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DEPARTMENT OF SCIENCE AND TECHNOLOGY

DISCUSSION DOCUMENT

CO-ORDINATING LAND USE DATA IN AUSTRALIA FOR BETTER

DECISION MAKING AT ALL LEVELS OF GOVERNMENT

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DECISION-MAKING AT ALL LEVELS OF GOVERNMENT

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Chairman of the Australian Law Reform Commission

OBJECT OF PAPER

This short discussion paper arises out of three papers previously produced by the author expressing personal views on the need for urgent consideration to the establishment of a National Land Use Data Base. Alternatively, it is proposed that urgent consideration should be given to the standardisation of land use data, as used in all Australian jurisdictions, so that, as computerisation of land use data proceeds in the various Federal, State and Local Government authorities having lawful responsibility for such data, it does so in ways that can later be merged into compatible and integrated aggregate information.

The three papers in which this issue has been raised by the author are:

- * An address, 'Surveying and Law Reform' to the 22nd Australian Survey Congress, Hobart, 25 February 1980 (C.14/80)
- * An address, 'Computers : Who is Concerned?' to the Annual Conference URPIIS 10, The Australian and Urban Regional Information Systems Association, Sydney, 1 December 1982 (C.77/82)
- * An address, 'Computerised Land Use Data -- Mark II' to the NSW Registrar General's Seminar of Registrars of Title, 27 April 1983 (C.35/83).

On 11 July 1983, the Federal Minister for Science and Technology (the Hon Barry Jones MP) discussed the matter with the author in Melbourne. He expressed interest and authorised discussions with his department. On 21 July 1983 the Department of Science and Technology, on the initiative of Dr John Bell, arranged a meeting in Canberra at which the author raised the issue with colleagues from relevant Commonwealth Departments and authorities.

OBJECT OF PROJECT

The object of the project is to identify a national problem inherent in the Australian Federal system of government, as it relates to the computerisation of land use information that is proceeding rapidly in land use agencies at all levels of government in Australia. Under the Constitution, the Commonwealth Parliament does not have constitutional power to enact legislation requiring all State and Local Government authorities to submit to a single Commonwealth regime for the computerisation of land use data. It is possible that by use of the appropriations power, the Commonwealth could effectively achieve such a goal by offering the facility of a National Land Use Data Base to State and Local Government authorities. It is also possible that under s.96 of the Constitution the Commonwealth could impose relevant conditions upon grants in aid, relevant to standardisation of the computerisation of land use data.

The Commonwealth has other relevant constitutional powers, notably in relation to census and statistics (s.51 (xi)) and telecommunications (s.51(v)). However, funds are not readily available to launch a costly Commonwealth initiative. Despite the opportunity costs of ignoring the unrestricted and unco-ordinated computerisation of land use data, the costs of establishing a single National Data Base might not be warranted by the benefits thereby procured, having regard to the fact that concern with land is typically local.

Notwithstanding these points, the Commonwealth has a legitimate concern about the present virtually completely unco-ordinated computerisation of land use data throughout Australia:

- * Commonwealth authorities. A number of Commonwealth agencies have well established interests in the use of land throughout the nation. It will be inefficient and expensive if the computerisation of Federal land use data has to be developed in ways that differ significantly from State to State in order to be compatible with State and Local Government data bases.
- * National responsibility. The Commonwealth has a legitimate concern to ensure the optimum use of data relevant to land throughout the nation. If the Commonwealth does not attend to this concern, local idiosyncracies will make subsequent achievement of compatibility difficult, expensive or even impossible.

Geocoding co-ordinated data. The Commonwealth already collects important land use data in the Australian Bureau of Statistics. If parcel data could be produced in standard categories (eg land use) in all States and if parcels were geo-coded to census collection districts, a great deal of beneficial use could be made by State and Local Government authorities of co-ordinated population, housing, manufacturing, retail and other data integrated with land use data. Such a co-ordination would greatly improve the development of national, State and local policy analyses. Access to such a computerised, co-ordinated, high resolution data base would possibly provide the 'bait' which could induce State and Local Government authorities in Australia to co-ordinate land use computerisation with a national standard. It might also encourage better planning of State and Local Government activities within a national context and the better use for policy and national development purposes of information, present unco-ordinated and likely to remain so if computerisation of land use data proceeds without an appropriate national plan.

COMPUTERISED LAND INFORMATION SYSTEM

Just as the lawyers must accommodate the new information technology, so must all those involved in urban and regional development in Australia. Nothing has happened since the addresses in 1980, 1982 or 1983 to make the need for work towards a national land use data base at the least, co-ordinated standards and definitions less feasible or less urgent.

The technology does not stand in the way. Only our local obsessions, a lack of national vision and puny, parochial attitudes, limit the development of the common standards and definitions necessary to establish a land use data bank for Australia or the potential of an integrated system. The report of the Institution of Surveyors (N.S.W. Division) on the Information Needs of Surveyors in the 80's recorded that the incremental cost to land development that could be attributed to development delays as plans are put through the planning maze of multiple individual authorities, was something between \$60 million and \$120 million a year in New South Wales alone. A national land use data bank into which was fed the relevant data and requirements of the various authorities of Commonwealth, State and Local Government, would not destroy the opportunity for local experimentation and variation. But it would inevitably reduce the mechanical costs of urban development, planning and home purchase and the delay inherent in the current checking procedures. In 1980 I pointed to our relatively small population, the widespread use of the Torrens System of land registration and technological expertise as advantages with which we start. There are, as I am aware, many practical

and some legal obstacles which stand in the way of progress. They include different codes, different standards of measurement, different specific and local interests, different statutory definitions and so on. The authorities which keep land inventories are extremely numerous. And they tend to move slowly, cautiously and independently.

In 1980 I said, and in 1982 and April 1983 I repeated, that it will be a tragedy for our country if, on the brink of computerisation of the data of all of these various land authorities, they all decide to go and 'do it their way'. As long ago as 1975, when he was in Opposition, Mr Ralph Hunt called for a 'worthwhile attempt' to undertake a joint Federal/State land use survey to develop a 'national land use data bank, inventory and land use strategy'.² Unfortunately, when in government, Mr Hunt did not pursue this idea. His 1975 call should be heeded. But it will probably require much more active concern about the inefficiencies of inaction than presently seems to exist among Federal authorities. In a continental sized country, there is only one place where an initiative for a national, mutually compatible land use data bank can come with proper authority, proper collection of expertise and proper funding. That is the Commonwealth. It is no negation of State or local rights to suggest that the Commonwealth should take the leadership role here. It is unreasonable to leave leadership to the hardy band of dedicated private professionals who do their best at weekends and on busy afternoons after a heavy day at work. It is unrealistic to expect State authorities to take the initiative. They will have their own concerns and will often be quite innocently ignorant of the laws, practices and problems of colleagues in other States.

A report from New Zealand has revealed that the Government there has established a working party on computerised land information systems.³ How much easier it is in New Zealand or England where the complexities of the Federal division of power can be ignored. That division will not go away in Australia and it must be squarely faced as a potential impediment for the early adoption of a cost saving national computerised land information system. The point I wish to repeat is that unless the initiative is taken soon, and at a Federal level, it will be extremely difficult later and much more costly to secure compatibility between the approaches taken in different States. The Commonwealth's Landsat Program would seem to offer a useful starting point for Federal leadership. Its data is consistent in scale and quality across the continent. There is repetitive coverage on a 16 day cycle permitting the data base to be regularly updated. Old data is safely archived. The next generation Landsat 1985 will permit accuracy to 10 metres. This would be adequate for a national grid suitable for domestic household lots. But whether it is Landsat, CSIRO or some other agency of the Commonwealth, a national lead is needed.

A major initiative has been taken in Western Australia in the Land Information Systems Support Centre of the Government of that State. Mr. Brian Humphries, a land information consultant directing the Computer Policy Committee said in April 1982 that his investigation had revealed that 475 man years a year was expended by government departments and the private sector in the mechanical task of retrieving information about land in Western Australia. Little wonder that the economies of computerisation are at last being recognised:4

The biggest problem is that all the information we have is a reflection of the 150 years history of W.A. and the first task I have is to get all that information into computer form. If I can do that from a number of different sources and start to merge them one against the other, I can start to identify clearly what are the anomalies...The most important thing is that here in the West we have this ability whereas other States of Australia are still dreaming about it.5

Now 'dreaming' is a harsh word and may be unfair to the one or two other States which have taken some initiatives. But it does seem true that other parts of Australia, and the country as a whole, could take lessons from the Western Australian experience. These lessons would be:

- * Institutional rivalries. Until institutional problems are resolved, rivalries settled and bureaucratic empires vacated, real progress cannot be made.
- * Finding standards. There are many different types of land information systems. There is no system which of its nature could be described as 'a standard system'. The call for 'standards' applies to data exchanges between systems. To secure 'standards' it is necessary to have both the resolve and the authority to compromise and settle on what will be the 'standard'.
- * Interesting politicians and key bureaucrats. To achieve this recognition, it is absolutely vital that elected officers of government address the complex institutional problems that exist. Without a commitment by the Executive Government, vested departmental interests will undoubtedly preclude rationalisation of land management systems. The problem is not to be solved, I believe, by the simple expedient of assigning the co-ordinating role to a land related department. Such departments are able to address the functional needs of a system. But of equal importance is the need for financial co-ordination (involving the Treasury), organisational co-ordination (involving the Public Service Board)

and co-ordination of departmental politics (involving, normally, the Premier's officers).

* Agreeing on codes. To establish a national land use data bank of integrated systems it will be necessary to settle on a standard land use coding system. A recommendation for a coding land use system in Western Australia is now before the whole Australian community. Those who take the initiatives here will almost certainly offer leadership. Unless State Governments quickly recognise now the need to manage technological change it is likely that any technological development, regardless of how small it may be, will be a progressive constraint to national standards being possible, let alone adopted and implemented. The diversity of railway gauges in Australia which took the better part of a century to resolve and were than only resolved after much of time had passed the railways by, stand as a warning to us of what will happen if each State 'goes it alone' with its own homegrown land information system. Now, I realise that the problems facing governments in connection with the introduction of computerised land information systems are complicated by the fact that the present manual systems have themselves never been planned as a homogenous or integrated operation. In many cases they are not even adequately described in a comprehensive single text. Accordingly, implementation of computerised land information systems require a number of steps to be taken:

- ** identification of the present manual system
- ** correction of anomalies and removal of duplications
- ** standardisation of fundamental tools such as street addresses
- ** computerisation of the data bank

Even when the decision of principle is made to move to computerisation, the problems facing governments remain problems of finance and commitment. A cost/benefit study undertaken of our present land information systems would show significant benefits to the community, in aggregate, from the move to computerisation of land use data. This study has not been undertaken. The result is that computerised land information systems are just popping up by default in much the same way as the separate manual systems developed earlier. The same hunch that has led particular operators to move to automation, should, I believe, justify governments moving to an aggregate system. Certainly the Western Australian authorities have already reached the not too startling view that the highly labour-intensive, complex, slow, tedious system of checking land data we use at present, is, of its nature, susceptible to major cost savings by a move to computerisation.

AVOIDING THE COMPUTER BABEL

More uncertain is the problem of commitment. Computerised land information systems are now developing in all parts of Australia. Local Government Councils are adopting them in every form: from the sophisticated system of the Sydney City Council to quite primitive systems of small local authorities. They are being developed in some government authorities and semi-government authorities such as the State Electricity Commission of Victoria and the Metropolitan Water Sewerage and Drainage Board of Sydney. They are appearing at the State level of some States (South Australia, Western Australia and Northern Territory). They are under investigation in all other States. These investigations are advanced to a lesser or greater degree. The Commonwealth has its own entirely separate and legitimate interests because of the Commonwealth statutory authorities which have relevance to land use, the most obvious being Telecom. In this environment, there is little doubt that even if no active promotion of computerised land information systems were undertaken, forms of automated systems would be operating at all levels of government and semi-government authorities throughout Australia within 10 to 15 years, using (as the manual systems do) different definitions, different criteria, different indicia; a cacophony of computers, like the Tower of Babel, unable to communicate with each other for a lack of a common computer tongue:

So the Lord scattered them abroad from thence upon the face of all the Earth: and they left off to build the city.

Therefore is the name of it called Babel; because the Lord did there confound the language of all the Earth; and from thence did the Lord scatter them abroad upon the face of all the Earth.⁶

We in Australia run the risk, for want of appropriate commitment, leadership and perception of the real economies involved, of creating for ourselves a special Land Information Babel. It is not too late for this distinct danger to be seen in the appropriate quarters. An obstacle to the early implementation of the national land use data base, that Mr. Hunt spoke of in 1975, includes the continuing lack of corporate commitment by politicians and administrators in the Executive Government. In the States, where investigations are being carried on, the investigations are themselves often under the control of interdepartmental committees, those special enemies of prompt and effective action in Australia. In those States where there is no one individual in a key position in government with a commitment, the State itself tends to show little commitment. The Commonwealth, perhaps out of deference to its view of its traditional role has failed to offer either leadership, co-ordination, expertise or financial help. If as a country we did our social arithmetic and calculated the savings and efficiencies that would be

secured for the Australian community in aggregate, I have no doubt that it would justify a major co-operative Federal/State effort for a national land information system. But without the leadership, it is likely that we will drift slowly unevenly and languidly in the direction of the computer Babel.

A PROPOSAL : FINDING A 'METHODOLOGY OF COMPATIBILITY'

It is neither possible nor appropriate in a discussion paper such as this to define finally the scope and nature of the problem nor to identify the best national ways of tackling it. Even within the Federal sphere itself, there is room for improvement. In Queensland recently I was told of two incompatible Federal land use systems which cannot be merged to provide composite land use information because one provides co-ordinates to a central point in given rectangles of land, whilst the other takes as its reference a point in the top right hand corner.

But if the problems as between Federal land use data bases are already significant, the growing problems of incompatible land use data bases at a State and Local Government level are more daunting. When I attended the seminar of Registrars of Title held in the New South Wales Registrar-General's Office in April 1983, I was informed of the Interdepartmental Committee on Computerisation established by the Government of New South Wales. However that committee is limited to Departments of State. It has no control over or representation of Local Government. And this is despite the major involvement of Local Government in land use data and the rapid computerisation of land use data in the Local Government sector.

Similar problems exist in the other States. However, in Queensland, legislation has enhanced the power of the Queensland Surveyor-General. He must now be informed before any agency of that State proceeds to computerisation of land use information. In this way, at least in Queensland, there is a single authority with adequate power to superintend and monitor developments of State agencies, department, authorities and Local Government bodies.

What is probably needed, by agreement in co-ordination with the States, Territories and Commonwealth authorities is the establishment of a similar arrangement at a Federal level to ensure that all land use data, national, State and local is computerised according to:

- * agreed definitions
- * compatible systems
- * compatible measurements and reference points
- * compatible equipment.

The object should not be to depress or discourage computerisation or even local experimentation and difference. It should not be to impose rigid bureaucratic controls as agencies, big and small, pursue the goal of efficient information processing suitable to their own special and peculiar needs. But it should be the agreement on the methodology of compatibility, before it becomes too late or too expensive. The Commonwealth as guardian of the national interest and having its own legitimate interests in land use data, should take the lead.

A NATIONAL CONFERENCE

Compatibility in definitions, terms, measurements and equipment will not come by wishful thinking. It will only be achieved by:

- a recognition of the problem
- bringing together the relevant authorities and agencies with an interest and power to tackle the problem, and
- offering inducements to make the achievement of compatibility worthwhile

It is proposed that a national conference on the co-ordination of land use data should be organised early in 1984, say February 1984. Whether that should be organised in conjunction with URPIIS or some other professional meeting is a matter for discussion having regard to conference timetables. The conference should be initiated by the Commonwealth Department of Science and Technology in co-operation with all other Federal agencies having major interests in land use data. It would be preferable if those Federal bodies could agree upon a single Federal agency for primary carriage of Australian land use data co-ordination. If it is not to be the Commonwealth Surveyor-General, LANDSAT, the National Mapping Council, the CSIRO Division of Land Resources, the Australian Bureau of Statistics or the Standards Association of Australia, it should be the Department of Science and Technology itself. Alternatively, consideration should be given to the establishment of a special unit or bureau in the most relevant Commonwealth Department.

A Planning Committee should be established immediately to prepare a program of workshops in which Federal, State and Local Government authority personnel could exchange views and help to define the problem. Invitations should be sent to key personnel in State and Local Government and in interested private groups and associations. I would be prepared to act as general rapporteur of the conference and to develop an analytical precis of the results of the conference, with a view to making recommendations for discussion at a ministerial level between relevant Federal, State and Northern Territory Ministers.

The easy path is to say that land is local, that it is a traditional area of State administrative concern, that the Commonwealth's interest is relatively small and that funds are low for new ventures that would make the idea attractive to the States and to Local Government authorities.

But we should constantly remember the spectre of the differing railway gauges in Australia. We should remember the opportunity costs involved if we fail to develop land use information systems which can be merged and co-ordinated for effective national development and informed policymaking at all levels of government.

If the unco-ordinated computerisation of land use data is allowed to proceed much further in Australia, without an overall national scheme, we will reach a point where every small local authority has gone its own way and the achievement of an integrated and compatible land use information system will become practically impossible. That would be a reproach to our generation greater even than the failure of colonial railway administrators to agree on a single railway gauge. It took nearly three quarters of a century after federation to achieve a uniform railway link across Australia. In the meantime, the inefficiencies resulting from the lack of a standard gauge contributed to the general run-down of the railway system and its replacement by other more efficient means of transport. We ought not to allow the same lack of co-ordination to blight the co-ordinated development of land use data as it enters the computer age. It is to be hoped that this warning will be heeded and that the administrators of today will show a larger appreciation of national responsibilities than did the colonial railway administrators of the 19th century.

FOOTNOTES

The views expressed are personal views only.

1 The Institution of Surveyors, Australia (NSW Division), Ad Hoc Committee
investigating Information Needs of Surveyors in the 80s, 2nd major report, May
1977, 1-4.

2 R J Hunt, 'Rural Retreats' in Community, Vol 2 No 1, July 1975.

3 NZ Law Talk 161, 2 (3 November 1982).

4 Western Australia, Land Information Systems Support Centre, Land Information
Systems, Management Summary, November 1982, mimeo.

5 ibid.

6 Genesis, II, 8-9.