

# The Design of Government

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**Computing professionals have skills and experience relevant to the proper design and implementation of systems of government.**

**I**n the January 2009 The Profession column ("The Credit Crunch and the Digital Bite," pp. 116, 114-115), I offered two binary measures—one old, one new—to attack the monetary disease now severely affecting the world. The old one would limit artificial entities such as commercial enterprises to two levels of ownership. The new one would limit representations of value such as money to two levels of abstraction. Both measures are drastic and basic simplifications.

The measures actually being taken by governments, or supposedly being taken at, for example, last month's G20 Summit, either attack the disease's agents through regulation or attempt to ameliorate its symptoms through fiscal stimuli. The disease will probably retreat, but be left alive to return later in a stronger form.

Why has the world gone into recession? The physical part of the world hasn't changed much, at least not at anywhere near the rate the financial world has changed. Nor has the living part of the world, its plants and animals, its people, and their knowledge and skills.

The recession is a failure of government, of society's nervous system.

Why did the government of society fail us? Because its basic nature hasn't changed while modern society has rapidly become more complex. Why can't our governments simplify our society? Perhaps because they can't even simplify themselves. Therefore, simplifying ownership and value in society at large is impossible with our present government structure.

## TRADITIONAL GOVERNMENT

At least as they exist in developed nations, traditional administrations provided a simple reform of feudal government. It is still a hierarchical system of monarchs, lords, and vassals. Brave, wise men brought in democracy to exercise some control over lords and, in some cases, monarchs.

In Australia, the monarch or head of government is called the prime minister at the federal level, or the premier at the state level. The lords are called ministers, and the vassals are amusingly called public servants. There is an awkwardness called parliament, but the political party system usually keeps that under lordly control, and its main effect is to keep the media supplied with bemusing and sometimes wryly amusing news items.

The scope of government is strictly divided into fiefdoms or departments nominally distributed by the head of government between the ministers. These departments are worlds of their own in nations with long-term stable governments.

Government departments are notionally under their minister's control. How notional was brought out in the BBC radio and television series *Yes, Minister* ([en.wikipedia.org/wiki/Yes\\_Minister](http://en.wikipedia.org/wiki/Yes_Minister)), with content drawn from real life.

Government departments are very much what sociobiologists call superorganisms. This was brought home to me recently when reading a splendid book called *The Superorganism* ([www.wwnorton.co.uk/book.html?id=1799](http://www.wwnorton.co.uk/book.html?id=1799)) and recalling a decade spent in a public service city trying to work productively with various government data processing sections.

Perhaps the best analogy for present-day governments is the apiary. Each individual hive or department is strongly organized to survive as a superorganism despite the occasional disruptions of the apiarist or minister. The superorganism is hierarchically structured with a queen or a head at

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the top and drones or clerks at the bottom. The main difference is that hives persist through 24 hours a day, seven days a week, without holidays.

## OPERATING SYSTEMS

The problem is that each government department takes its fiefdom to be its exclusive responsibility. Moreover, the fiefdom is introspective, especially when the department is socially isolated from the world at large in a city dominated by government employees.

much more closely followed nowadays (The Profession, "The \$100,000 Keying Error," Apr. 2008, pp. 108, 106-107).

These examples share the common theme of dividing a process into relatively independent stages. Applying the principle to government departments would have some responsible for monitoring and analyzing what is happening in and to their country, while others would be responsible for effecting changes to how things happen. The different monitoring and

having to devise remedies or alleviations. An operative department would look at the effective application of government measures generally to its own component of society without having to cater to the needs of a particular activity area.

An analytical department would collect data about its areas of activity, analyze it, model the activity, and predict short- and long-term effects under different assumptions. Analytical ministers would bring such predictions together at the cabinet and parliamentary level, where corrective measures would be considered and decided.

An operative department would apply to its component of society staged measures responsive to parliamentary decisions and then monitor and enforce adherence to those measures. Operative ministers would bring results of the monitoring together at the cabinet and parliamentary level, where measures could be modified and new decisions influenced.

A major secondary advantage of bifurcation is that the skills needed for an analytical department's staff would be different from those needed for an operative department's staff. Staff training and recruitment would become more effective because it would be more focused.

Analytical skills are like those of the different branches of science and mathematics, while operative skills are like those of engineering and trades. This similarity should also make movement between government and private enterprise jobs easier, which would have benefits for both sides of the exchange.

## BIFURCATE POLITICS

Bifurcation of government departments does not necessarily require bifurcation of the elective and higher levels of government. These are often already bifurcated, but not in the way described above.

One common bifurcation splits parliamentary representation

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How might this introspection be broken down? There are plenty of suggestive examples outside government, and they have a common theme.

Scientists separate analysis and synthesis. Engineers distinguish measurement and control in feedback loops. Manufacturers balance supply and delivery. Our own nervous systems use perception to control actions.

For the computing profession, though, perhaps the best example lies in operating systems. They have one large essential component that accepts and manages incoming data, feeding it to appropriate programs, and another that manages data from the programs it supervises, feeding it to the outside world through peripheral devices.

Many user programs also have major components separately handling data on the way in and out. Indeed, many years ago, the US Air Force's data processing people spent 80 percent of their coding effort and space on input data checking (The Profession, "The Usefulness of Hind-sight," Nov. 2004, pp. 120, 118-119), an admirable practice that should be

analytical departments could focus on different areas of societal activity—for example, consumption, production, and education; while the different operative departments could focus on different components of society, such as organizations, infrastructure, and people needing help.

## BIFURCATE GOVERNMENT

Such a bifurcation of government departments would break the closed loop that currently allows, even encourages, government departments to hide or disguise their activities, and to discount or ignore the activities of other departments. Departments would have to look outward more consistently, and could exhibit fewer of a superorganism's characteristics.

This bifurcation could be done the other way around, or in a different manner altogether, but the important innovation is having a loop-breaking bifurcation at all, although I believe the approach described here would work well.

An analytical department would look at the effects of government actions in general as they affect its own area of social activity, without

between two political parties and offers a reasonably successful means of providing an alternation of dominance between two notionally distinct philosophies of social values—which seem to become relevant mainly during the final months before an election. Much of this procedure's danger could be avoided by having a system of continuous election (The Profession, "Representative Democracy and the Profession," Feb. 2002, pp. 120, 118-119), but this is unlikely to be adopted without major preliminary reform.

Another common bifurcation divides a parliament into two chambers, usually a lower chamber with members notionally representing the interests of individual electorates, and an upper chamber with groups of members representing the interests of districts of electorates, such as states in a federation. This approach holds that legislation should start in the lower house but must be endorsed by the upper house before taking effect, in principle providing for a coalescence of local and regional interests. In practice, especially when proportional representation is adopted, this can sometimes lead to representatives outside the two major political parties holding the balance of power, usually seen by the major parties as a curse while the public might see it as a useful constraint.

If government departments were split between analytical and operative functioning, then undertaking a similar bifurcation of elective responsibilities would be reasonable perhaps at the cabinet level or at the chamber level. Splitting at the cabinet level would mean having two subcabinets, one analytical, the other operative. This would allow separate consideration of symptoms and remedies. The obvious danger here is that this would give a schizoid flavor to parliamentary proceedings. Splitting at the chamber level has more interesting possibilities.

The laws of a parliament usually involve two main parts: formal sections that focus the parliamentary debate, and regulations that give the details of how to apply the formalities. The formal sections spring from the cabinet level, while the regulations are typically left for the departments to add.

Suppose both parts were made formal. The sections could then define the scope and detail the objectives of the law, and the regulations could detail the methods by which the objectives are to be achieved. The analytical departments would support the sections. The operative departments would apply the regulations.

Suppose further that the sections and regulations were to move separately through the parliamentary process. Then the upper chamber could introduce and debate in detail the sections for approval by the lower chamber, and subsequently the lower chamber could introduce and debate in detail the regulations for approval by the upper chamber. Separating the sections from the regulations would make it easier to debate the issues; thus, reaching decisions would become simpler and clearer.

If this were done, the process for selecting candidates for election could be improved. Selection of upper-chamber candidates might favor an analytical background. Selection of lower-chamber candidates might favor a practical background.

**H**ow does all this involve computing professionals? First, all members of a professional society have a duty to use their skills and experience to benefit society at large. Computing profes-

sionals have skills and experience relevant to the proper design and implementation of systems; systems of government are no exception. Indeed, they should be seen as systems with a high priority for reform, given their questionable performance in recent years. Consider the extraordinary technological developments of the past century. It has seemed popularly reasonable from time to time to anticipate that technology use would banish poverty and unemployment and otherwise greatly improve standards of living everywhere. That this hasn't happened is arguably a general failure of governments, which were recently expected to be made much more effective by their wholesale adoption of digital technology.

Second, governments have become thoroughly dependent on digital technology but notoriously incompetent in the implementation of large digital projects. So there is clearly and urgently a need for bringing professional computing into the higher levels of government. Candidates for election to government should much more often be computing professionals (but see The Profession, "Should Professionals Be Political?" July 2003, pp. 100, 98-99).

We face an urgent need for improving political effectiveness in respect to all parts of the electorate and internationally. We will need digital technology to survive as a coherent society. Take note, computing professionals. ■

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