

FITTING LAW TO INNOVATION POLICY*

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Law plays an important part in innovation policy. It is represented in a wide range of relevant policies such as intellectual property, trade and competition, industry assistance and government enterprise policy. Law acts however both as an instrument of government policy and as a check on that policy. These two sides to law can be illustrated by the competition between two basic legal approaches to policy implementation, the bureaucratic-legal approach and the purposive action approach. The paper traces recent Australian developments in innovation law and identifies the tension in recent policy experience between the two approaches.

Keywords: Innovation policy, law, intellectual property, trade policy, industry assistance, government enterprise.

The onus of policy formation presents government with the problem not only of settling on acceptable policy objectives but also of finding a workable procedure or mode of operation for the state itself.¹ Government structures have internal characteristics and external associations that limit their availability and deployability in the performance of policy functions. Law is a case in point. With this elementary point in mind, this article aims to trace recent experience with the law in a range of areas relevant to innovation including intellectual property law, the law of economic association, competition and foreign investment law, the legal supports for government financial assistance to industry and the legal framework for public enterprise.

TWO BASIC LEGAL APPROACHES

Any worthwhile examination of the experience should be mindful of the dual nature of law. Law acts both as a means of policy expression and implementation and as a form of control on government policy making and administration. The uncertain charms of law for those who are responsible for policy functions in government can thus be characterised in terms of the competition they encounter between two basic legal approaches. This article endeavours to identify the characteristics of the two approaches and to offer some impressions about the roles they play in innovation policy.

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The first, and the one most commonly associated with the law, is the bureaucratic-legal approach. This approach is concerned with establishing and upholding a set of rules which govern in general terms the allocation of resources. It is often allied with the market supporting approaches to economic policy where the law provides at arms length the formally equivalent conditions for participation in economic activity in the private sector and "civil society". This approach is typified by the backing the state provides in the liberal legal form of fully blown property rights over economic resources and support for their transfer and use through the complementary legal institutions of private contract and economic association.²

The bureaucratic-legal approach can also be associated with a government role in prescribing general regulatory standards, for example in the criminal law, as a set of conditions placed upon the exercise of market power by private agencies. In this way, such law can supplement or even substitute the judgement of the authorities for that of the market but it does so in the form of rules. Government can then be held accountable in the courts if it fails to adhere and confine itself to those rules. The rationale for such a legal approach is well known. The market is considered the most efficient and democratic means of allocating resources. The law's role is properly confined to a limited support role, concerned with facilitating the workings of exchange-related processes in the economy and overcoming market imperfections.

In contemporary Western economies, governments often find the bureaucratic-legal approach to be too indirect, obtuse or uncertain a means to satisfy the economic demands placed upon them. Governments are under pressure not only to support the processes of the market but also to compensate for deficiencies or gaps in private production in the overall long-term interests of the economy and to correct for its adverse effects upon a variety of producer, labour and other groups.³ These demands are likely to intensify when the economy is going through a period of major structural change.

In the practice of economic policy, a contrast can be drawn with a second legal approach, one which is both more intensive and particularistic but at the same time more informal and flexible than the bureaucratic-legal approach. The "purposive action" approach works through administrative discretion.⁴ In this approach, the main role of the law is to provide a base on which policy can be developed progressively, fashioning working standards and individual decisions to further objectives under fluctuating environmental conditions. Policies are targetted much more directly and discriminatingly to strategically placed sectors, projects and firms. The law supports arrangements which merge interests, devolve authority and underwrite projects, removing innovation policy from rule-based review through the use of statutory privileges, flexible regulation, administrative proceedings, and collaborative decision-making.

RECENT GOVERNMENT INNOVATION POLICY

Before examining features of the recent experience with legal structures or modes of policy implementation, we should identify more closely the objectives or goals for which acceptable strategies are being sought. In recent years, it is clear that the formative context for policy in most countries seems to identify success both in product and process innovation closely with the country's prospects for sustained productivity, growth and international competitiveness. But the means to achieve this innovation may be the subject of considerable internal debate. In Australia some lobbies question whether we should attempt to build our own capability and enterprise in new high technology areas. They argue that Australia cannot expect to compete in these areas.⁵ It is more realistic for Australia to seek access on the best possible terms to the transfer of advanced technology from the leading producer nations so that its capacities can be applied to established strengths.

STRUCTURAL COMPETITIVENESS

Most recently, the insights into the conditions for successful innovation have developed to the point where the stark dichotomies between support for local and foreign technology, or new and established industries, no longer seem to be helpful policy frames of reference. Policy analysts have suggested that the smaller industrialised countries might need to combine a strategy of modernisation of processes in their traditional industries with specialised entry into high technology product areas.⁶ These nations are best served if they combine the acquisition and use of existing new technology with the stimulation of local innovative activity. The conditions for success in the new economic order suggest that these two strategies will be mutually reinforcing. This prescription seems particularly apt in the fields of microelectronics, information technology and communications technology, for these technologies are converging and permeating all corners of industry. Such countries should seek the capacity to design and build specialised consumer goods, intermediate products, process equipment and other capital goods, together with the ability to integrate the advances of the technology in a wide variety of products and processes.

This approach is informed by the observation that successful innovation depends not simply on the exploitation of a few outstanding inventions but also, and maybe more importantly, upon the access to less discrete and transferable resources such as technological know-how, individual and institutional cumulative learning, control over complementary assets such as factors of production and marketing networks, and organisational ability generally.⁷ Innovation benefits by economies of scope as well as scale. Success depends not only upon the activities of a few high flying firms, but on the global or systemic

capacity of each national economy. "Structural competitiveness" is affected by such factors as the scale, location and reach of a country's firms, the quality of production relationships across sectors and industries, the demand from domestic markets and the sophistication of users, and the quality of non-market activities such as the provision of public sector services and the guidance of regulatory agencies.⁸ In this vein, it is now suggested that the complexity and range of the new technologies require industry to develop strong and diverse organisational relationships if it is to take advantage of the opportunities which are being presented. Certain advantages are gained by concentration and internalisation but the nature of innovation also demands the developments of organisational linkages such as sub-contracting specialisation work for core producers and quasi-integration by way of joint ventures, consortia and other associations. The linkages involve a variety of private producers, public sector institutions and the technology users.

POLICY MEASURES

In the event, the high technology industries are largely organised into groups of large oligopolistic transnationals operating in the core, with a variety of specialised, smaller firms assuming peripheral functions and finding niches in the markets. Locally, governments have taken the view that a country like Australia cannot expect to compete squarely with the leading producer nations and to become self-sufficient in the new technologies, but must gear its policies very much to the strategies of the core producers and their governments. Thus, a key consideration in Australia's case is the conditions on which the foreign suppliers are prepared to transfer their technology whether by way of local investment and in-house transfer, licensing to outsiders, or the export of finished products. So too is the opportunity which they provide to the local producers to compete in high technology markets both at home and for export and the access which they allow them to joint ventures, outward licensing, production facilities and marketing networks. Therefore, the returns from such market-related policies as intellectual property, competition, foreign investment and trade policy all became relevant to the benefits which local industry obtains in exchange for the privilege afforded to the foreign companies in Australia. The policies adopted towards the strategies of the major producers are important not only to determine how readily and cheaply local users obtain access to the latest technology from overseas but also significant in the drive to build up a base of local capability and enterprise, so that the country can both reduce its dependence at home and participate in the international market.

Such local capability and enterprise will not be built solely on the strength of favourable transfers from overseas. It must be supported

by a program to establish a local foundation of essential knowledge, skills and networks so that the indigenous firms are in a position to appraise and exploit the opportunities which the worldwide revolution in technology is providing.⁹ Government has striven in recent years to gear a range of traditionally distanced activities such as education and training, public service and enterprise, government grants, taxes and procurement, wage policy, capital market arrangements and social regulation activities to the cause of innovation and the promotion of a suitable climate for local research and development, design and product activity. As a small country, Australia will not readily be able to enjoy some of the advantages experienced by the large high technology nations such as the reach of its own multi-nationals and the support of strong domestic capital and consumer markets, but it might be able to exploit certain local strengths such as its relatively high education levels, the presence of consensus seeking institutions, and sound public and welfare sectors.

On the supply side of innovation in particular, this effort to create a conducive environment for local industry to adapt and compete has signified a shift from negative defensive measures which are designed to shore up local industry and insulate it from the rigours of international exposure. The new approach to tariffs is evidence of this trend, though it should be noted that tariffs have not disappeared entirely and that other non-tariff barriers to trade such as quotas, voluntary restraints, differential regulatory standards and abstruse screening procedures have emerged to fulfil a similar function.¹⁰ Still, the emphasis has shifted some way to the use of such "positive adjustment" measures as grants, bounties, tax concessions, government contracts and favourable licences, which are designed to make investment in local research and development and the other steps in successful innovation more attractive.¹¹

Indeed, government involvement has on occasions extended further than these positive incentives and inducements to private sector investment into the deployment of a variety of active and direct measures to transform the structure of industry and to connect local firms with new commercial opportunities. Government has become engaged in the role of an industrial entrepreneur and broker, organising linkages and mergers between firms in the private sector, large and small firms, local and foreign companies. Procurement powers, trade services, the government's good offices and administrative guidance, soft loans and tax concessions, planning agreements and industry plans, have been used to make the connections. The intensity of this approach, the areas in which it is deployed and the guises it assumes, vary from country to country, but it seems that routinised involvement with industry is inescapable and that practical relations and alliances are forged notwithstanding the influences of tradition and ideology.¹² Government has indeed participated itself as a partner directly in commercial and production activities in a variety of ways, through equity investment, the licensing of public inventions, collaborative ventures

between public and private companies, and the provision of research and development facilities. In addition, governments have mounted their own high technology undertakings in areas such as the carriage of telecommunications.

LEGAL POLICY

Do we detect, with this understanding of the requirements for structural competitiveness, a shift from an indirect and rule bound approach to a more purposeful, administrative style of policy implementation? Policy implementation exhibits a tendency to particularise and to fine-tune both market supporting and market substitution approaches in order to achieve the desired mix between such contingent conditions of innovation as invention and imitation, competition and concentration, and foreign and local participation. Let us look now at recent legal policy initiatives in the area of innovation in Australia to see how this tendency has fared locally.

INTELLECTUAL PROPERTY POLICY

The place for property entitlements is often taken for granted in any appraisal of economic policy. Property entitlements are regarded as a familiar and uncontroversial part of the general backdrop to economic activity. But a period of radical change turns up new resources and techniques which do not readily fit the existing property categories.¹³ As interests seek to capture the benefits of these innovations, they generate claims which may be translated into questions both of appropriability *per se* and of the distribution of any property rights amongst the various interests with claims upon the resource such as the employee inventors, sub-contractors, industrialists, financiers and public sponsors. In other words, property is very much a live issue in the field of innovation policy and the use of the property approach might be subject to as much scrutiny as any other policy approach.

In an open policy environment, extension of the traditional intellectual property regimes will be subject to evaluation from an instrumental point of view. In theory, the policy choices are multiple. The choice may be not to confer private property rights at all over some of the new techniques, or to do so only on strict conditions, or to decide to screen admission to the property on a case by case administrative basis, or to confer counterbalancing rights of access at the same time to other interests.¹⁴ Nonetheless, the above analysis would suggest that there will also be demands for clear, categorical property rights, which are at the same time freely tradeable in the market through contract and association. The debate over copyright for computer software might act as a recent indication of the tendencies in intellectual property policy in Australia.

THE CASE OF COMPUTER SOFTWARE

In response to an adverse judicial interpretation of existing copyright legislation, and after a lively policy debate amongst producers, suppliers, users and advisors, the Commonwealth Government decided to legislate to confer copyright protection over computer software on its authors and any of their assignees in the market. The protection was broad. It extended legal control not only over the reproduction but also the adaptation and translation of original software work.¹⁵ Both literal copying and derivation from the original were to constitute infringements of software copyright.

The former Registrar of Copyrights in the United States, Barbara Ringer, argues that we have reached a point where any new rights under copyright law apparently cannot be exclusive rights.¹⁶ Legislators resolved the conflicts between interests associated with the new technology by conferring title upon the producers and then providing for compulsory licensing of the work, at a fee fixed by an official tribunal if agreement cannot be reached between the private parties. The response to the conflict over software did not however take this form. The extension of copyright did not involve provision for such compulsory licensing, neither were the producers required to disclose the software's underlying techniques to competitors if they wish to obtain protection, nor was the protection graduated according to the level of inventiveness and investment of the producer or to the purposes and effects of reproducing and building upon it.

An unqualified property right was provided despite the arguments that the protection would be over-inclusive. Copyright has traditionally applied to literary works, the value of which lies in their mode of expression as much in the ideas and information which they embody, while computer software is valued for the functions it performs and the effects it produces as an industrial process. While the object of the production of literary works is usually to publish and distribute them on the open market at a price, software owners may wish to keep their techniques secret and exclusive in order to prevent dissemination of the knowledge or only partially to release the techniques in order to take advantage of lag times in reverse engineering. Furthermore, the real creativity and ingenuity behind a program is likely to lie in the perception and the formulation of the solution to the technical problem which it overcomes and hence the real object of protection is likely to be the logic and structure of the program rather than the precise form of expression of that solution. To proscribe derivation is to extend protection beyond the form of expression of the work into the underlying concepts, ideas and approaches, and the experience with the 'look and feel' litigation tends to bear this observation out.¹⁷ In addition, to proscribe reproduction runs the risk of extending the protection to the unoriginal elements of a program, the author's collection of sub-routines and utility programs which have been developed by others and become the stock

in trade of the industry.¹⁸ Thus such copyright protection might inhibit not only the out and out software pirates but also the genuine developers and users who wish to also to feed off and to enhance the existing technology.

The contribution which such a legal protection would make to Australia's economic interests was also queried. The local software industry is very small, and Australia is a net importer of software. For example, that it has been estimated that around ninety per cent of software packages are imported from overseas.¹⁹ Local production is confined essentially to specialised customised work which is likely to be protected by other means such as the confidential agreement which can be formed with a limited number of customers. Software pirating means that local users can effectively gain access to overseas products without the permission of the holders.

LAW AND POLICY

The non-instrumental nature of intellectual property development is often attributed to the influence of lawyers. In advocating patent reform, the economic consultants to the Commonwealth Government's Industrial Property Advisory Committee were to say that "although the widely accepted rationale for the patent system is economic, much of patent law has been drafted by those with a legalistic bent. Such people would appear to have great difficulty coming to grips with wider social cost and efficiency considerations, or equity issues across society as a whole."²⁰ Similarly, writing critically in relation to performers' rights, Court advanced the view that debates over legal policy towards new technologies take place in Australia in a pro-copyright culture. In her view "most of the expert writing on copyright in Australia is written by copyright specialists for other copyright specialists, legal practitioners and law students. It rarely, if at all, questions or criticises the copyright system, nor is that system considered from the perspective of the user or consumer."²¹

These observations perhaps overestimate the singularity of lawyers. Certainly, in the case of software, a wide ranging economic and political debate took place before copyright was settled on the technology. Economic considerations were prominent. The Government recognised the large and essential contributions which the assets of ingenuity, organisation and investment make to the production of new software.²² It was concerned that overseas suppliers would not make the most up to date software available to local users without protection; a reluctance to release programs would also affect local hardware manufacturers and local support services. Additionally, it considered it important to provide protection to locally produced software, particularly software produced for export. It feared a retaliation in foreign markets if protection was not made available in Australia. It ought to be noted that the United States had legislated for copyright protection as early as 1972, with the

United Kingdom, France and West Germany following suit in 1985, and Japan in 1986.²³

Part of the appeal arguably of copyright is in the form it takes as a clear, comprehensive, and self-invoking rule or right. This appeal is not simply an appeal to the lawyers' intellectual tradition, which is bound up with rules, but also the attractions of the simplicity and certainty which it provides for those who wish to order and plan their economic affairs.²⁴ In this vein, proposals that copyright protection should be variable in the individual case according to the level of original contribution or to the purpose of the copying have been rejected on the ground that they would cause too much confusion.

Part of the appeal of copyright stems also from its embodiment of property. In the debate over software policy, producer interests appealed strongly to the notion of property.²⁵ The Australian Equipment Suppliers Association was emphatically of the view that copyright protection was the appropriate form. The Association was backed by the Australian Software Houses Association which submitted that copyright was apt in a property owning democracy, by the Australian Computer Services Association which considered that copyright was just and fair, and by the Australian Computer Retailers Association which asserted that the opponents of property were seeking to destroy the fabric of society.

There are of course many other advances in the realms of high technology which raise questions about the desirability of appropriability. The Commonwealth Government has recently been involved for instance in settling a (more qualified) protection on the production of semi-conductor chip designs or lay-outs.²⁶ Innovation in biotechnology is also presenting critical property questions, including the questions of rights over new plant varieties, genetically engineered higher life forms, and now the blueprints for human beings.²⁷

TRADE POLICY

In the bureaucratic-legal approach, especially in its liberal market supporting form, the complementary institutions to property are contract and the legal embodiments of economic association such as the company. These forms provide means to arrange the trade, combination and private administration of the resources over which property is held. The non-judgemental support which these forms give to economic activity provides a major facility for producers to minimise the risks, attract the investment and organise the undertakings associated with innovation.

The use of these facilities proves important in the attempts to capture the benefits of innovation. We have noted that the studies of success in innovation have shown how 'complementary assets' such as research and development know-how, process and production know-how,

dynamic learning economies, marketing networks, and organisation ability generally, are crucial to the capture of the benefits of innovation.²⁹ Much of this accumulative capacity is said to be too tacit, complex and idiosyncratic to be readily acquired and contained in discrete lumps of intellectual property. Firms who wish to control these complementary assets use contractual relationships to ration them in the market and closer forms of economic association such as merger to bring them in-house. Such a strategy has found legal expression for example through the obligations in contract to respect industrial and commercial confidences that are common in relationships between employers and employees or between members of joint ventures.³⁰ These obligations may be complemented by non-competition arrangements, such as trailing clauses, which limit generally the release and application of the specialised assets beyond the relationship.³¹ Producers also seek to obtain control over specialised assets by buying into and taking over the firms which embody them. The provision of the corporate form with legal personality, limited liability and transferable shares facilitates a trade in firms as commodities in their own right.³²

The state underwrites economic activity in a fundamental way by embodying and upholding these legal forms of private resource allocation. But it does more than provide an empty shell; it is active working on standards to guide the parties in their use of the forms. These standards give them information about contingencies and provide terms for their convenience in order to minimise potential breakdowns in the processes of exchange and accumulation. An example is the allocation of the risks in product liability law that novel and complex computer technology may fail.³³ Governments are involved in this activity, not only domestically, but also on an international level. For example, the Commonwealth Government is actively engaged in the attempt to standardise and harmonise the legal terms of trade in goods through such bodies as the United Nations Conference on International Trade Law³⁴ and in proceedings to settle technical standards for goods in such forums as the International Standards Organisation.³⁵

Yet the unqualified and non-judgemental support of this property and other market power can lead to anti-competitive and innovation inhibiting practices. Software production might again provide a pertinent example. A survey for the Organisation for Economic Cooperation and Development (OECD) has reported on the attempts of some hardware manufacturers to marginalise and drive smaller, independent software houses from the market.³⁶ Recently, the manufacturers are said to have employed such anti-competitive practices as supplying software exclusively for their own hardware, resisting attempts to standardise interfaces and move to open systems and software portability, withholding information about the interface requirements of their new hardware, and embedding the necessary software in their hardware as firmware. At the same time, the hardware manufacturers have been putting more investment into in-house software development. Where

they continue to go outside for development, particularly for application software, they select out particular suppliers and enter into exclusive distribution agreements. Cooperative research consortia have also been established between the manufacturers themselves. One of the software houses' responses to this challenge is the growing number of their own mergers. The houses have also entered into marketing cooperation arrangements.

COMPETITION POLICY

While property, contract and company law are largely agnostic about the use of their facilities in these ways, a common approach in Western economies is to employ a scheme of competition law to regulate the resulting restrictive trade practices which exploit the presence of such legal and other market power with anti-competitive purposes or effects. Such schemes characteristically proscribe a variety of anti-competitive practices. Some are specifically identified such as the use of exclusive and restrictive dealing arrangements. The schemes may also be concerned with mergers and other practices that can lead to market domination and with the subsequent anti-competitive use of such dominant market power. But does competition law represent an example of the bureaucratic-legal approach with a policy of clear rules and their general invocation against the undesirable practices?

THE CASE OF PATENT LICENSING

We can first illustrate with the attitude of competition law to the use of intellectual property power. Intellectual property power can be used by firms strong enough to stand alone in the market to keep innovations in-house, inhibit market entry by competitors, and lock-in customers.³⁷ It may also be used not so much as a means to exclude all others from access to innovations but to bargain and build the close, selective relationships necessary to the acquisition of complementary assets and the ordering of product markets with others.³⁸ Intellectual property can thus be deployed within technology transfers to subsidiaries, exclusive licensing agreements with outsiders, acquisition and merger with specialist firms, and pooling in research and development consortia and joint ventures.

The traditional policy of competition law has been to accept the presence of intellectual property as a kind of monopoly power and to seek to counterbalance the expression of that power by confining its uses for restrictive purposes. So, for example, the Australian trade practices laws make an explicit exception to the general operation of their provisions for the restrictive conditions of intellectual property assignments and licences so long as those conditions relate to the subject matter of the intellectual property.³⁹ This approach was recently

confirmed when the Commonwealth Government declined to take up its Industrial Property Advisory Committee's recommendation that the exception be removed, at least in the case of patents.³⁹ Such an approach does not however afford a blanket exemption from the operation of the trade practices provisions to the uses of intellectual property power such as patents. The conventional formula is to allow the restrictive arrangements provided they fall within the "scope of the patent."⁴⁰

Clearly, arguments can arise in the individual case over the necessity of a particular restriction as a means of protecting the subject matter of the intellectual property. Moreover, a case may be arguable that the benefits which flow from the security of the intellectual property outweigh the anti-competitive costs of the restrictive arrangement. In the seventies, in the key jurisdiction of the United States, the Department of Justice sought to avoid these disputes by ordering its policy according to rules and issuing to industry a list of proscribed practices which were deemed to be outside the scope of the patent.⁴¹ In the European Economic Community, the Commission also sought to settle its policy by passing a regulation in 1984 that listed restrictions which were deemed either to come or not to come within the scope of the patent. But more recent practices have indicated a softening of attitude by the authorities in both these jurisdictions to such licensing restrictions and the adoption of a more discretionary approach which is geared to the objective of promoting high technology. The changes are represented in a shift from a rule based or *per se* approach to restrictions in favour of an approach that discriminates between individual cases particularly on the basis of whether the economic benefits of the licensing arrangements outweigh their costs.⁴²

THE CASE OF RESEARCH CONSORTIA

A second example is the attitude of the competition authorities to the growing number of research and development consortia in which intellectual property is pooled or cross-licensed under restrictive conditions. Again, these ventures may both reduce competition between the parties and restrict diffusion of the innovations to those outside the venture, especially where the venturers are the large oligopolistic firms. In a survey for the OECD, Chesnais suggests that technology exchanges now "principally take place between firms of similar technological sophistication, possibly as part of loosely knit international oligopolies. Unless they are very specialised in unique assets, small firms experience great difficulties in becoming parties and more generally in gaining access to licences."⁴³ In an international economic order, these exclusive arrangements can become national concerns for countries such as Australia.⁴⁴

The anti-competitive implications of such compacts have not prevented the authorities from giving support to them in recent years.

In the United States, the *National Co-operative Research Act* of 1984 has provided that research and development joint ventures which meet certain qualifying criteria shall not be considered anti-competitive *per se* but instead will be subject to scrutiny in the individual case on the basis of their costs and benefits.⁴⁵ The Act has sought to maintain a distinction between pre-competitive research collaboration and production or marketing arrangements, but the challenge from the Japanese, especially in the semi-conductor market, is providing support for local production consortia, and there is a firm prospect now that the anti-trust regime will be further modified. In 1984, the European Community passed a regulation that provided a block exemption from anti-trust scrutiny for certain prescribed research and development joint ventures.⁴⁶ Joint ventures which do not qualify for the block exemption may still obtain individual exemption after notification to the European Commission if their restrictions contribute to the promotion of technical or economic progress while meeting certain other conditions.⁴⁷ The Commission has readily considered that joint ventures contribute to technical progress by promoting economies of scale, increased production and profit, the rationalisation of resources, improved supply, and risk sharing for example in research and development.

AUSTRALIAN TRADE PRACTICES LAW

These overseas examples suggest that the style of competition policy is not so much a rule based one as a more discretionary and particularistic approach which is sensitive to policy preferences like the promotion of local innovation. So too, in Australia, the trade practices laws generally provide a considerable amount of discretion to the administering agencies. While some trade practices are unlawful *per se* under the *Trade Practices Act* 1974 (Cth), other practices are only unlawful in the individual case if they are proved to have anti-competitive purposes or effects. Furthermore, the primary administering authority (the Trade Practices Commission) is empowered to authorise some kinds of anti-competitive conduct if it is satisfied that the public benefits outweigh the detriment to the public by the lessening of competition.⁴⁸ One exception to this authorisation power is the case of corporations which hold a substantial degree of power in a market and seek to take advantage of that power in anti-competitive ways. Additionally, the Commission exercises some discretion concerning the categories of offence which it pursues as a matter of priority and the types of action which it takes against offenders.

From time to time, the Commission has given indications of the benefits of anti-competitive practices. In its merger guidelines, for instance, the Commission has stated that mergers could be regarded as generating a public benefit by affecting a rationalisation of industry resulting in greater efficiency in the allocation of resources, or by

obtaining international competitiveness whether on Australian domestic markets or in the export field, or by making a higher contribution to significant research and development activity.⁴⁹ Certainly, from time to time, anti-competitive practices in the market for computer and related equipment have been authorised by the Commission.⁵⁰ The Commission's authorisations can nonetheless be subjected to review in the Trade Practices Tribunal. There is also some indication of a shift towards a more critical enforcement policy now, at least in relation to retailing practices in the computer consumer market.

FOREIGN INVESTMENT POLICY

If a major influence on a pattern of innovation in a small country such as Australia is the practices of the multi-national companies, then the operation of the foreign investment review policy is also important. In Australia, the high technology industries are concentrated in the hands largely of foreign-owned companies and the overwhelming proportion of computer technology is imported.⁵¹ Important then to the technological capability of Australian industry are the conditions on which the foreign nationals either establish local subsidiaries and acquire local firms or transfer technology internally and though licensing with outsiders.

The Commonwealth Government's foreign investment policy is almost purely a creature of executive act and individual decisions are highly discretionary. The power to screen foreign investment proposals is afforded to the Treasurer primarily by the provisions of *Foreign Takeovers Act 1975* (Cth).⁵² The body which screens proposals and advises the Treasurer, the Foreign Investment Review Board, has no legislative status. The Treasurer issues guidelines from time to time to inform the policy but these guidelines are very broad. The policy is most rule-like on the matter of which investment proposals do not need to be submitted to review. For example, in the manufacturing and service sectors, only the acquisition of businesses over five million dollars and the establishment of new businesses over ten million dollars are currently reviewed as a matter of course.⁵³ In the introduction to the Government's guide to foreign investors, the Treasury states in part that "the policy is administered in a practical manner and is based on guidelines rather than inflexible rules. In the majority of industry sectors, proposals are approved as a matter of course unless judged contrary to the national interest."⁵⁴

In previous years, the Treasury's guidelines indicated that a relevant consideration was the contribution which the proposed investment was likely to make to research and development activity or to technology transfer.⁵⁵ However, in recent years, the appraisal of investment proposals has been liberalised, so that, instead of weighing the costs and benefits of a proposal, the Board need only to consider whether an investment is contrary to a broad, unspecified criterion of the "the

national interest'. The record suggests that nearly all proposals for investment in the manufacturing sector are approved by the Board, though most are approved with conditions.⁵⁶ The conditions seem to relate predominantly to tax arrangements. In addition, the policy does not currently seem to include the review of the technology transfer practices of the foreign companies, either inwards to Australia or outwards, apart from those transfers which occur on the acquisition of a firm or the establishment of a business.⁵⁷

Foreign investment policy provides a good example of the Australian Government's attempt to manage the tension between the pressures on the one hand to uphold the liberal internationally established policies regarding the trans-national movement of capital and other commodities and the concerns on the other hand to ensure an adequate level of local capability and opportunity in the high technology industries. In material terms, the Government considers it essential to encourage foreign investment so that the country may obtain the benefits of scale and concentration through resource rationalisation, research and development sophistication, and access to overseas markets.⁵⁸ Its open policy is said to be a realistic recognition of Australia's as a subsidiary position in the order of the new international economy where the major strategic decisions are made by companies overseas and where the multi-nationals can choose to go elsewhere if the local conditions do not suit them.⁵⁹

Yet there is evidence that the conditions on which the foreign companies operate in the high technology markets and in particular the conditions on which they transfer technology, are not so favourable to Australia. Critics suggest that Australia could perhaps bargain harder, as some other small nations seem to have done, over the conditions on which the multi-nationals participate in the local economy.⁶⁰ But Australia's policy may also be the result of its subscription to the legitimacy of the international liberal trade and investment policies of international bodies like the OECD and General Agreement on Tariffs and Trade (GATT), which recommend the free movement of goods and no less favourable treatment for foreign enterprises. It is perhaps difficult for a country such as Australia, which shares both some of the characteristics of the industrialised nations and of the third world nations, to find an appropriate position in international forums. Australia regards itself however as a full member of these organisations and participates actively in their resolutions.⁶¹

FINANCIAL ASSISTANCE TO INDUSTRY

In recognition of the economic significance of the higher technology industries and the strategic position of individual companies, many Western governments have moved beyond their market oriented policies into more direct and discriminating measures of support for innovation. But, rather than regulate the direction of investment, they have sought

to influence it positively through selective inducements such as tax concessions and cash grants for research and development or venture capital expenditure. The best known examples of this approach in Australia are the grants for industrial research and development scheme, the tax concession for research and development expenditure, and the tax concession for venture capital invested in certain high technology businesses, but a variety of *ad hoc* assistance has also been provided, for example through the appropriations to the Commonwealth Department of Industry, Technology and Commerce for the communications equipment strategy and for space technology research and development.⁶²

These forms of assistance represent a mixture of the bureaucratic-legal and purposive action approaches. The most important has been the tax concession for expenditure on research and development activity. The concession still works very much indirectly and at arms length from the private sector. It relies on the decisions of private firms to respond to the inducement and to apply it to the activity the Government seeks to promote. The enabling legislation, the *Income Tax Assessment (Research and Development) Act 1986* (Cth) does lay down some basic eligibility criteria particularly in regard to the definition of research and development, the scope of concessional expenditure on this activity and the need for the research and development to be properly exploited to the benefit of the Australian economy. But the categories are broad and open to interpretation and in some respects they confer correlative rights to the assistance on taxpayers. Indeed, the kind of approach taken in the tax concession has been praised for its openness and detachment. It allows private firms to choose the projects which maximise their competitiveness without direct government involvement in the type, size or timing of their programs.⁶³

It is a feature of the same package, however, that the concession, being an indirect and general measure, does not place the Government in a position to steer the pattern of research and development activity in the directions most favourable to its policy. The concession provides no guarantee that the overall rate of research and development will be increased, not at least at a net social benefit. It might for instance fund research and development that would have been undertaken in its absence. The scheme is still in the process of evaluation, but the early work of the Bureau of Industry Economics suggests that the concession has raised the level of local investment in research and development and, more importantly perhaps, the level of local consciousness and experience.⁶⁴ The net benefit from the policy, after allowing for the revenue foregone and the administrative costs, remains to be identified.

The quality of the activity which is being funded has been another concern. The concession has encountered the familiar hazard for the taxation system which we see in the manipulation of the provisions at the margins and the artificial construction of eligible claims. The schemes has had several devices built into it to screen claims, such as

the requirement of registration by claimant companies, but these devices have depended heavily on the resources of the Australian Taxation Office and the Industry Research and Development Board. This hazard has been underlined by the report of the Auditor-General's efficiency audit which has raised concerns about the level of assessment of individual claims.⁶⁵ The Auditor-General found that in the early days of the scheme the Board was unable to screen all applications for registration individually. The eligibility of expenditure for the concession had been verified by the Office in only about two per cent of claims. Latterly, procedures have been tightened up.

The problem of creative accounting or financial engineering, along with some genuine ambiguities in the legislation, led the Commissioner of Taxation to issue several detailed rulings on aspects of entitlement. But the policy of the Commissioner remains subject, at least in part, to review in the Commonwealth Administrative Appeals Tribunal in the well-established legal appeal structure of the taxation system. (In 1988, the Commonwealth Administrative Review Council recommended to the Government that several of the remaining areas of discretionary administrative decision-making under the scheme be subjected to review on their merits in the Tribunal.⁶⁶) The Government was obliged in 1988 to tighten up the provisions of the Act, yet in 1989 it signalled another move to close loopholes.⁶⁷

The administration of the grants for industrial research and development represents an attempt to exercise more administrative control over the purposes for which the assistance is applied in the individual case. After suggestions that the scheme's predecessor, the Australian Industrial Research and Development Incentives Scheme, was funding activity that would have been undertaken in any case, the Government decided to target grants to start-up companies in high technology areas.⁶⁸ While some basic definitions were installed in the enabling legislation, the *Industry Research and Development Act* 1986 (Cth), the targetting was left very much to the Minister for Industry, Technology and Commerce. The Minister has for example issued directions to the administering agency, the Industry Research and Development Board, prescribing the criteria for the assessment of applications in the category of discretionary grants and nominating the fields for the allocation of grants in the category of generic technology grants. The Board has elaborated on these prescriptions.

The selection of the individual applications which are suitable for grants still lies very much with the Board and its technical assessors. The Board comes in for inevitable criticism about the choices it makes. These decisions are not subject to appeal in the Tribunal. In his report, the Auditor-General expressed doubts about whether the applications for discretionary grants were being systematically screened to ensure that the projects were really being run by start-up companies which would not be eligible for the tax concession and would not be able to proceed without the grant.⁶⁹ The Auditor-General was also critical of the level

of the Board's prescription, documentation and monitoring of the conduct of projects in the category of generic technology grants. Despite its modest dimensions, the grants scheme is likely to continue to attract criticism because it involves the administering agency in the job of "picking winners" and discriminating between ventures.

GOVERNMENT AS ENTREPRENEUR

Yet, even the provision of financial inducements has appeared to some government policy makers to be too uncertain and indirect a means of promoting innovation. Governments have deployed their agencies to participate directly in the establishment and operation of particular firms and ventures. As we noted initially, government's concern for real results has led it deeper into the realm of industrial entrepreneurship and the management of commercial undertakings. Governments in Australia have long supported research institutions, industrial instrumentalities and commercial enterprises in the public sector. In their efforts to stimulate local innovative activity, the governments have moved however to gear these agencies directly to the fulfillment of economic objectives for example through their commitment to commercial ventures. The approach has been not so much to extend the public sector's own role by moving into production and supply but by passing over resources to the private sector and collaborating in their commercialisation. The central executive policy makers of government have not simply urged and encouraged the various agencies to orient themselves to the private sector; they have also become actively involved in organising these collaborative relationships between the public and private sector.

In this vein, government industry development corporations such as the Australian Industrial Development Corporation and the Victorian Economic Development Corporation provided equity finance to local high technology start-up firms. The inventions of the public research institutions like the universities, the Commonwealth Scientific and Industrial Research Organisation, and the Defence Science and Technology Organisation, have been licensed to the private sector for commercialisation, and there is now private sector input into the planning of some research work. The Commonwealth Government has established a national procurement development program to mobilise government agencies to trial innovative products which are supplied by indigenous information technology firms.⁷⁰ The Victorian Government organised a research and development consortium between the State's prominent medical research institutes, private firms and the Victorian Economic Development Corporation.

Similar, and perhaps even more intensive examples of the same approach can be seen in the established industrial sectors. In return for local investment, governments have reached special purpose development agreements with mining, refining, and urban development companies

to settle such matters as permissions for projects, the contribution from public works, the extent of royalties, and the provision for local sub-contracting opportunities.⁷¹ The Commonwealth Government has developed industry plans with employers and unions in target industries which combine government assistance such as soft loans with efforts by the private sector parties to modernise production, especially through the exploitation of computer technology.⁷² Perhaps the most ambitious combination of these techniques will be inspired by the promotion of the "multi-function polis".⁷³

THE RATIONALE FOR THE PARTICIPATORY APPROACH

The economic rationale for such an industry-oriented participatory approach is often strong. The governments identify gaps in the operations of the private market which they endeavour to fill with their own initiatives. One such gap has been the failure of the market to support local start-up commercialisation ventures. In its technology statement, the Victorian Government commented that "the successful transmission of scientific ideas to the stage of commercial development will depend critically on the infra-structure in place to support private developments in the intermediate business stages."⁷⁴ Another has been the reluctance of the foreign producers to support innovative activity within Australia through their subsidiaries and contractors. Operating on an international scale, a scale enhanced by the new technology itself which permits communication and organisation to take place in a disembodied form, these large private interests can not be easily coopted to a national policy, and much of their research and development for example can if they wish be conducted elsewhere, often at bases located close to their major production facilities and markets.⁷⁵

The approach also has an internal operational rationale. Exercising government powers through the medium of administrative arrangements or contractual relations has the appeal of avoiding the complexity and rigidity of parliamentary legislation and judicial review.⁷⁶ So many of these measures of support are legally sourced in broad permissive statutory frameworks or even in simple budgetary appropriations. They may be operated within more or less formally defined administrative schemes, involving the use of ministerial directions, agency guidelines and other kinds of "quasi-legislation" in order to structure the criteria by which individuals decisions are to be made.⁷⁷ Often they delegate the discretion to select the individual beneficiaries to specialist administrative agencies and all manner of hybrid commissions and councils involving business and other private sector representatives in their decision-making. Such bodies may not enjoy any legislative status. In some cases, the administration of the particular support measure is given over to a joint venture, trading company or other commercial association which operates only under the general standards of contract

and business law. The result of these arrangements is to distance the support activity from the traditional forums of legal accountability. But at the same time the form provides greater scope for executive direction of the agencies' mission, the exercise of managerial discretion over the conduct of the agencies' work, and participation by the private sector interests in the agencies' decision-making.⁷⁸

An example of this approach is the offsets program. The offsets program has not enjoyed a legislative status. The policies and procedures are represented in a number of informal processes such as the Ministerial guidelines which are set for the various purchasing authorities, the supervision provided by an offsets authority within the Department of Industry, Technology and Commerce of the particular offsets arrangements, and the agreements reached with the successful suppliers.⁷⁹ A related scheme, the partnerships for development, has involved negotiations directly between the Minister for Industry, Technology and Commerce and the head offices of the major transnational corporations such as DEC, Unisys, Honeywell-Bull, Wang and IBM. The scheme to redirect the orientation of research in the higher education institutions provides another example. While the enabling acts passed in 1988 provided some legislative recognition to the Department of Employment, Education and Training's new advisory bodies such as the National Board and the sectoral Councils, it failed to structure the centralised executive and administrative decision-making process. It did not define the roles and powers of the various agencies in matters of policy and administration generally, or prescribe the policy framework for the determination of such key standards as the national priorities so important to the allocation of resources, or order the procedures for the fixing of grants for example through the negotiation of educational profiles with the individual education institutions.⁸⁰

ADVERSE REACTIONS

Both within the public sector and without, concerns have been raised about the legitimacy of this style of operation. One area of concern seems to be the nature of the agencies' relationship with the private beneficiaries of their support. Those criticisms take several forms. There is opposition on the basis that the strategy discriminates between sectors and industry and favours particular firms and ventures. Such criticisms comes of course from others who also wish to have economic benefits conferred upon them by government. But the awards may also discriminate by creating a competitive advantage in the market for the recipients of assistance, for example by allowing it to reduce its prices or boast its reliability. So for example, the Victorian Employers' Federation argued that the Victorian Government's recent policy of taking equity in high technology export oriented companies was likely to lead to discrimination against firms in the state's more established

industries, as the Government became more committed to the success of its preferred ventures.⁸¹ Local information technology firms were concerned that the Commonwealth Government's partnerships for development strategy within the offsets scheme would lead it to favour the foreign suppliers in the award of contracts. These suppliers would also outbid them in the market for scarce research and development resources.⁸²

A criticism in a similar vein suggests that the measures dispense largesse and legitimacy to the favoured firms without obtaining in return much in the way either of commitment to the program objectives or of performance in material terms.⁸³ There is of course criticism of the financial cost of the support measures. It is also suggested that the strategy of direct and selective support confers legitimacy upon the ventures of the beneficiaries. For example, the manager of the Victorian Government's "nascent technology ventures program" was quoted as saying that "a major contribution of the program to start-up firms is credibility. The link with an educational institution has provided start-ups with an image of having broadly based and highly stable support structures. These images help them to attract bank funding and product orders."⁸⁴ In the VEDC controversy, private creditors of the favoured companies cited the Corporation's involvement as a major influence upon the attitude which they took to the companies, both in investing initially and in holding off from foreclosing.⁸⁵

The Government agencies rely more upon careful screening before making awards and upon the threat of withdrawing their goodwill than upon the strength of legally binding obligations to obtain returns on the investment of their resources. Where undertakings are obtained, they are likely to be confined to good faith and best endeavours obligations which are hard to measure.⁸⁶ Queries have been raised then about the yield from the various measures. For example, while the Commonwealth Government has declared its intention that the commitments to offsets be legally binding, not all the successful suppliers have complied with their offsets arrangements in the past.⁸⁷ In addition, doubts have been raised about the quality of the local research and development and technology transfer which has been arranged, and difficulties have been encountered in monitoring the value of such offsets.⁸⁸ The experience and expertise of some public agencies in choosing the appropriate recipients of support has also been queried. This type of criticism was the main theme of the special auditor's report to the Parliament on the VEDC'S performance.⁸⁹

ACCOUNTABILITY AND THE RULE OF LAW

The criticisms also take on a constitutional theme as they perceive a blurring of the line between the public and private sectors and the development of a conflict between the strategies of economic

management and the rule of law. Broadly, governments are criticised for compromising their sovereignty by bypassing the usual rule bound procedures and treating some companies as co-equal partners in a bargaining relationship over policy implementation.⁹⁰ Special development agreements are a case in point.⁹¹ The strategy affords the private interests a position inside the administrative process without making them accountable for the policies developed and the decisions taken.⁹² The proliferating use of private sector representatives, especially on the many non-statutory bodies such as the high technology councils and committees, comes to mind.⁹³

Moreover, the involvement of public agencies in commercial ventures with private parties risks a conflict of interest between the agencies' public functions and their commercial obligations. Such a tension is most pronounced where the agencies do not simply trade at arm's length with a private sector firm but are engaged on an ongoing basis in the management and fortunes of commercial associations such as joint ventures and special purpose companies. Tensions may develop between their public and private roles where for example the government agencies are involved in enterprises that are bidding for contracts or for other government support, that are running adrift of general regulatory requirements such as trade practices or public health provisions, or that are putting suppliers, investors, creditors, employers and so on at risk.⁹⁴ The special auditor cited the conflicts experienced by VEDC officials as directors of their beneficiary companies as a reason why remedial action was not taken quickly enough.⁹⁵

It may not simply be a matter of the agencies which are involved in the promotion of innovation being called to account for the money they spend. The agencies may also have regulatory and other public responsibilities to discharge which come into conflict with a promotional objective. For example, purchasing agencies may have a responsibility to obtain the most technically sound and reasonably priced equipment for the government, health authorities to fund the safest and most efficacious pharmaceutical products, and the education authorities to engage in an open and critical inquiry into industry and government practices. Particular agencies may therefore resist the mixture of promotion and regulatory functions; certainly some tension may be experienced within government between agencies which are assigned different missions.

THE ROLE OF THE COURTS

Such criticisms can of course lead calls for government to retract to a more limited role in the economy. Demands are commonly made that governments stop spending money on commercial enterprises and leave investment decisions to the private sector. For example, the pressure currently to privatise more sections of the telecommunications market

is enormous. More qualified responses call for the institution of greater accountability in the conduct of such public enterprises. Amongst the constituency we might describe as the “constitutionalists”, this call often translates into a desire to make the decision-making accessible to review in the courts.⁹⁶ As the courts focus on the legality of administrative decision-making, the opportunities for review depend largely on the extent to which the approach to implementation involves the specification of the powers, decision-making criteria, and procedures of the agencies in legislation or some other law. In this sense, the constitutionalists favour a bureaucratic-legal approach.

We can see this focus recognised in the Commonwealth Administrative Review Council’s recent consideration of the scope for expanding the courts’ review of Commonwealth Government officer decisions under the *Administrative Decisions (Judicial Review) Act 1977* (Cth).⁹⁷ The Council considered the amenability to review of a number of decisions connected with the administration of industry assistance including contract and tender decisions, decisions in non-statutory schemes and decisions of bodies established by executive order. On the whole, the Council’s response to submissions for the extension of judicial review under the Act was cautious. It did nonetheless recommend that decisions of an administrative character made by an officer of the Commonwealth under a non-statutory scheme or program should be reviewable decisions where its funds are authorised by an appropriation made by the Parliament.⁹⁸ But the opportunities for review also depend upon the courts’ own preparedness to question administrative action. The courts’ own requirement that an applicant have sufficient interest in decisions (standing to sue) generally confines the opportunity to obtain review to those in the eligible class who are denied an award by government. Where review is permitted, the courts’ own enquiry is commonly confined in any case to the presence of an overreach of authority, procedural unfairness in the decision-making, or to other limited matters which the courts consider are “justiciable”.⁹⁹

In some jurisdictions in Australia, parliament may empower a specialist administrative appeals tribunal to review the merits of administrative decisions within a particular scheme. We have noted for example that the Administrative Review Council argued for a wider jurisdiction for the Commonwealth Administrative Appeals Tribunal in the case of federal industry research and development assistance.¹⁰⁰ To some extent, however, these tribunals share the structural limitations under which the courts operate in reviewing the administration of government policy. The expertise of their personnel to decide questions of technical and economic judgement can be limited.¹⁰¹ Moreover, the tribunals must depend upon the way claims are fed to them by the grievants and they must arbitrate within the confines of the particular disputes.¹⁰² The courts and tribunals have a tendency to translate broad collective issues into questions of individual rights. Accountability for the overall programmatic thrust of a policy is likely to depend upon the

opportunities for a review within other government institutions such as the parliaments, the central executive agencies, and the administering agencies themselves, where proactive and systematic policies can be developed.

THE ROLE OF THE PARLIAMENTS

In Australia, latterly, accountability for the innovation support measures has been translated into a question of accountability to parliament, its committees and officers. As we have noted, accountability to parliament begins with the enactment of the scheme and the extent to which the government observes for example the conventions that an ongoing program of expenditure requires the introduction of specific "permanent legislation". But accountability has also been translated into terms of the opportunities afforded for the periodic review of the programs, through requirements for instance that ministerial directives and other working policies be tabled in parliament, annual reports be made by the agencies, and information be provided to parliamentary committees. For these means to work, in the first place, much depends upon the quality of the procedures used in the agencies themselves for managing and monitoring their decision-making, and the initiatives by the Commonwealth and some State Governments to upgrade their internal systems have been of assistance here.¹⁰³

The opportunities also depend upon the continuing preparedness of the governments to tolerate the often uncomfortable experience of review. Experience with the innovation support measures have revealed some ambivalence among governments on this score. Their attitudes to the role of the auditors-general provides an example. Disputes have arisen for instance over the proper reach of the auditor-general's jurisdiction. As the administration of the measures has become more distanced from the conventional core of government, such as the departments of the Crown and the statutory authorities, the auditors-general have expressed concern over the loss of jurisdiction to the authority of private auditors operating under the general companies legislation.¹⁰⁴ Disputes have also arisen over the scope of the auditor-general's enquiry into any particular program and the dividing line between the audit of financial performance and the appraisal of government policy.¹⁰⁵ Another illustration of this ambivalence is afforded by government's response to the application of the freedom of information legislation. Governments have on occasions cited the commercial sensitivity of the information about their dealings with the private sector as a reason for exemption from the requirements of such legislation.¹⁰⁶ At the same time, it should be noted that the Commonwealth Government has allowed its innovation support measures to be reviewed extensively by expert standing bodies such as the Australian Science and Technology Council and the Bureau of Industry Economics and by a number of *ad hoc* committees of review.

CONCLUSIONS

Of course it is not possible to sum up the complex relationship between law and policy in the field of innovation. There are for instance many more legal developments which we have not been able to mention here. The writer hopes to deal with some of them in an extended work. Very tentatively, it might be suggested on the strength of the examples considered here that the law has been involved with innovation policy in recent years. We can talk of the law as an object and instrument of policy. But law has its own internal characteristics and external associations which limit its malleability and deployability in the implementation of policy.

This feature of the law is illustrated by the experience with the purposive action approach. The approach engenders a loss of faith in the state's preparedness to guarantee the categorical and formally equivalent legal conditions for the conduct of private economic activity and to maintain the "rule of law" generally.¹⁰⁷ The institutions of the law are placed under stress as the state moves from a legitimacy based on its role in upholding this liberal form of law to a legitimacy which is contingent on its success in particularised management of the economy.¹⁰⁸ The concern for the rule of law is often linked with a preference for the support of private rights such as property and trading rights. The state encounters a strong lobby, not only to prevent further encroachment into the sphere of private economic autonomy, but also for the creation of private rights over new resources, the privatisation of public assets and the legalisation of claims to government subsidies and services.¹⁰⁹

The strength of the liberal legal form provides a source of independence to producers from the aspirations of the government of the day. But government, especially in a country like Australia, cannot readily ignore or override the claims of this form. While it is dependent on the cooperation of the producers for the success of its modernising programs, it can be played off against other governments in an international economy for the legal support which the producers desire. Consequently, government seeks a means to induce the private sector to deploy its rights in the cause of innovation. It is inclined to turn to incentives and inducements rather than directives to achieve this end, especially where it is seeking to influence a small number of powerful economic actors to engage in innovative activity on a long-term basis.¹¹⁰ The purposive action approach becomes an approach with limited goals, employed not so much to replace or direct private economic activity as to create a bargaining and bartering relationship with industry in order to maximise the realistic prospects of "getting things done".¹¹¹

NOTES AND REFERENCES

1. C. Offe, 'The Theory of the Capitalist State and the Problem of Policy Formation', in L. Lindberg (ed.), *Stress and Contradiction in Modern Capitalism: Public Policy and the Theory of the State*, Lexington Books, Lexington, Massachusetts, 1975, p. 125.
2. J. Commons, *The Legal Foundations of Capitalism*, Macmillan, New York, 1924.
3. C. Offe, in J. Keane (ed.), *Contradictions of the Welfare State*, Hutchinson, London, 1984.
4. T. Prosser, 'Towards a Critical Public Law', *Journal of Law and Society*, 9, 1982, p. 1. Also see J. Winkler, 'The Corporatist Economy: Theory and Administration', in R. Scase (ed.), *Industrial Society: Class, Cleavage and Control*, St. Martin's Press, New York, 1977, p. 43.
5. R. Joseph, 'The Politics of High Technology in Australia', *Prometheus*, 7, 1989, p. 103.
6. C. Freeman and B. Lundvall (eds), *Small Countries Facing the Technological Revolution*, Printer Publishers, London, 1988.
7. K. Pavitt, 'Sectoral Patterns of Technical Change: Towards a Taxonomy and a Theory', *Research Policy*, 13, 1984, p. 311.
8. F. Chesnais, 'Science, Technology and Competitiveness', *STI Review*, 1, 1986, p. 85.
9. Freeman and Lundvall, *op.cit.*
10. For example, A. Wineburg, 'The Japanese Patent System: A Non-Tariff Barrier to Foreign Business?', *Journal of World Trade Law*, 22, 1988, p. 11. Some attention is now being paid to such practices in international forums such as GATT, as it is to the discriminatory use of positive assistance in favour of local business.
11. Commonwealth of Australia, Bureau of Industry Economics, *Studies in Industrial Development and Innovation Policy, Introduction and General Overview*, AGPS, Canberra, 1987.
12. S. Wilks and M. Wright (eds), *Comparative Government-Industry Relations*, Clarendon, Oxford, 1987.
13. B. Edelman, *Ownership of the Image: Elements for a Marxist Theory of Law*, Routledge and Kegan Paul, London, 1979 (translated by E. Kingdom).
14. N. Henry, *Copyright, Information Technology and Public Policy Part I: Copyright — Public Policies and Part II: Public Policies — Information Technology*, Marcel Dekker Inc., New York, 1975 and 1976.
15. Parliament of the Commonwealth of Australia, Senate, *Copyright Amendment Bill 1984 — Explanatory Memorandum*, Canberra, 1984.
16. B. Ringer, 'Copyright Law Revision: History and Prospects', in G. Bush (ed.), *Technology and Copyright: Annotated Bibliography and Source Materials*, Lomond Systems, Mt. Airy, Maryland, 1972, p. 287.
17. J. Lockhardt, 'Copyright and Advancing Technology', *Copyright Reporter*, 2, 4, 1984, p. 9.
18. J. Emerson, 'Computer Software: Detailed Enquiry Needed Before Legislation', *Law Institute Journal*, 58, 1984 p. 514.
19. Commonwealth of Australia, Industries Assistance Commission, *Computer Hardware and Software; Typewriters, Calculating and Other Office Machines; Parts and Accessories; Recording Media*, AGPS, Canberra, 1984.
20. T. Mandeville, D. Lamberton and E. Bishop, *Economic Effects of the Australian Patent System: A Commissioned Report to the Industrial Property Advisory Committee*, AGPS, Canberra, 1982, p. 138.
21. J. Court, 'The Politics of Copyright and the Problem of Home Taping', *Copyright Reporter*, 4, 2, 1986, p. 22.
22. Parliament of the Commonwealth of Australia, *Parliamentary Debates, House of Representatives, Weekly Hansard*, No. 8, p. 3141, 7 June 1984, Copyright Amendment Bill.
23. M. Kindermann, 'The International Copyright of Computer Software: History, Status and Developments', *Copyright — Monthly Review of the World Intellectual Property Organisation*, April 1988, p. 201.

24. M. Weber, *On Law in Economy and Society*, Harvard University Press, Cambridge, 1954 (translated by E. Shils and M. Rheinstein).
25. Commonwealth of Australia, Attorney-General's Department, *National Symposium on Legal Protection of Computer Software*, Canberra, 1984.
26. E. Gaze, 'The Circuit Layouts Bill 1988/89' *Law Institute Journal*, 63, 1989, p. 488.
27. Organisation for Economic Cooperation and Development, *Biotechnology and Patent Protection: An International Review*, OECD, Paris, 1985.
28. D. Teece, 'Capturing Value From Technological Innovation: Integration, Strategic Partnering, and Licensing Decisions', in B. Guile and H. Brooks (eds), *Technology and Global Industry: Companies and Nations in the World Economy*, National Academy of Engineering Press, Washington, 1987, p. 65.
29. H. Pearson, *Computer Contracts: An International Guide to Agreements and Software Protection*, Kluwer, London, 1984. The protection of confidences such as trade secrets leads on to the question of treating information *per se* as property and the criminalisation of unauthorised access and disclosure. A related question is the restrictions on transmission in the interests of national security, see, for example, D. Wilson, 'Federal Control of Information in Academic Science', *Jurimetrics Journal*, 27, 1987, p. 283.
30. F. Neumeyer, *The Employed Inventor in the United States: R & D Policies, Law and Practice*, MIT Press, Cambridge, Massachusetts, 1971.
31. Some commentators do argue that the trade in companies has reached the point where it is interfering with the long range planning and investment that is necessary to see innovation through to industrial success.
32. G. Hughes, 'Australian Computer Law and the English Experience', *Australian Business Law Review*, 16, 1988, p. 208.
33. Commonwealth of Australia, Attorney-General's Department, *Annual Report 1987-1988*, AGPS, Canberra, 1988.
34. For example, standards for automatic scanning technology, *The Age*, 27 February 1989.
35. Organisation for Economic Cooperation and Development, *Software: An Emerging Industry*, OECD, Paris, 1985.
36. R. Delamarter, *Big Blue: IBM's Use and Abuse of Power*, Pan Books, London, 1988.
37. G. Bertin and S. Wyatt, *Multinationals and Industrial Property: The Control of the World's Technology*, Harvester Wheatsheaf, Hemel Hempstead, England, 1988.
38. S. Ricketson, *The Law of Intellectual Property*, Law Book Co., Sydney, 1984.
39. D. Lamberton, 'Patent Reform in Australia', *Prometheus*, 5, 1987, p. 73.
40. J. Venit, 'In the Wake of Windsurfing: Patent Licensing in the Common Market', in B. Hawk (ed.), *United States and Common Market Anti-Trust Policies*, Annual Proceedings of the Fordham Corporate Law Institute, Matthew Bender, New York, 1987.
41. *ibid.*
42. J. Koob, 'Anti-Trust Laws in America', *Prospect: Journal of the British Technology Group*, 1, 1987-1988, p. 22.
43. Chesnais, *op.cit.*, p. 107.
44. Commonwealth of Australia, Australian Science and Technology Council, *Mechanisms for Technology Transfer into Australia*, AGPS, Canberra, 1986.
45. D. McInerney, 'Anti-Trust Scrutiny of Joint R & D Ventures in the US and the EEC', in B. Hawk (ed.), *op.cit.*
46. T. Frazer, 'Competition Law: Mapping the Minefield', *Computer Law and Practice*, 3, 1987, p. 199.
47. J. Claydon, 'Joint Ventures — An Analysis of Commission Decisions', *European Competition Law Review*, 14, 1986, p. 151.
48. M. Brunt, 'The Use of Economic Evidence in Anti-Trust Litigation in Australia', *Australian Business Law Review*, 14, 1986, p. 261.

49. CCH Australia, *Australian Trade Practices Reporter*, CCH, Sydney, 1983 and updates, #60,688.
50. Commonwealth of Australia, Trade Practices Commission, *Annual Report, 1984-1985*, AGPS, Canberra, 1985, p. 42.
51. R. Johnston, 'The Control of Technological Change in Australia', in S. Hill and R. Johnston (eds), *Future Tense? Technology in Australia*, University of Queensland Press, Brisbane, 1983, p. 89.
52. D. Flint, *Foreign Investment Law in Australia*, Law Book Company, Sydney, 1985.
53. Commonwealth of Australia, Department of the Treasury, *Australia's Foreign Investment Policy — A Guide for Investors*, AGPS, Canberra, 1989.
54. *ibid.*, p. 1.
55. Flint, *op.cit.*
56. Commonwealth of Australia, Department of the Treasury, *Foreign Investment Review Board, Report 1987-1988*, AGPS, Canberra, 1989.
57. P. Morris, 'Australia's Dependence on Imported Technology — Some Issues for Discussion', *Prometheus*, 1, 1983, p. 144.
58. Commonwealth of Australia, Bureau of Industry, Economics, *Importing Technology*, Research Report No. 25, AGPS, Canberra, 1988.
59. Australian Science and Technology Council, *Technology Transfer*, *op.cit.*
60. P. Grant, 'Technological Sovereignty: Forgotten Factor in the "High-Tech" Razzamataz', *Prometheus*, 1, 1983, p. 239.
61. Commonwealth of Australia, Attorney-General's Department, *Annual Report 1986-1987*, AGPS, Canberra, 1987, p. 67.
62. Commonwealth of Australia, Department of Industry, Technology and Commerce, *Annual Report 1987-1988*, AGPS, Canberra, 1988.
63. Commonwealth of Australia, Department of Industry, Technology and Commerce, *Annual Report 1986-1987*, AGPS, Canberra, 1987.
64. Commonwealth of Australia, Bureau of Industry Economics, *The 150% Tax Concession for Research and Development Expenditure — Interim Report*, Program Evaluation Report 7, AGPS, Canberra, 1989.
65. Commonwealth of Australia, Auditor-General, Efficiency Audit Report, Industry Research and Development Board and Department of Industry, Technology and Commerce: *Taxation Concessions and Grants for Industry Research and Development Schemes*, AGPS, Canberra, 1989.
66. Commonwealth of Australia, Department Review Council, *Review of Decisions Under Industry Research and Development Legislation*, Report No. 31, AGPS, Canberra, 1988.
67. *The Age*, 8 September 1989.
68. Commonwealth of Australia, Department of Industry, Technology and Commerce, *The Promotion of Indigenous IR&D in Australia and the Effectiveness of the Industrial Research and Development Incentives Scheme — A Summary Report*, Price Waterhouse, Canberra, 1985. Generally, see S. MacDonald, 'Theoretically Sound: Practically Useless? Government Grants for Industrial R and D in Australia'. *Research Policy*, 15, 1986, p. 269.
69. Auditor-General, *op.cit.*
70. Commonwealth of Australia, Department of Industry, Technology and Commerce, *Australian Technology Newsletter*, no.11, April/May 1989.
71. B. Head (ed), *The Politics of Development in Australia*, Allen and Unwin, Sydney, 1986.
72. Commonwealth of Australia, Department of Industry, Technology and Commerce *Annual Report 1986-1987*, AGPS, Canberra, 1987.
73. D. Yencken, 'The Multi-Function Polis: Social and Strategic Issues', *Australian Planner*, 27, 2, 1989, p. 22.
74. State of Victoria, *Technology Statement*, Government Printer, Melbourne, 1986, p. 57.
75. R. Krommenacker, 'The Impact of Information Technology on Trade Interdependence', *Journal of World Trade Law*, 20, 1986, p. 381.

76. T. Daintith, 'The Executive Power Today: Bargaining and Economic Control', in J. Jowell and D. Oliver (eds), *The Changing Constitution*, Clarendon, Oxford, 1985, p. 174.
77. G. Ganz, *Quasi-Legislation: Recent Developments in Secondary Legislation*, Sweet and Maxwell, London, 1987.
78. J. Halligan and M. O'Grady, 'Public Sector Reform: Exploring the Victorian Government Experience', *Australian Journal of Public Administration*, XLIV, 1985, p. 34.
79. P. Liesch, 'The Australian Government Offsets Program', *Prometheus*, 4, 1986, p. 306.
80. C. Howard, 'Minister Has Become Education Czar', *The Age*, 27 June 1989.
81. *Australian Financial Review*, 20 July, 1987.
82. *Computerworld*, 14 September 1987.
83. G. Ganz, *Government and Industry: The Provision of Financial Assistance to Industry and Its Control*, Professional Books, Abingdon, United Kingdom, 1977.
84. J. Matthews, *Proposal to Establish a Victorian Technology Incubator Facility in the Western Suburbs with a Link to Tertiary Institutions — Background Paper and Consultancy Brief*, Resources Coordination Division, Ministry of Education, Melbourne, 1984, p. 31.
85. *The Age*, 23 February 1989.
86. Ganz, *Government and Industry*, *op.cit.*
87. Parliament of the Commonwealth of Australia, Joint Committee of Public Accounts, *Implementation of the Offsets Program*, Canberra, 1987.
88. Commonwealth of Australia, Bureau of Industry Economics, *Monitoring of the Offsets Program — First Report*, Program Evaluation Report no.3, AGPS, Canberra, 1987.
89. Parliament of the State of Victoria, *Report of Inquiry — VEDC*, Government Printer, Melbourne, 1989 (the report by the special auditor, Mr. Fergus Ryan).
90. P. Cameron and S. Midgeley, 'Contract, The Rule of Law, and the Liberal-Democratic State: The Case of Britain and North Sea Oil', *International Journal of the Sociology of Law*, 10, 1982, p. 239.
91. M. Berry and M. Huxley, 'Property Development, Capital Switching and State Intervention: Studies of Melbourne Australia', *Paper Presented to the International Sociological Association*, Urban and Regional Development Research Committee Conference, Hong Kong, August 1985.
92. G. Lawrence, 'Biotechnology: Sunrise or Sunset?', *Journal of Australian Political Economy*, 17, 1984, p. 3.
93. Parliament of the Commonwealth of Australia, Senate Standing Committee on Finance and Government Operations, *List of Commonwealth Bodies*, AGPS, Canberra, 1987.
94. E. Harman, 'Government and Business in Western Australia 1983-1985: Legal and Political Aspects of the New Hybrid Enterprises', *Australian Journal of Public Administration*, XLV, 1986, p. 247.
95. *Report of Inquiry — VEDC*, *op.cit.*, p. 5.
96. For example P. Bayne, 'Administrative Law and the New Managerialism in Public Administration', *Canberra Bulletin of Public Administration*, 58, 1989, p. 39.
97. Commonwealth of Australia, *Administrative Review Council, Report to the Attorney-General, Review of The Administrative Decisions (Judicial Review) Act: The Ambit of the Act*, AGPS, Canberra, 1989.
98. J. Goldring, 'The Values Inherent in Judicial Review', *Canberra Bulletin of Public Administration*, 58, 1989, p. 78.
100. Administrative Review Council, *Review of Decisions Under Industry Research and Development Legislation*, *op.cit.*
101. M. Kirby, 'Beyond Frontier Marked "Policy-Lawyers Keep Out"', *Federal Law Review*, 12, 1981, p. 121.
102. J. Maschaw, *Bureaucratic Justice: Managing Social Security Disability Claims*, Yale University Press, New Haven, 1983.
103. J. Carroll, 'Background and Reasons for Proposed Policy Guidelines for Government Business Enterprises', *Australian Journal of Public Administration*, XLV, 1986, p. 284.

104. See for example the remarks of the New South Wales Auditor-General about the accounts of the subsidiary companies of government authorities including the universities; State of New South Wales, Auditor-General, *Auditor-General's Report for 1989*, volume one, Auditor-General's Office, Sydney, 1989.
105. State of Victoria, Auditor-General of Victoria, *Financial Assistance to Industry*, Special Report no.11, Government Printer, Melbourne, 1989.
106. *The Age*, 23 February 1989. Generally see D. Nelkin, *Science as Intellectual Property: Who Controls Scientific Research?*, Cornell/Macmillan, New York, 1984.
107. Offe, *Contradictions*, *op.cit.*
108. G. Teubner, 'Substantive and Reflexive Elements in Modern Law', *Law and Society Review*, 17, 1983, p. 239.
109. J. Broekman, 'Legal Subjectivity as a Precondition for the Intertwinement of Law and the Welfare State', in G. Teubner (ed.), *Dilemmas of Law in the Welfare State*, Walter de Gruyter, Berlin, 1985, p. 76.
110. T. Daintith, 'Law as a Policy Instrument: Comparative Perspective', in T. Daintith (ed.), *Law as an Instrument of Economic Policy: Comparative and Critical Approaches*, Walter de Gruyter, Berlin, 1988, p. 7.
111. E. Blankenburg, 'The Waning of Legality in the Concept of Policy Implementation', *Law and Policy*, 7, 1985, p. 481. Locally, see P. Loveday, *Promoting Industry*, University of Queensland Press, Brisbane, 1982.