moses, the master builder of roads, parks, bridges and other public works in New York during the 1920s to 1970s. Moses designed bridges with low overpasses so that buses could not drive on the roads beneath the bridges. Consequently, poor people, who included most black people, who were reliant on public transport, could not have access to the public parks (especially Jones Beach, Long Island) situated near the low-clearance bridges. Moses' bridges formed an essential element in a socio-technical system which embodied a politics of class and racial exclusion, an effect deliberately constructed by Moses. However, it is not Moses' political ambitions, but the very material nature of the bridges which define the political programme of exclusion: low bridges exclude buses. Even if Moses had not desired racial segregation, low-clearance bridges would have guaranteed it.[1]

This example clearly shows the political nature of Moses' bridges. Political analysis which assumes the neutrality of these bridges either would be unable to identify the segregation taking place, or would be unable to explain it. The illustration shows the political nature of only Moses' bridges, not of bridges in general. This lack of generality does not bother me, for I am arguing that technologies, in their particular manifestations (e.g., Moses' bridges), may involve politics. I am not here arguing for the idea that a technology (such as bridges) is inherently political.[2]

The recognition of technologies in understanding socio-political struggles is not new. For example, Karl Marx observed capitalists purposefully adopting machines which embodied a particular mode of work which would reinforce the subordination of workers, would reduce the power of the unions, and would reduce labour costs through the employment of unskilled labour such as women and children (1954, I, ch. 15). Lewis Mumford argues that some technologies are democratic and others are authoritarian (1964). People with disabilities know only too well that staired buildings embody a politics of exclusion of people reliant on wheelchairs for their mobility, whereas ramps embody a more democratic form of access. Michel Foucault (1977, pp. 200–9) argues that Jeremy Bentham's Panopticon embodies a disciplinary form of power.

It really should not come as a surprise that technologies can be political and can embody political projects. The political nature of scientific knowledge and of social policies, for example, have previously been highlighted. Recent feminist analyses of science draw attention to how scientific knowledge can embody sexist notions of the world (Bleier, 1984; Harding, 1986). Social policies can be similarly political (Shaver, 1988; Fraser,

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1989). Whilst technological artefacts, scientific knowledge and social policies can be variously shaped to achieve political goals, the specific technology, knowledge and policy which result are themselves imbued with the politics which brought them to form. Such technologies, knowledge and policies then act out the politics they embody.

If, as Latour argues, technologies are important in understanding politics, then to fully appreciate the policy processes which involve the formalisation of policy by governments and its subsequent execution, we need to take account of all the elements involved, both social and technical. In contrast, technology is conspicuously absent in policy studies. Usually technology is only considered when it does not work (Bijker, 1993, pp. 113–14), or by a few perceptive people who recognise that policy is not possible without appropriate technological support (Baker *et al.*, 1975; Jones, 1983, p. 94).

It is for this reason that I refer, if somewhat provocatively, to technology as 'a political player in policy processes'. The technological player is 'political' when it is part of political debate and political struggles and when its use has political implications.

THE STUDY

If technology is a political player in policy processes, what role does it play? In order to answer this question, this paper draws on empirical data regarding the use of computers in Australia's Department of Social Security (DSS). Thus, the question addressed is what role do computers play in the policy processes of Australia's Department of Social Security?

The project involved case studies of the initiation, development, implementation, execution and evaluation of the Home Child Care Allowance and the Partner Allowance. Over an eighteen-month period, data were collected through field observations in the DSS's National Administration office and four local offices. Interviews were also conducted with senior policy staff and computer personnel in Canberra's National Administration and a variety of office staff in an Area Office, a Teleservice Centre and three Regional Offices. These case studies were supplemented by documentary research which included an analysis of the use of administrative technologies by the DSS from its inception. This was achieved through an analysis of DSS's Annual Reports. Finally, welfare rights staff and staff from the Social Security Appeals Tribunal were interviewed to gain their perspective of the social security system and of how the DSS's use of computers may impact on their work.

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COMPUTER TECHNOLOGY AS A POLITICAL PLAYER IN SOCIAL POLICY PROCESSES

The term 'policy processes' encompasses a number of activities involving a variety of actors. In the context of government policy, 'policy processes' refers to more than just a formal decision made by a government. The initiation of policy, policy debate, policy development, the implementation of policy and the ongoing administration or enactment of policy, and policy evaluation are all important elements of policy processes. These processes involve both humans and non-humans. The human component includes politicians, bureaucrats, pressure groups, economists, academics and journalists, whilst the non-human component includes such things as buildings, computers, paper forms, client files and money. To facilitate the consideration of computer technology's role in the policy processes associated with Australian social security policy, I discuss three areas: policy development; policy administration; and policy initiation and debate.

Policy development

Policy development involves the specification, elaboration, refinement and analysis of a policy suggestion or of a particular policy objective, such as targeting payments to a specific group or achieving financial savings. Policy development terminates in a government decision to either adopt or reject a developed policy proposal.

In the DSS, computers play a key role in this process: computers produce statistics which provide a basis for policy decisions, computer models assist the development of policies and consideration needs to be given to the computer support for the ongoing administration of a policy. Computers are used to model policy proposals to determine such things as the financial cost of a proposal, the number of people affected by the policy change and the financial consequences for those people (Oliver, 1994).[3] These computer-generated numbers form the basis on which refinement of policies is made. The numbers are checked by the Department of Finance (DoF) before the DSS can make its formal budget submission to the government. They provide important points for consideration when a government makes a policy decision. They can provide political support when a government tries to sell its policy to the voters (Rose, 1991).

Computer models may give relatively simple results. However, these results are a consequence of a number of assumptions. According to the manager of the computer modelling section of the DSS, there is a tendency for some people (particularly those from the DoF) to grab the first results to come out of the computer model, even when they are told that

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the numbers have not been checked and are likely to be erroneous. Perhaps the best explanation for this behaviour is the widespread assumption that computers are objective and the answers they give are correct.

Small changes in assumptions underlying the models can result in huge swings in the estimated number of people affected and the cost of the policy. Thus, the 'art' of computer modelling is to discover believable assumptions which give the required results. However, the DSS must make sure that the results indicated by the computer modelling of a policy and the consequent outcome of implementing that policy are not too dissimilar. For if the cost to the government is underestimated, the DSS would have a harder time getting the necessary approval from DoF. Despite this, the DSS staff admitted that as the DSS is the only department to have a computer model suitable for many social security policy analyses, they had a strategic advantage over DoF who would agree with the numbers if they seemed 'ball park'.

The importance of these computer models can not be overestimated. Various models embody both social security and taxation laws, and are therefore able to explicate the complex interactions between the two systems. The systems are so complex that computer modelling can show up some surprising results. For example, hundreds of thousands of aged pensioners would *lose* if the tax-free threshold was increased![4] *Computer models therefore make the implications of proposed policies knowable*. It is thus not surprising that many DSS policy staff emphasised the importance of computer models for policy development. Speaking about the use of computer modelling for the development of the Home Child Care Allowance and the Partner Allowance, one DSS policy staff person commented, 'we couldn't have done it without it . . . computer modelling was absolutely crucial'. A senior computer modelling staff person claimed that 'without the computer model we would not have found the unintended financial consequences of the policy change, and we would have found the political consequences afterwards'.

Through the assessment of the cost of policies and the identification of losers, computer models are an important form of political insurance. The estimation of costs ensures that the government avoids unexpected expenditure. Through the identification of losers the government can ensure that it avoids creating policies with losers who might cause political embarrassment; or the government can prepare appropriately for the political consequences of adopting policies which disadvantage people. With the use of this technology, the technical aspects of policy development and policy making has significantly increased. Whilst there are still

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ideological elements in policy making, the days of introducing a policy on its ideological merit alone are gone. Computer modelling also assists the development of more complex policy proposals. Without sophisticated tools, the implications of complex policy proposals would remain mostly unknown.

However, it is no use developing complex policies if they can not be implemented effectively. Or, as Michael Jones observes, 'social policies depend on the available technology' (1983, p. 94). A national manager of DSS's computer systems repeats the sentiment: 'technology drives what is feasible'. Consequently, computers shape what policies are possible and which are chosen. For example, in 1986 the Social Security Review suggested that the additional allowance paid to (usually male) beneficiaries for the support of dependent children be transferred to the (usually female) recipient of Family Allowance (Cass, 1986, p. 107). Because the computer systems supporting the relevant payments were incompatible, various technical issues needed to be overcome before that policy was finally adopted in 1991 and implemented in January 1993. (Sophisticated computer modelling was also necessary for the development of this policy.)

DSS computer professionals give voice to the abilities of computer technology, or lack thereof. They can argue that certain policies are not possible, or are too difficult to implement, by giving a financial estimate for its implementation which would make the policy less attractive. They also specify the amount of time necessary for proposed policies to be implemented, thus shaping the start dates of policies. As one senior DSS computer systems manager argued, through considerations of the cost, time and difficulty of implementing computer system support for proposed policies, computer systems shape which policies are chosen. Because of the large numbers of social security clients involved and the amount of data required to be processed, there is no realistic alternative to computer technology for administering social security policy. If the computer cannot do it, it cannot be done.

Dependency on computers has considerable policy implications. As the above example of the Social Security Review illustrates, computer systems may decrease policy flexibility. However, emerging technologies are promising more flexibility to support significant policy change. Dependency also means that computer failure has major implications for client service. Claims cannot be processed and payments to clients already in financial need are delayed. Indeed, during my study a fire in the computer system for the state of New South Wales virtually closed the DSS in that state for three days. In such cases emergency cheques

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can be issued, but because of unhelpful banking practices this fails to adequately address the situation.

The above uses of computers are political in a number of ways. Computer analyses of policies help form the basis for political decisions, and provide weight for political negotiation (between government departments) and the public selling of policy. Computers can be manipulated to provide partisan support. Computer models make policy options thinkable and analysable, the political implications of which means new social policy is possible. They provide political insurance. The technical component of policy making increases. However, due to the dependence on computers, the capacities of computer technology shapes what policy can be thought, analysed and administered.

Policy administration

Policy administration involves the ongoing enactment of policy and the practical support for that task. It is often assumed that computers provide improved administrative efficiency. Studies within various sectors show that this is not necessarily the case. Data on the DSS provides a mixed picture. Whilst the time taken to process claims and make payments has improved, the clients-to-staff ratio has not. Substantive policy change makes comparison difficult and may explain unexpected results. Rather than improving efficiency, by providing the unique support for new policies and administrative practices, computers have increased productivity. More work is done.

Computer technology, thus, enables different forms of policy administration. Perhaps the most profound change in policy administration has been in client compliance. Computers are used to maintain a level of surveillance over clients that was not previously feasible. Through Accelerated Claimant Matching computers check new claims against the DSS databases to ensure that the claimant is not already receiving payments which are incompatible with the new claim. Computers match data from the DSS with various governments departments (e.g., the Australian Taxation Office, the Department of Immigration) to check that DSS clients are not violating social security legislation (e.g., by not declaring all their earnings, or by going overseas) (Cahill, 1994). Computers are also used to maintain a comprehensive review of the client population, by using risk-based criteria to randomly select clients to be reviewed. Risk-based criteria are determined by computer analysis of clients who record overpayments, and these criteria are progressively refined by subsequent analysis to target investigations. A review may involve the interview of the client by DSS staff or it could involve a

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computer generated letter to the client to which the client must respond. If the computer does not record a response within fourteen days, say, the computer automatically suspends payment to the client. After a further time period has expired without a response from the client, the payment is automatically cancelled.

This last example illustrates how computers automate policy. They become (virtual) bureaucrats empowered to make policy decisions.[5] Apart from suspending and cancelling payment, computers automatically calculate the rate of entitlement from available information and automatically check for and then calculate overpayments. Interestingly, the Australian government was forced to amend the *Social Security Act* to legally recognise computer-made decisions as decisions with a legal reviewable status (Sutherland, 1994, pp. 172–3, 503; cf. *Social Security Act 1991*, ss. 948, 950, 951D (for the Home Child Care Allowance)).[6]

There are a number of problems which arise as a result of the automation of policy by computers. Firstly, both DSS staff and welfare rights staff have told me of occasions when there is a need to override either information held by or a decision made by the computer, but the request is disallowed by the computer. The need to do this may result from the computer initially making a decision based on information which turned out to be inaccurate and which needs to be readdressed, or from a computer fault, or from the limitations of the computer system. Three examples serve to illustrate these points.

Home Child Care Allowance (HCCA) is only paid to people who are a member of a couple. Thus, in developing computer support for HCCA the policy to disallow recipients of Sole Parent Pension (SPP) from receiving HCCA was built into the system. However, parents who have spouses in prison may be legally entitled to receive both SPP and HCCA. As the HCCA computer system disallows those few people who are eligible for both SPP and HCCA, the administration of their HCCA payments must be done manually.

Most social security payments are paid fortnightly. However, the Minister for Social Security agreed to a request from a group of homeless youth to receive weekly rather than fortnightly payments. Because the computer systems operate on a fortnightly basis, there are apparently regular problems with making the special weekly payments.

After the implementation of Partner Allowance it was found that some recipients were paid into bank accounts which they no longer used or which had been closed. Whilst the cause of this problem was quickly recognised, the attempt to fix it was thwarted by communication problems between two computer systems. I was told the following story. Upon

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discovering that her payment had been sent to the wrong bank account, a client telephoned the DSS and requested that her payment details be altered. She was informed that this was done. The following fortnight the payment again went to the wrong bank account. This time the client went to a local DSS office and asked that her payment details be changed in front of her. She requested that she see the computer screen in order to be convinced that the information had been changed. On the third payday the payment again went to the wrong bank account. She again rang the DSS. As she had seen that the information had been correctly entered into the computer, she was not convinced with the explanation that there had been a computer error. She instead thought that individuals within the DSS were causing her problems.

This example suggests a second problem which may occur as a result of automating policy by computer. Computers follow the literal interpretation of the instructions they are given, and given their instructions they rarely make mistakes. Because of these abilities we perceive computers as objective and correct. A number of people I interviewed suggested that this perception of computers may undermine the accurate administration of policy. As the computer is seen to be correct, DSS staff and clients may be unlikely to question a decision made by the computer. The attitude being, 'the computer made the decision, it must be correct'. Or as one Welfare Rights worker expressed the attitude as he had experienced it, 'because the computer has made the decisions, who are they [the DSS staff person] to override it?' Whilst the computer most likely followed out its instructions correctly, this attitude overlooks the possibility that the instructions the computer received were erroneous.

This problem is compounded by a third difficulty with using computers to automate policy, especially complex policy, that is, of not knowing how the computer got the answer it came up with. This issue was expressed by a number of DSS staff. The identification and calculation of an overpayment to a client is one particular example. When overpayments result from a number of changing circumstances, the calculation of what a client owes the department becomes quite complex. In such cases it may not be clear what rules the computer used to obtain the result. Another example involves the calculation of income derived from DSS clients' managed investments. This amount is used to calculate the clients' pay rates. Because the relevant law is highly complex, DSS staff generally accept the amount which the computer system derives.

Computer automation of policy has implications for DSS clients. Like DSS staff, they too are likely to accept the numbers which the computer

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produces. This, in turn, means they are less likely to appeal decisions made by the DSS, *in effect* undermining their legal rights. This is compounded when policy is complex. If policy is straightforward, people are more likely to be able to individually calculate their entitlements and thus appeal if there is a difference between the DSS's and their own calculations. Welfare Rights and Social Security Appeals Tribunal staff have also mentioned that the use of computers to administer and automate policy have made it more difficult to unravel the processes whereby policy decisions have been made.

The above consideration of computer technology's role in policy administration reveals that computers are bureaucrats working in the DSS. In fact, under Max Weber's account of the bureaucratic official (1968, pp. 223–6, 956–1005), computers are ideal. They execute their orders exactly, efficiently and objectively, they give their full attention to the job and they have no personal interests in the organisation. Indeed, the computer bureaucrat has been praised for its more uniform application of policy than that performed by human bureaucrats. As the objectivity of computers often leads human DSS officials to not question decisions made by computers, computers are perhaps privileged senior bureaucrats. In the use of computers for client compliance, computers are agents of client surveillance investigating the personal lives of clients. Computers actually interrogate the data trailings of people and digital constructions of peoples' personae, hence Roger Clarke's conception of 'dataveillance' (1994). In summary, computers are political agents of the government. As such, computers do not necessarily assist DSS clients, but instead help to increase the power differential between DSS clients and the DSS.[7]

These examples illustrate the political nature of computers in the DSS. Computers provide the basis for new more complex policies. Through enabling more powerful forms of policy administration, computers enhance the political position of both the government and the DSS *vis-à-vis* the populace. Computers maintain client surveillance. Computers are bureaucrats whose heightened objectivity, *vis-à-vis* human bureaucrats, means they impartially implement policy. Their automation of complex policy obfuscates policy decisions. Both these imply that computer decisions/calculations are less likely to be subject to reviews than those made by humans. Consequently, the legal rights of welfare recipients are effectively undermined.

Policy initiation and debate

Policy debate involves parliamentary debate and debate by politicians, public contact with the government through formal submissions, petitions and letters, and more general public debate including that facilitated

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and inflamed by the media. Policy initiation involves the suggestion of policy change and is closely related to policy debate.

Policy debate often makes use of computer-generated and computer-analysed statistics. For example, consider the centrality of unemployment, economic and trade statistics in political debate (Rose, 1991). In terms of social security policy debates, Henderson's Poverty Line and Average Weekly Earnings statistics are regularly used to assess the adequacy of social security payments. At times the DSS receives Parliamentary Questions which require the use of computers to produce and analyse statistics. In the use of computer generated statistics, computers become advisers to ministers. In the production and analysis of statistics by computers, computers make a previously unknowable area of policy or social reality knowable. However, the social reality that statistics reveal is quite limited. Statistics record only those aspects of reality which have been quantified, and in doing so lose much of the detail they purport to represent.

Computer models reached an unprecedented presence in Australian political debate in 1992. The Coalition Opposition had earlier released its policy package called *Fightback!* (Hewson and Fischer, 1991). The policies had been costed and computer models had been used to determine the social and economic implications of the proposed policies. In response, the government had the Department of Treasury use its computer model to assess the effects of *Fightback!*. A highly public debate ensued about the impact of *Fightback!* on Australia's population and economy, with each side arguing that their computer model had shown that such and such would be the outcome. Although not an example of the DSS's use of computer models, it illustrates how both the results of computer models and the computer models themselves can become objects of political debate. The debate was essentially about the social and economic policy for Australian society, and computer models were being drawn into the debate to support partisan perspectives under the guise of objectivity. When conflicting 'objective' models are presented to the public, the response is to treat the issues as technical matters which must be left to the experts, rather than as issues imbued with politics and political aspirations. As mentioned above, computer models embody assumptions which can be variously manipulated to achieve the results one wants. This no doubt occurred, but the assumptions were scarcely scrutinised in the debate.

Computer-produced statistics may bring to light areas where policy does not achieve the desired aims, areas for political action or poverty traps. Perhaps the political awareness during the late 1980s of children

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living in poverty in Australia was partly a consequence of using computers to estimate the number of such children. Anecdotal evidence is usually not enough, and the methods of calculating the types and numbers of people living in poverty become increasingly complex (Harding, 1993). This tendency to complexity is itself a function of using computers. According to a senior DSS staff person, computer modelling has revealed anomalies or 'poverty traps' which have then led to policy proposals. A particularly useful utilisation of computer models involves the calculation of Effective Margin Tax Rates, the percentage a person or household loses through tax and reduction in social security benefit as a result of earning extra money. Because of the immense complexity of social security and taxation law (Polette, 1994), computers facilitate these calculations. These rates are important because they assist the evaluation of the disincentive effects of policies. For instance, it has been identified that some 28,000 recipients of Additional Family Payment lose about $1.08 for every extra dollar the family earns.[8] They go backwards.

In the identification of poverty traps and the like, and the creation of statistics, computers help to give rise to newly defined social groups; such as the long-term and the very long-term unemployed, those 'at risk' of becoming long-term unemployed, homeless youth, families in poverty, and those 'at risk' of being overpaid or defrauding the social security system. Computers help to define these groups, to make them knowable, and therefore to assist their governance (Rose, 1988, 1991). In response to these new groups, policy is made in order to address their needs, to protect the integrity of the social security system, or to reduce the possibility of undesirable outcomes. One such policy change involved the 1989 split of unemployment benefits into Newstart Allowance for persons unemployed for more than twelve months and Job Search Allowance for other unemployed persons.

These examples illustrate the ways in which computers contribute to the initiation of policy. They make areas of society knowable and thus problematise these areas as a domain for government. As computer-produced statistics are available to the Opposition and other interest groups, they can be used to help create and to support public debate. This may lead to policy initiation and then policy development.

The political aspects of computers as illustrated in these examples are varied. In political debate, the perceived objectivity of computers is used to validate statistics which support partisan views. In doing so the political process is hidden behind a veil of objectivity. The statistics which computers provide make new domains knowable and thus governable. New policy, devised to address these new domains, is certainly a political effect of the use of computers.

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The consideration of the use of computers in Australia's Department of Social Security supports the view that computers are political players in social policy processes. They are key participants in political debate and political struggles, and their use has political consequences.

CHANGES IN SOCIAL SECURITY POLICY

Having argued that computers do play a role in policy processes, I conclude by showing what effects this has had on the substance of policy and policy processes. In drawing attention to the following four changes, I do not invoke a technological determinism. Rather, I echo Latour's (1986, pp. 5–7) comments that both the technical means and the political imperative need to co-exist for changes to occur.

Policy change has increased. In 1992 Annette O'Neill stated that 'In the 45 years of consolidated [social security] legislation approximately one quarter of the one hundred and twenty eight amending acts have been [sic] in the past four years' (1992, p. 275). Historical records of the DSS indicate that computer technology has assisted this change and that one of the aims of upgrading computer technology is to support policy change:

> The use of [Automatic Data Processing] facilities has made a major contribution to the department's ability to implement complex changes to benefits legislation (Australia, 1980, p. 62); and
>
> Once the [computer] system redevelopment is complete, the department's ability to accommodate this high rate of change and to implement change more quickly will be enhanced. (Australia, 1989, p. 117)

The discretionary elements of social security policy have reduced. Because computers can not cope with ambiguity and because computers are increasingly being used to automate policy, computers have supported this reduction of discretion. The attempt to achieve greater consistency in decision making, argued to be improved by the use of computers, is also related to the decrease in discretion. Reduction in discretion is evidenced in the changes to Special Benefit, a discretionary payment, which now has many conditions before the payment can be awarded. Whilst there are no doubt important political reasons for these changes, the involvement of computers cannot be overlooked. Another change involves the accuracy about paydays and rates of pay. As computers have provided the ability to calculate payments more accurately, policy dealing with payments when clients change circumstances have been considerably elaborated.

Social security policy has become more targeted. Whilst there are very strong economic and political imperatives behind this change, computers

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have been essential in supporting increasing targeting. Universalised policies are much easier to develop and evaluate than targeted policies. Computer models thus provide the means with which targeted policies can be developed, and computers provide the support for the implementation of such policies. Indeed, to determine client eligibility targeted policies require more information from clients than universal policies. Computers provide the most effective means to assess and store this information. Perhaps the most telling example of the use of computers to support the administration of targeted policy involves 'saved groups'. Saved groups consist of DSS clients who are to be treated under old social security rules because they would be disadvantaged under new rules. The social security system is so complex that it currently has saved groups within saved groups, computers being necessary to administer this complex system. However, due to the complexity, DSS computer staff are often less than enthusiastic about creating saved groups.

Thus, social security policy has become more complex. This is a direct result of increased policy change and increased targeting. For example, there are now eight different categories (involving six different rates) of allowances for single people, and four different categories for couples. Computers clearly have a crucial role in supporting such a complex social security system.

These four general directions of Australian social security policy – increased policy change, reduced discretion, increased targeting and increasingly complex policy – are a consequence of both available technology and political ambitions. Developments in technology consequently mean that policy developments can occur. Thus, technological developments constantly raise for the first time the question of whether we really want the policies they make possible. Is policy too targeted, too complex? Is policy change too frequent? Are the surveillance practices too intrusive? There are often good arguments for increasing targeting and surveillance. For example, money can be saved and directed to those most in need. However, when do the changes undermine other values, such as a simple and comprehensible policy system and personal privacy? Just because we can do it, does not mean that we should.

After much public pressure the government recently decided to avoid the temptation of complexity. In the May 1995 Budget the government announced it would overturn the previous policy of deeming unrealised capital gains of pensioners' shares as income, a complex policy supported by computers with links to the Australian Stock

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Exchange. Instead, a simpler formula recommended by a Strategic Review (Barber *et al*., 1994) was adopted. This apparent win by the 'public' is a dramatic reminder that policy processes are very much social processes. Whilst the changing nature of technology enable new policies to be thought and implemented, 'Princes' must choose to utilise new technological capacities and other humans can shape and respond to the policy enacted. Policy processes are, then, socio-technical processes.

Just as governing is not purely a social, but a socio-technical process, so too is resistance. Indeed, computers can be used to counter the power of the 'Prince'. In an innovative project, the DSS is developing a computer expert system for assessing claims. It is envisaged that the product will be installed on personal computers and distributed widely in the community sector. Prospective clients, perhaps with the assistance of a local welfare worker, would assess their own claim independently to the DSS. In this way, if the DSS and client-operated expert system produce different results the claimant is, supposedly, more empowered to appeal the DSS's decision, than if she/he had no idea of what to expect from the complex social security policy system.

CONCLUSION

In this paper I have argued that if policy analysts are to fully appreciate the processes of policy making and the implications of policy, technology must be included in the analysis. To do this a conception of technology, not as neutral tool but as political, needs to be embraced. The importance of technology in policy processes was illustrated by an empirical study of the use of computers in Australia's Department of Social Security. It was argued that computers played an indispensable role in policy development and analysis, that they contributed significantly to public debate, and that they helped identify new domains for policy to address. In the Australian social security context, this use of computers has led to increased policy change, reduced discretion in policy, and increasingly targeted and complex policy.

As Machiavelli and Latour point out, 'Princes' use whatever means to achieve their political aims. Indeed, Australia's Minister for Social Security has recently outlined his vision for social security (Baldwin, 1995). Computers are clearly present in that vision. Robert Moses cleverly used architectural and town planning designs to create his vision of a segregated society. Consequently, if we are to be sophisticated in our analysis of policy and of how we are governed, we need to follow 'the Prince' and see how he achieves his aims (Latour, 1988).

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NOTES

1 The social context is also important, for if cars were affordable for all, the social segregation effect of the bridges would dissipate.
2 Winner goes on to consider the question as to whether there are inherently political technologies (1986, pp. 29–38) and suggests that nuclear power must necessarily involve the restriction of civil liberties (1986, pp. 37–9, 175–7).
3 Computer modelling is the process whereby a mathematical model of the world, such as traffic flows, weather patterns or total household income, is incorporated into a computer. In doing so, the computer is able to perform the necessary calculations to predict changes in the model. For example, will traffic flow improve if the road was widened, the traffic light sequence was changed, or the speed limit altered? Based on today's weather patterns, what should we expect tomorrow? What types of household will be (dis)advantaged by specific changes to taxation or social security policy?
4 If the tax-free threshold were increased, the Pensioner Rebate would be decreased an equivalent amount. This will still maintain the standard that no pensioner receiving the full-rate pension would pay any tax. However, the rules of the transferable Pensioner Rebate effectively involve a 'double counting'. Thus in increasing the tax-free threshold and reducing the Pensioner Rebate an equivalent amount, this 'double counting' advantage is reduced, thereby resulting in an increased tax burden for some pensioners. See Polette (1994, pp. 22–3) for specific details.
5 I use the term 'virtual' for those uncomfortable without the delimiter. To some people, 'bureaucrat' refers to a human, and not to any other entity which performs similar activities. Clearly, the activity of DSS's computer problematises the notion of 'bureaucrat'. Hereafter, I will not use the delimiter to highlight the blurred domain of computer and human bureaucratic activities.
6 What motivated the legal change was a ruling by the Australian Administrative Appeals Tribunal that a computer-made decision to cancel a client was not considered a legally reviewable decision because an officer of the department had not made the decision. This meant that the person appealing the decision had no legal recourse to undo the decision.
7 Such an observation is hidden when we consider technology to be a neutral tool. If we are fully to appreciate the power of the state we need to take account of the technologies used to achieve and maintain government, an observation well expressed by Latour (1988).
8 This occurs when the household unit's weekly earnings falls between $507.59 and $522.37 (Polette, 1994, D(i)).

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