For human service planning SPACE is the final frontier.

Brian A Cooper b.cooper@usyd.edu.au

B.A. (Soc. Sci.) (Mitchell) MUS (Syd) MISA

Discipline of Behavioural and Social Sciences in Health

Facility of Health Sciences

University of Sydney

Abstract

This paper examines how space is defined and when a disconnection exists between real space (legally defined and understood) and how human services view space. Whilst there are hierarchies of space exist in most classification systems associated with space; this is not evident in human service planning provision data sources. The issues of statistical and legal space are reviewed as they apply to localities and postcodes.

The central theme of this paper is how statutory human service agencies deal and define space through changing resource allocation regimes, address issues of social disadvantage and space and issues arising from statistical (census) geographies, localities and postcodes. There is a brief overview of aspects of spatial definition. The paper briefly addresses the differences in spatial definition that land-use professionals use in comparison to other groups such as human service planners. The paper questions the spatial assumptions research used to inform public policy that attempts to address questions of equity and inequality.

The planning process for human service results from a budgetary allocation process that usually reflects political ideology of the government in power and its social and political agenda. Whilst there are several tiers of players in human services, the commonwealth and state or territory governments will determine the broad agenda for the funding of services whilst local government and the for-profit and non-for profit sectors will be responsible for the delivery of services.

A definition of human services is '*institutionalised systematic services*' aimed at '*meeting human needs ... required for maintaining or promoting the overall quality of life*' Zins (2001, pp. 6–7) of service users. While this covers a broad range of activities, which may include education, health, childcare, residential, and at-home care for the aged, disability services, family support, early intervention, homelessness, and job search assistance (Zins, 2001).

The politics of resource allocation are not addressed in this paper, some of the issues associated with the topic of human services planning, understanding of spatial concepts and the potential impact this has on resource allocation. The decision about administrative space in this context is a political one.

This literature review will be limited to issues associated with spatial definition and the use of space in public policy planning and resource allocation debate and development. Spatial definition has a technical meaning as used by those in the spatial sciences. This will be different in human service planning. The commonality between both is how each defines and applies space to planning, administration, and analysis, which are the key topic of this review.

Common to most societies are the need to define and delineate space. This delineation of space creates definitions of tenure, social and economic relationships. As societies become increasingly complex, the process of spatial definition assumes a similar level of complexity. The rules of spatial management will determine the basis of land tenure, ownership modes, taxation regimes, rules of inheritance and succession. As an example, in Joshua 18 vs 3-10 is a description of land allocation based on tribal size and importance (NIV, 1984).

Space can be categorised into several classes such as physical, social, administrative or personal spaces.

Space as a physical form has the capacity of measurement. Physical space has four dimensions: latitude, longitude, height or depth and time. From this have arisen several forms of study that specifically deal with space as a form of measurement. Cartography and geography along with surveying are cousins in the spatial sciences. All three attempt to describe the physical form of the particular space and given contextual meaning to that space. Temporal space describes the time dimension of physical space (O'Hara, 1996). Sometimes in the Australian vernacular rather than use physical distance such as kilometres, the duration (time) involved describes the distance covered. Cyberspace is an expression to describe digital virtual space (Gibson, 1986, 2001). Social space will have various meanings. Goffman in Frame Analysis created a framework in which one could make sense of social space (Goffman, 1974). It is from his work that most concepts of social space have evolved. Personal space, there are definitions of space as experienced and defined by the individual immediate individual physical space (determined by imagined boundaries) or habitat the space an individual considers theirs to live in. A logical development of this is psychological space. Whilst there are several distinct areas of activity within what would be termed psychological space the paper presented by Shaw and Gaines on the work of George Kelly (Kelly, 1955, 1963, 1969, 1970) is perhaps the most comprehensive summary of the extent of psychological space and its evolution (Shaw & Gaines, 1992).

The issues that arise are the values given to space. In human services a disconnection exists between real space (legally defined and understood) and how human services view space. Policy makers limit spatial awareness in public administration, as their political masters have not required the same diligence for spatial analysis as for financial analysis and reporting.

The areas of contribution to understanding these issues will come from the nature of the mechanisms the funding bodies view space through the shift in funding models adopted. Hierarchies of space exist in most classification systems associated with space. This is not evident in human service planning. Spatial classifications such as suburbs or postcodes are as non-standard spatial units. As the Australian Standard Geographical Classification (ASGC) is based on the census collector district (ABS, 2009) which is defined as the second smallest geographic area defined in the ASGC (ABS, 2008), the smallest being the meshblock. For the 2006 Census, CDs will also be the basis of output for most data, the exception being some Place of Work destination zones and population counts for meshblocks.

In New South Wales, for many localities the census-derived region often has a different spatial definition to that of the gazetted locality of the same name. There are fewer derived localities, and then there are gazetted localities. Census derived postcodes are also an approximation of the Australia Post Postal area. The maps on the following pages illustrate some of the issues encountered with statistical and administrative space.
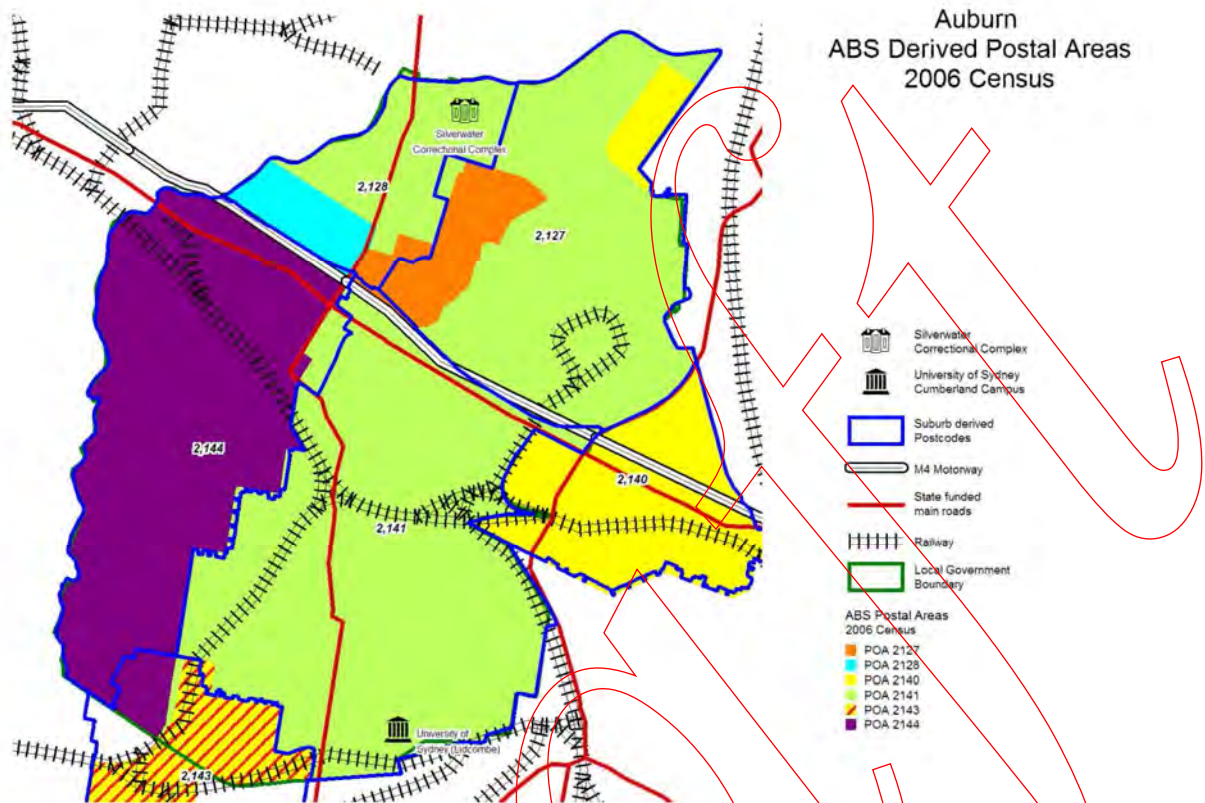
Map 1 Auburn Postcodes (Cooper, 2009)

As there are no officially gazetted postcodes boundaries, the Australia Post postcode boundaries shown on map one use gazetted suburbs allocated to an Australia Post postal area. The business rules for a postcode in New South Wales are to have a specific locality allocated to one postcode only. Here map one show the differences between postcodes using collector districts and those using gazetted localities. Postcode 2141 as defined by census collector districts covers most of the Auburn local government area, but based on the gazetted locality, the area is smaller. The ABS postal area covers other postal areas (2144, 2141, 2127, and 2128). The ABS definition of Postcode 2140 covers Homebush West (Strathfield Local Government Area) and the residential area of Homebush Bay (Auburn Local Government Area), which is not the Australia post definition of the same postcode.

A postcode is a four-digit number designated by Australia Post to deliver mail. It is a requirement by Australia Post to have a postcode on the end of each postal address (Australia Post, 2009a). The Australia Post postcode is a non-enclosed space, but based on one of three modes, delivery area, large volume mail (competition), or PO Boxes. Australia Post does not delineate the external boundaries of any postcode. A delivery area postcode may contain several localities (each state or territory has a body assigned to ensure the regulation of locality definition and naming) but these localities may be several hundred kilometres apart. Examples these are postcode 2831 east and north of Dubbo (NSW) and extending to the Queensland border or across jurisdictional boundaries such as postcode 3586, which is contained within postcode 2734, 22 kilometres from the NSW and Victorian Border.

There is strong dependence by Australian and state government bodies on the use of postcodes as a basis of their data-reporting framework. Postcodes are problematic when being used as a space for public administration. Many researchers and businesses use postcodes as a crude approximation for a geographic region for the aggregation and analysis of address based data. The desire to compare such data to census data in turn creates demand for census data aggregated by postcode. In certain localities, there are large residential facilities such as prisons, military bases and schools which have a highly transitory population and will distort any local residential population statistics. Though these populations will have their unique needs, there may not be any provision for them in broader planning.

Whilst there is an Australia standard AS 4590-2006 (Standards Australia, 2006) for addressing which Australia Post expects for mail delivery, the data collections required by human service organisations do not have the same requirements in their data specifications.

ABS prior to each census will develop a Census Geographic Area classification known as Postal Areas, which approximate the area of Australia Post postcodes (ABS, 2006; Australia Post, 2009b). An ABS postal area is an enclosed space based on aggregations of CCD. At each census, the area covered will change because of CCD revision for that particular census. There is no direct relationship of the ABS postal area to a local community. There is no provision for non-conforming postcodes; these are those postcodes, which are located within other postcodes or interstate postcodes.

Australia Post is a government business enterprise, not a statutory authority and therefore the delineation of a postcode in an internal business decision not a question of public policy. Where possible the establishment of a new postcode will occur because of discussion between the local Australia Post officials and the local government authority concerned. It is not designed for statutory public administration or social research purposes (Australia Post, 2009b).

Any social research or public administration purpose using postcodes as the base unit of analysis will be subject to flaws as there is no current agreement on the exact spatial dimensions of all postcodes in Australia. The same also applies for statistical local areas defined by postcodes. These agencies have assumed a postcode to be a closed polygon that is spatially unique, what this demonstrates is the inability of these agencies and other users of postcodes to understand the basis of definition for postcodes and associated limitations.
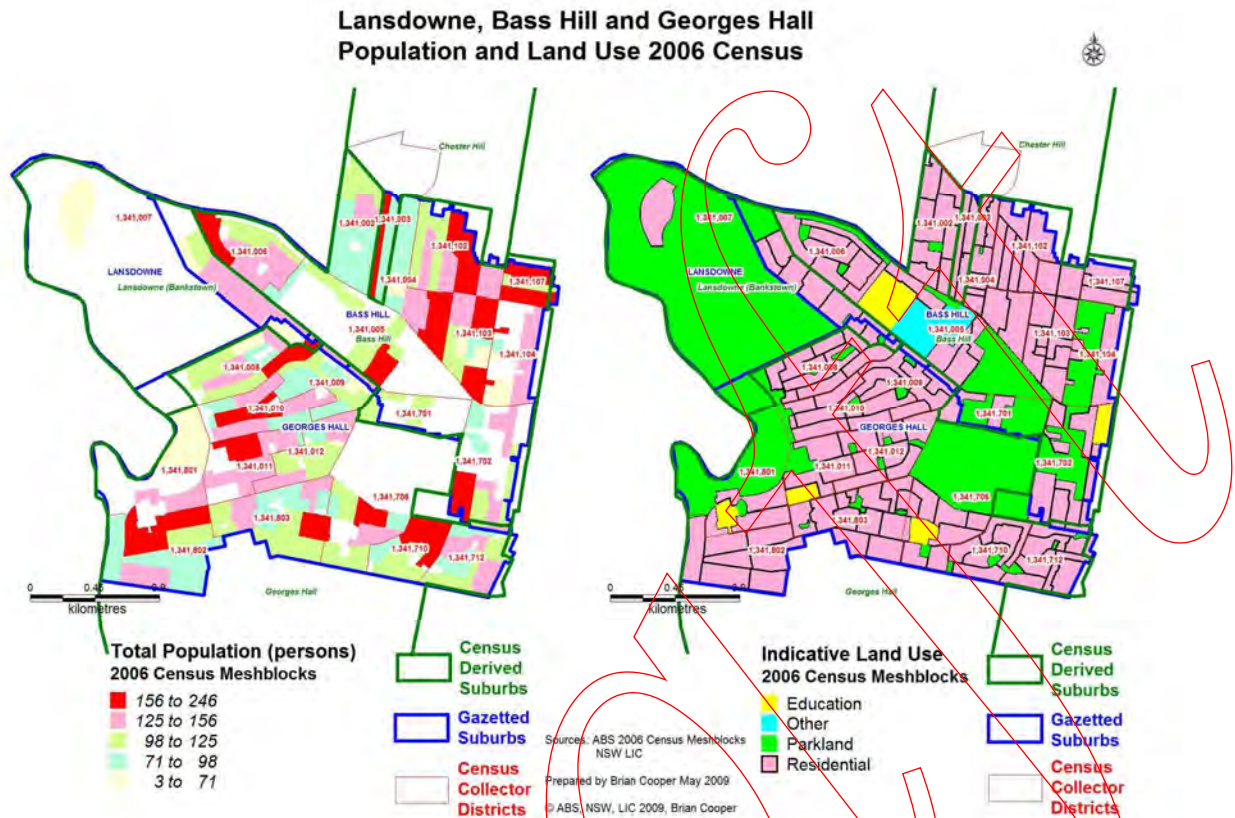
Map 2 Lansdowne, Bass Hill and Georges Hall (Cooper, 2009)

Map two shows the differences between censuses derived localities and gazetted localities. The three suburbs illustrated show distinct differences in area covered. The problem arising is the non-agreement of the various polygons (suburb areas) and associated population. In some regions, there will be significant variation between ABS population estimates and actual population. As an example, the actual population of Lansdowne is 11 when using meshblocks (ABS, 2005) population counts for those areas identified as having population; and the census population is 808 with the majority of the population coming from Bass Hill with some limited contribution from Georges Hall. The indicative land use map shows that there is a limited area for residential housing. The majority of the suburb is open space for either active or passive recreation. The maps also show that there is considerable variability in population density within each collector district.

This creates a problem for resource allocation. If the statistics show there is a population for a particular service such as childcare or aged care, but the actual population and local knowledge show that there is insufficient population for the service type there arises questions of data reliability and validity. If the statistical geography refers to other external geographies that have not been clearly stated (this is the case of ABS) the use of such data would have to be considered invalid. The spatial assumptions related to the statistical geography have to be clearly stated in order that small area geography data is able to be used.

The spatial mindset for human service planning is not to acknowledge spatial diversity in land use and there is a hierarchy-associated space. The ABS in developing meshblocks has attempted to develop basic core geography, which is related to cadastre and land use zoning and at the same time link these to population counts (ABS, 2005). The use of cadastre to create a meshblock ensures that basic land use information relates to population or other statistical data that have a spatial element. The ABS identified across Australia common land use classifications. This allows the reader to view holistically population distribution and associated use of land.

An analysis of the meshblocks shows that 89.5% of the Australian population (Appendix One Table One) lives in less than .4% of the total area of Australia (Appendix One Table Two). Human service planning systems suffer from cartographic myopia by not recognising population and land use variability.

There is an implied hierarchy in society when dealing with space. If one takes the position of Irwin (Irwin, 2007), who argued spatial hierarchies commences the intimacy Individual and family through primary relationships to those of Neighbourhood and Community; where Region and society are concepts that are more distant. This mirrors the concepts of place, locality, space, region, and state, which (ABS, 2007) are mooted for the revised Australian Standard Geographic Classification. Space then becomes a series linked origins and destinations that have meaning depending on the life cycle stage of the person concerned (Janelle, Klinkenberg, & Goodchild, 1997).Often destinations have specific meaning and some will chose some destinations for services and recreation, which may require considerable travel in preference to destinations that are closer.

Space as legal entity has two dimensions. The first is positional, as it describes the location of any given space within a jurisdiction. This becomes basis of the legal title allocated to the space concerned. In New South Wales, the recording of land tile is according to deposited plan, local government area, parish, and county. The second dimension is land use. Once a legal definition of a particular space exists, a series of statutory plans will define permissible uses of the land. Development control planning will define the range of uses permitted to that space. There will a local environment plan usually applying to the local government area that will include any development control plans. Beyond the regional environmental plan are state environmental plans. These can deal with physical planning issues or social planning issues such as the provision of aged and disabled accommodation (Gurran, 2007).   However, in the planning there is no consideration for client location or preferences for modes of service delivery.

Human services rely substantially on government funding. There has been a significant shift in the funding of services where specific service location has become increasingly irrelevant. The shift in government decision making on human service provision is linked with the creation of markets allocated to a given range of geographies. In theory the introduction market mechanisms in human services programs has been to improve the quality of service providers, both by encouraging new entrants and promoting change in existing providers (Davidson, 2008). By examining the hierarchy of space as viewed through different perspectives, it is evident in the current approach to induce an artificial market for human services that client spatial and social efficiencies will not be a high priority. What has become evident in human service planning is that spatial context has a limited if any role to play in the plan.

Labeling a community as being *disadvantaged* makes excellent headlines, but rarely is this have a positive impact on the residents. The victim becomes a space instead of a person. Traditionally the deserving poor were those such as with illness or were aged, but the undeserving were those who were seen as being idle (Baer, 2009). This distinction has underlain human services policies since. The use of local area analysis by researchers such as Vinson (Vinson, 1999, 2004; Vinson, Cooper, & Rawsthorne, 2007) or Baum (Baum, 2005) has implicit in their approach the concept of the deserving and undeserving areas instead of individuals. Areas are not disadvantaged as such, as this would be anthropomorphic if the application of the expression applied to those localities when the expression is normally applied people.

Often researchers give the impression that they are not able to distinguish between administrative space, statistical space, and locality. For local area spatial analysis, there are no agreed spatial units below local government area, useable in Australia. The problem that arises is the non-integration localities and postal areas into the current ASGC. The other issue that has not been addressed by all human service agencies is the non-consistent approach to spatial definition for imputing data with spatial tags and their inability to output administrative data at a geography, which has a legally defined basis or correctly aligns with the ASGC. A common form of spatial reporting is the postcode, but given the nature of postcodes they are not reliable enclosed space but more a tag for mail delivery.

The concept of social disadvantage implies a moral judgement on a group of persons resident in a specific geography as previously stated in this paper. The lack of spatial awareness by human service planning leads to a falsity in the spatial and population assumption used. This falsity arises from basic misunderstanding of the nature of space and population location and distribution. A presumption in the use of variables to create measures of social disadvantage if there is a significant correlation between any of the variables; that this relationship is causal only.

Labelling some localities as disadvantaged when a limited sub-population may be involved and their reason for locating in the particular locality may be the result of public policy, not the choice of the population concerned. Many spatial definitions of social disadvantage are more applicable as descriptions of access to modes housing tenure and stock. Many of the variables used may not be contributing but co-existing within the same geography. Apart from spatial accidents, there are no ways of establishing if the presence of a group of variables is causal or co-incidental in nature.

Common issues with the human service planning and space are the problem of sub regional contribution to a particular score. These will not be normally acknowledged often it is a form of Simpson's Paradox (Weisstein, 2009).That is the mean of the parts may not be the mean of the whole. The problems that are common with the type of information used in human service planning are the Ecological Fallacy, which assumes that individual behaviour can be determined from group analysis (Bahk, 1985; Openshaw, 1984a, 1984b; Piantadosi, Byar, & Green, 1988). The other spatial issues is the Modifiable Areal Unit Problem, this is present in all spatially aggregated data. The 'problem' consists of two interrelated parts. First, there is uncertainty about what constitutes the *objects* of spatial study—identified as the scale and aggregation effects. Second, there are the implications this uncertainty presents when *interpreting* the results of spatial analyses (Ratcliffe & McCullagh, 1999) .

This paper has examined in a preliminary manner some of the issues associated with space and human service planning. There is a complexity in the subject material which requires broader explanation than what is possible in this paper. As stated previously space has a technical meaning and a social meaning in the wider context. A key problem with human service planning the linkage of administrative data with census data, these issues were touched upon. The other issue that arises is how data with attached spatial attributes informs public policy and planning. In summary, those who are involved with human service planning have viewed space as a social concept without reference to physical form.

Appendix One

Table 1 Distribution of Australian Population by indicative land use category

Land use	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	Australia
Agricultural	0.10%	7.50%	7.10%	7.90%	8.20%	13.40%	7.20%	4.60%	7.30%
Commercial	2.00%	2.30%	2.00%	1.50%	1.20%	0.60%	1.90%	1.50%	1.80%
Education	1.50%	0.30%	0.50%	0.40%	0.20%	0.30%	0.20%	0.30%	0.30%
Hospital/Medical	0.00%	0.10%	0.20%	0.10%	0.20%	0.10%	0.10%	0.10%	0.10%
Industrial	0.10%	0.20%	0.50%	0.30%	0.30%	0.30%	0.20%	0.30%	0.30%
Homeless	0.20%	0.20%	1.00%	0.30%	0.20%	0.20%	0.10%	0.40%	0.20%
Other	0.10%	0.00%	0.00%	0.10%	0.00%	0.10%	0.00%	0.10%	0.00%
Parkland	0.30%	0.50%	1.40%	0.60%	0.20%	0.70%	0.30%	0.50%	0.50%
Residential	95.70%	88.80%	87.30%	88.80%	89.50%	84.30%	89.90%	92.30%	89.50%
Shipping	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Transport	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Water	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total (Persons)	**323,957**	**6,549,206**	**192,919**	**3,904,596**	**1,514,357**	**476,473**	**4,932,410**	**1,959,579**	**19,853,497**

Source 2006 census meshblocks

Table 2 Total area by indicative land use category

	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	Australia
Agricultural	6.80%	86.00%	92.70%	94.00%	96.20%	40.40%	63.40%	89.10%	90.20%
Commercial	0.80%	0.00%	0.00%	0.00%	0.00%	0.00%	0.10%	0.00%	0.00%
Education	0.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.10%	0.00%	0.00%
Hospital/Medical	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Industrial	1.00%	0.00%	0.00%	0.00%	0.00%	0.10%	0.20%	0.00%	0.00%
Homeless	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Other	0.20%	0.00%	0.00%	0.20%	0.00%	0.00%	0.00%	0.00%	0.00%
Parkland	84.10%	12.60%	7.00%	4.60%	1.00%	55.40%	31.60%	8.80%	8.00%
Residential	5.90%	0.70%	0.10%	0.80%	0.20%	1.70%	2.30%	0.10%	0.40%
Shipping	0.00%	0.00%	0.10%	0.40%	0.00%	0.50%	1.20%	1.80%	0.70%
Transport	0.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Water	0.00%	0.60%	0.10%	0.10%	2.60%	1.90%	1.20%	0.10%	0.50%
Total (Km²)	**2,358**	**801,596**	**1,353,170**	**1,740,614**	**985,455**	**68,263**	**230,115**	**2,576,695**	**7,758,267**

Source 2006 census meshblocks

Bibliography

ABS. (2005). Information Paper Draft Mesh Blocks Australia 2005: Australian Bureau of Statistics.

ABS. (2006). *2970.0.55.016 - 2001 Census of Population and Housing - Fact Sheet: Postcodes and Census Data, 2001* Retrieved May 2009, 2009, from http://www.abs.gov.au/AUSSTATS/abs@.nsf/0/CDC0154FF2A661DCCA2571490003713F?OpenDocument

ABS. (2007). Review of the Australian Standard Geographical Classification. Canberra: Australia Bureau of Statistics.

ABS. (2008). 1216.0 - Australian Standard Geographical Classification (ASGC), Jul 2008. Canberra: Australia Bureau of Statistics.

ABS. (2009, 21 January 2009). *Collection District (CD)*. Retrieved 19 May 2009, from http://www.abs.gov.au/Ausstats/abs@.nsf/bb8db737e2af84b8ca2571780015701e/413876f3bae9cc70ca25720a000c428b!OpenDocument

Australia Post. (2009a). Address Presentation Standards. In A. Post (Ed.), *Australia Post*. Melbourne: Australia Post.

Australia Post. (2009b). *Assignment of Postcodes*. Retrieved May 2009, 2009, from http://www.auspost.com.au/BCP/0,1467,CH4200~MO19,00.html

Baer, K. (2009). Aid to the "Deserving Poor"

Poverty and Policy (Vol. 2009). San Francisco: World Press.

Bahk, K. H. (1985). *Ecological fallacy : pitfalls of statistical analysis on spatially aggregated data.* Unpublished Thesis (M Urban Plan), University of Washington, 1985.

Cooper, B. (Cartographer). (2009). *Auburn Postcodes*

Cooper, B. (Cartographer). (2009). *Lansdowne, Bass Hill and Georges Hall*

Davidson, B. (2008). For-profit organisations in managed markets for human services.

Gibson, W. (1986). *Burning chrome*. New York: Arbor House.

Gibson, W. (2001). *Neuromancer*. New York: Ace Books.

Goffman, E. (1974). *Frame Analysis: An Essay on the Organization of Experience*. New York: Harper & Row.

Gurran, N. (2007). *Australian Urban Land Use Planning : Introducing Statutory Planning Practice in New South Wales*. Sydney: University of Sydney.

Irwin, M. D. (2007). Territories of Inequality: An Essay on the Measurement and Analysis of Inequality in Grounded Place Settings. In L. M. Loba, G. Hooks & A. R. Tickamyer (Eds.), *The Sociology of Spatial Inequality* (pp. 85-112). New York: State University of New York Press.

Janelle, D. G., Klinkenberg, B., & Goodchild, M. F. (1997). The Temporal Ordering of Urban Space and Daily Activity Patterns for Population Role Groups. *Geographical Systems, 5*, 117 - 137

Kelly, G. A. (1955). *The Psychology of Personal Constructs*. New York: Norton.

Kelly, G. A. (1963). Aldous: the personable computer. In S. S. Tomkins & S. Messick (Eds.), *Computer Simulation of Personality* (pp. 221-229). New York: Wiley.

Kelly, G. A. (1969). A mathematical approach to psychology. In B. Maher (Ed.), *Clinical Psychology and Personality: The Selected Papers of George Kelly* (pp. 94-113). New York: Wiley.

Kelly, G. A. (1970). A brief introduction to personal construct theory. In D. Bannister (Ed.), *Perspectives in Personal Construct Theory* (pp. 1-29). London: Academic Press.

NIV. (1984). *New International Version® (NIV) Bible*. New York: International Bible Society.

O'Hara, R. J. (1996). Mapping the space of time: temporal representation in the historical sciences. In M. T. Ghiselin & G. Pinna (Eds.), *New Perspectives on the History of Life: Systematic Biology as Historical Narrative* (pp. 7–17): Memoirs of the California Academy of Sciences.

Openshaw, S. (1984a). Ecological fallacies and the analysis of areal census data. *Environ Plan A, 16*(1), 17-31.

Openshaw, S. (1984b). Ecological fallacies and the analysis of areal census data (UK, Italy). *Environment & Planning A, 16*(1), 17-31.

Piantadosi, S., Byar, D. P., & Green, S. B. (1988). The ecological fallacy. *Am J Epidemiol, 127*(5), 893-904.

Ratcliffe, J. H., & McCullagh, M. J. (1999). Hotbeds of crime and the search for spatial accuracy. *Geographical Systems 1*(4), 385-398.

Shaw, M. L. G., & Gaines, B. R. (1992). Kelly's "Geometry of Psychological Space" and its Significance for Cognitive Modeling. *The New Psychologist*, 23-31.

Standards Australia. (2006). AS 4590-2006 Interchange of client informatio
 Sydney: Standards Australia.

Weisstein, E. (2009, 24 may 2009). *Simpson's Paradox*. Retrieved May 2009, from http://mathworld.wolfram.com/SimpsonsParadox.html

Zins, C. (2001). Defining human services. *Journal of Sociology and Social Welfare, 28*(1), 3-21.