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CHAPTER 22

THE TOOLS OF GOVERNMENT IN THE INFORMATION AGE

CHRISTOPHER HOOD

WHAT does the arrival of contemporary information-age technology mean for older, horse-age and railway-age, ways of thinking about the instruments used by government for public policy? Do we need completely new ways of conceiving those instruments in the twenty-first century? Or on the contrary, do the older questions and conceptions of government tools have just as much if not more analytic value in an age of changing technology? This chapter argues the case for the latter proposition. It begins by briefly reviewing some of the standard strains in the policy instruments literature of the last two decades, and then explores the case of e-government and information-age technology to assess how far such developments radically challenge earlier ways of thinking about the instrumentalities of the state, and what we can learn about information-age technology in government through the lenses of conventional tools of government analysis.

1. TOOLS OF GOVERNMENT ANALYSIS: THREE CONVENTIONAL STRAINS

The tools or instruments of government have been analyzed in at least three main ways in the public policy literature over the past twenty years or so, and changing forms of information technology present different analytic issues for each of those conventional approaches. One such approach, possibly the best known, is to conceive of instruments as institutions, in the sense of forms of organization available to government, such as public corporations, independent or private sector contractors, and various forms of public–private partnership. Perhaps the leading contemporary exponent of this approach is Salamon (2002; originally Salamon and Lund 1989), who argues that new types of institutional forms for public policy are central to the “new governance” paradigm of recent decades. How far those public–private institutional forms are as truly distinctive to the modern era as Salamon (2002, 2) claims is debatable—after all, apparently commercial and independent forms of organization have long been extensively used by governments in the world of espionage, black propaganda, and other forms of unconventional warfare (see Mackenzie 2002) and church organizations have traditionally been important in education, welfare, and population registration in many European states. But that is not the central issue here.

A second well-established approach focuses on the politics of instrument selection, in the sense of the interests or ideas that shape the choice of tools. For this approach it is not crucial whether government instruments are viewed as institutions or other forms of action: the key question concerns what political, ideological, or cognitive processes lead to the choice of one policy instrument rather than another. A striking instance of this kind of approach is the exploration by Ackerknecht (1948) and more recently by Baldwin (1999) of the extent to which differences between authoritarian and liberal state regimes shaped the choice between “sanitarian” and “quarantinist” tools to tackle the serious problem of contagious disease in nineteenth-century European states. But in the general public policy literature, this approach is perhaps best exemplified in the work of Linder and Peters (1989, 1992, 1998), who have classified various ways of understanding the link between policy problems and selection of instruments, ranging from contingency to “constitutivism.”

A third set of approaches to the instruments of government has tended to be institution free and to focus more on cataloguing the tool kit in a generic way than on the politics of instrument choice. This approach can be partly traced back to Dahl and Lindblom’s (1953) pioneering analysis of the array of socioeconomic instruments used by government, though that is a hybrid of institutional and institution-free analysis. More strongly institution-free approaches come in at least three varieties. Some, notably Elmore’s (1987) approach (elaborated by Schneider and Ingram 1990), have a strong purposive or managerial theme and focus on broad (and not necessarily government-specific) “intervention strategies” that include capacity building, symbolism, and system changing. Another fairly well-known approach of this type is

the “carrots, sticks, and sermons” categorization of policy instruments, developed by Vedung (Bertelmans-Videc, Rist, and Vedung 1998), on the basis of a well-known trichotomy of types of organizational control originally developed by the famous organizational sociologist Etzioni (1961) over thirty years before. Le Grand’s (2003) “knights, knaves and pawns” analysis of motivations in public policy might be argued to be of a similar kind. A third is my own analysis of the instruments available to government for gathering information and affecting behaviour at the point where government comes into contact with citizens (Hood 1983).

The latter analysis differs from the “carrots, sticks, and sermons” approach insofar as it is concerned with the instruments specifically available to government (rather than those employable in any organization), is concerned with both information-gathering and behaviour-modifying/enforcement tools (rather than with the latter alone), and is based in cybernetics, the science of general control systems, rather than organizational sociology. (For classic applications of cybernetics to government and organization, see Deutsch 1963; Beer 1966; Steinbruner 1974; Dunsire 1978.) The key claim is that the instruments specific to government for information gathering and behaviour modification—universal aspects of control—have to be based on some combination of at least four basic social resources, namely “nodality,” “authority,” “treasure,” and “organization.” Nodality denotes the capacity of government to operate as a central point (not necessarily *the* central point) in information networks. Authority denotes government’s legal power and other sources of legitimacy. “Treasure” denotes its assets or fungible resources, and “organization” denotes its capacity for direct action, for instance through armies, police, or bureaucracy.

This three-part classification of approaches does not cover all the possible ways of conceiving the instrumentalities of the state. And there are certainly some approaches, such as Dahl and Lindblom’s (1953) early account of the socioeconomic instruments of public policy, as already mentioned, which cut across the three types (mixing institutional forms and generic forms of action, in that case). But the trichotomy perhaps captures enough of the conventional forms of “instruments” analysis to allow us to explore how far such conventional analysis is radically superseded by the information age, and how far it can be fruitfully drawn upon to understand information-age government tools.

2. INFORMATION AGE TECHNOLOGY AND GOVERNMENT: TRANSFORMATION OR DYNAMIC CONSERVATISM?

The idea that information-age technology is destined to have radically transformative effects on the way government operates has been advanced both by scholars and

by governments themselves. In the academic world, numerous cyber-scholars (such as Taylor 1992, 377–8) have berated their colleagues in public administration and public policy for neglecting or seriously underestimating the extent to which information and communications technology alter the way that government works. Some, such as Frissen (1996, 1998), have gone so far as to argue that such technology heralds an entirely new form of state—in his case, a “virtual state” in which the new techno-culture produces “fragmented, decentred and non-hierarchical” structures and processes (Frissen 1998, 41). Over a decade ago, Taylor and Williams (1991, 172) claimed: “A new public administration is being forged and new information flows, and the computer networks which facilitate and mediate them, are fundamental to the innovation process.” Scholars such as Bellamy and Taylor (1998) have argued in similar vein that the separation of front- and back-office functions in government, facilitated by developments in information and communications technology, is fundamental to changing government’s *modus operandi*. More broadly, the advent of microprocessors brought a range of prophets who argued that the new technology would decentralize power and control in society, and would thus help to usher in a less hierarchic society (for an early analysis of the “neutrality” debate see Ward 1989).

In rather darker vein, civil libertarian critics have made much of information and communications technology developments that are said to be bringing about a quantum extension in government’s powers to detect and punish, through applications such as satellite and CCTV cameras linked to computers, new ways of monitoring telephony and computer use, high-security identity systems, and compulsory tagging of various kinds of individuals. Brin’s (1998) *Transparent Society*, developing earlier “surveillance society” analyses (such as Rule 1973; Bunyan 1976; Ackroyd et al. 1977; Hewitt 1982, ch. 2), makes much of the potentially radical implications of surveillance technology that can continuously pinpoint the whereabouts of individuals in spaces as small as a single square metre—an application being developed at the time of writing for surveillance of convicted paedophiles and those who have been convicted of domestic violence who are legally restrained from approaching those they have abused.

Politicians and public service reform visionaries such as Osborne and Gaebler (1992) have likewise made much of the potentially transformative effects of information and communications technology on public service delivery. Every self-respecting government today has to have a relentlessly upbeat vision of the future that involves information and communications technology decisively improving the way it interacts with citizens. Perhaps the best-known example of that sort of techno-vision is the 1993 Clinton–Gore “National Performance Review” of the US federal government, which claimed (Gore 1993, 112): “With computers and telecommunications we need not do things as we have in the past. We can design a customer-driven electronic government that operates in ways that, 10 years ago, the most visionary planner would not have imagined.” The NPR made much of the ways that information and communications technology could transform government purchasing systems, advice and information systems, methods of funds transfer, “smart cards” to entitle citizens to use a range of related public services, and electronic interactions

between citizens and government on matters such as filing of tax returns. And that vision has been widely echoed in other countries, for example in the UK government's *Modernizing Government* White Paper of 1999 (Cabinet Office 1999), almost to the point of cliché.

Against these transformative visions of the effect of information and communications technology on government instrumentalities and operations, numerous scholars have offered more sceptical analyses more redolent of Schön's (1971) idea of "dynamic conservatism"—that is, the sort of change that allows underlying social relationships to remain the same. Numerous scholars have argued that technologies in government tend to mirror and reproduce the cultures they develop within, contrary to expectations that they can usher in quite new social or organizational climates (see Kraemer and King 1986; Hood 2000; and for the broader "radical science movement" argument that science and technology are shaped by social systems, see Rose and Rose 1976). Indeed, contrary to Frissen's "end-of-hierarchy" analysis of the effects of ICT, Holliday (2001) has argued that central agencies in government are quite capable of using ICT developments to maintain and consolidate their power. For Holliday (2001), "the sole novelties [in the command structure of the state] introduced by the information and communications technology revolution are to be found in the expanded networks that can now be constructed around issues, and in the expanded array of resources on which actors are able to draw in seeking to secure their goals." Other scholars have highlighted the extent to which technological possibilities for enhancing government's surveillance capacity can be countered by the resourcefulness of opportunists or principled adversaries of government, as with the use of caller ID and other devices in the 1980s to avoid government surveillance of telephones through wiretapping (Chan and Camp 2002, 26). Margetts (1999) and other scholars have shown how far short government's actual information and communications technology operations often fall of what Margetts calls the "hyper-modernist" promises and visions of the new techno-future, to the point of introducing major new sources of government waste and failure.

Some of these differences in perspective might be put down to the difference between the analysis of implementation after the fact and the forward-looking analysis of potential. Some might be put down to the difference between the effects of information and communications technology on government's internal organization and its effects on the way government interacts with citizens. And some of those differences in perspective might depend on the time period that is taken, since many claim that the age when information and communications technology development mainly affected government's internal organization started to change decisively with later stages of such development, particularly web-based technology and tracking systems (see Margetts 2003, 371). Against that argument, it might be questioned whether the Internet really *is* so different, given that it too has been attended by the same contradictory "transformation" and "dynamic conservatism" views that surrounded the development of microprocessors in an earlier generation: in the early years of Internet expansion it "brought much social commentary telling us how the

web was about to sweep away the old regime . . . The pendulum swung back quickly, however” (Healy 2002, 480).

However, to the extent that the advent of the web did make a real difference to the instruments used by government at the point where it interacts with citizens, the notion that decisive change began with web technology would echo the argument of the veteran management guru Peter Drucker (1999, 49), who drew a parallel with the course of the nineteenth-century Industrial Revolution to argue that the first effect of the “informational revolution” has been to find new ways of making existing products, though it might later lead to qualitatively new products such as the railroads: “Like the Industrial Revolution two centuries ago, the Informational Revolution so far—that is, since the first computers in the mid-1940s—has only transformed processes that were here all along.”

Drucker’s argument certainly seems plausible for the case of taxation, where up to now the information and communications technology revolution has tended to consist more in changing the way that established taxes are paid (for instance through new filing or payment systems) and weakening some types of taxes that are vulnerable to avoidance through the Internet (such as betting taxes), than in collecting radically new types of taxes. In principle, Internet service providers could be the oil companies of the information age, a key point for tax collection, and in principle “virtual stamps” on email could be a twenty-first century fiscal innovation to match the invention of stamp taxes in the seventeenth century. But in line with Drucker’s claim, such fiscal innovation has so far been marked by its absence rather than its presence (see Hood 2003).

However the difference between the “transformational” and “dynamic-conservatism” perspectives on the effect of information and communications technology on government’s instruments might be accounted for, the question stated at the outset remains. That is, are the conventional ways of understanding government’s tools that were described in the previous section still adequate for the understanding of government’s operations in the information age?

3. APPLYING CONVENTIONAL ANALYSIS TO INFORMATION-AGE TOOLS OF GOVERNMENT: THREE SETS OF ISSUES

The three ways of analyzing government’s instruments that were identified earlier each raise different issues for the way government works in the cyber-age. For the Salamon-type instruments-as-institutions approach, the central issue is how far information-age technology reshapes or extends the range of alternative institutional arrangements available to government. There are several possible mechanisms

through which that could happen. One is by the development of computational power that reduces the transaction costs of choice or trading in such a way as to open up institutional possibilities that go beyond traditional forms such as regulated private monopolies or state enterprise. And in some cases, that does seem to have happened. For instance, Foster (1992, 73) claims that spot markets for electricity were not possible when electricity grids were first introduced in countries such as the UK in the 1920s (because of limited detection tools in calibrating a good that cannot be readily stored), meaning that the only real institutional alternatives for provision of electricity in those technological conditions were monopoly public trading corporations or regulated monopoly private providers, as in the traditional US style. However, Foster argues, the requisite computing power for creating a new kind of market had developed by the 1980s, offering the possibility for “a truly commercial electricity market buying and selling through the grid” that considerably extended the range of institutional alternatives. The capacity for utility consumers (for water, gas, telephones, etc.) to choose among alternative providers could also be argued to have been heavily shaped by the same sort of information technology developments.

Another way that information-age technology could reshape the institutional tools of government is by new forms of communication that shrink the effects of geographical distance for organizations. The development of this kind that has been most discussed by students of government, as noted earlier, is the capacity of information and communications technology to allow “back-office” functions to be physically separated from “front-line” activity (see for instance, Bellamy and Taylor 1998). And a further potential route might be found in the ability of information-age technology to reshape the case-handling, filing, and memory functions that were once distinctive to public bureaucracies, paving the way for new forms of privatization and outsourcing to global corporations, perhaps in conjunction with modern target systems (see Dunleavy 1994; Cairncross 2005, 19).

The second, politics-of-instruments approach to analyzing the tools of government that was identified earlier can also be applied to government policy instrumentalities in the information age, even though information-age technology is not central to Linder and Peters’s original analysis. For instance, we have already noted that IT developments have tended to be presented as a remedy for all the traditional shortcomings of government bureaucracy in politicians’ visions of re-engineered public services, at least since the Clinton–Gore “National Performance Review” in the United States a decade or so ago. Evidently, information-age technology was widely viewed as a solution looking for problems, to the extent that it offered an important new form of what Linder and Peters (1992) confusingly call “instrumentalism” in the choice of methods of policy delivery (they use the word instrumentalism to denote obsession with a single tool, such as price mechanisms or participative decision styles, as a panacea for all problems).

However, it is debatable how far such solution-for-every-problem attitudes towards information and communications technology are best understood as a contemporary manifestation of the recurring utopian belief, going back at least to Saint-Simon, that new technology can usher in radically improved social and governance

arrangements. Dunlop and Kling (1991, 16–17) have claimed that there is a recurring strain of utopian thought that “places the use of some specific technology—computers, nuclear energy, or low-energy, low-impact technologies—as the central enabling element of a utopian vision.” Such visions, according to Dunlop and Kling, typically assume the use of technology in social contexts where the users are highly cooperative and sabotage, conflict, politics, and adversarial legalism scarcely exist. On the face of it many contemporary visions of better governance and a new social order through information and communications technology (though not the dystopian visions) do seem to fit that pattern fairly closely, as has already been noted.

On the other hand, the solution-for-every-problem view of the implications of information and communications technology for the tools of government might involve something more than utopian optimism. That is, it might be best understood as a reflection of a new information-industrial complex with large corporate interests at stake in the outsourcing and computerization of government’s once-distinctive information-collecting, filing, and case-handling operations. From a Linder–Peters perspective, some parallel could be drawn with the military-industrial complexes that grew up in the nineteenth century as governments moved away from direct production of military *matériel* in arsenals and government dockyards to outsourced production of armaments, though the parallel is certainly far from exact. Indeed, in a different policy domain, the nineteenth century saw widespread abandonment of tax farming in favour of direct bureaucratic tax collection (see Ardant 1965; Levi 1988). Though Linder and Peters stop rather short of such an analysis of the way ideology and interest shape instrument choice in the information age, it would seem to be central to the understanding of modern executive government.

Indeed, the same sort of analysis could be used to explain how it was that, having created the Internet in the 1970s as a largely unintentional result of research sponsored in universities and defence establishments, government came to apply its authority tools to the Internet in rather traditional ways as the medium became commercialized. That is, government chose to use its authority to control content and to underpin ever-more draconian copyright and intellectual property controls (see Healy 2002, 490), rather than to give effect to the early libertarian visions of the Internet as a sphere that was immune to government regulation (2002, 481) and therefore destined to bring about a new kind of society free of traditional restrictions on the use of information. Explaining that choice is the sort of question that is eminently suited for the politics-of-instrumentality approach.

For the third set of approaches to analyzing the tools of government—the classification of forms of action for the purpose of exploring alternatives and combinations—the question is how far the repertoire of instruments identified by such approaches has been rendered obsolete by information-age technology. At one level, it seems undeniable that contemporary cyber-technology is transforming both the instrumentalities and the issues faced by contemporary government in important ways, just as much if not more than with the advent of railroads 150 years ago. Many of the examples given in my own 1983 book (Hood 1983) are undeniably as obsolete now as steam cars or seaplanes or transatlantic liners. There is no question that the

cyber-age has produced some particularly dramatic changes in the information-gathering tools available to government, with the near-universal ownership of cell phones giving government the opportunity to track the position of almost every cell-phone-using individual, and rapidly to put together information from different sources on any given individual. Indeed, Margetts (1999) has shown how information technology has significantly changed the way that government applies all its tools for gathering information and modifying behaviour.

However, this sort of technology-free approach to understanding government's policy tools is arguably more rather than less applicable to an age of fast-changing technology, for at least three reasons. One is that there are sharp limits to "virtualizing" government, particularly for those situations that most call for government action, where normal facilities or civilities have broken down, the chips are down, and the stakes are high. *Pace* Frissen and those who think like him, even in a world where much is digitized and "virtual," many of those virtual processes ultimately depend for their efficacy on processes that are unavoidably physical rather than virtual. That is not to deny that there are *some* wholly virtualized government services. For instance, one of the most unexpectedly popular uses of government-sourced information in recent years is the runaway growth of interest in searching for family history on the Internet through official records such as censuses, wills, tax records, registers of births, deaths, and marriages in a way that was much more difficult and costly for those would-be family historians in a pre-digital era. But only some of government's operations are like that. Sometimes the scope for virtuality is limited by the need to build non-virtual elements into administrative processes as a defence against online fraudsters, as applies to many commercial transactions. And the limits of virtuality show up sharply with those types of government operations that involve unavoidably physical operations, especially for disaster-relief activity or at the coercive end of government's relationship with citizens, when government faces principled or opportunistic recalcitrance. The tool kit of government always has to include instruments that are anything but virtual, and indeed too much of a focus on the virtual part will tend to take away from those ways in which government has to relate to citizens outside the cyber-world.

Indeed, a second reason why conventional technology-free analyses of the tools of government are still useful in a world of changing technology is that only analysis of such a kind can enable us to pinpoint what exactly changes in government's operations in the information age. For instance, in policy domains such as the handling of crime and public order, the collection of taxes, and the handling of contagious diseases—all part of government's "defining" policy operations (Rose 1976)—it is the "detector" or information-gathering part of those operations that have changed more as a result of information-age technology than the "effector" part of the operation. For crime and public order policing, dramatic new surveillance technology has developed, as already mentioned, and the information age in principle allows information to be put together from many different sources, such that the traditional instrument of the periodic census may be becoming outdated (though data protection laws often sharply limit the ability of governments to use the dramatic "joining-up" potential of information and communications technology across different information sources—see Raab 1995).