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# Mapping methods: Using GIS for regional and remote cultural planning

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## Publication Details

Brennan-Horley, C. (2015). Mapping methods: Using GIS for regional and remote cultural planning. In P. Ashton, C. Gibson & R. Gibson (Eds.), *By-roads and Hidden Treasures: Mapping Cultural Assets in Regional Australia* (pp. 53-70). Crawley, Australia: UWA Publishing.

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# Mapping methods: Using GIS for regional and remote cultural planning

## **Abstract**

Culture and creativity have never been found exclusively in urban domains, yet only recently have researchers begun to examine creative geographies beyond axiomatic creative cities from the global north. As Chris Gibson observes in 'Creative Geographies: Tales from the "Margins"' (zoro), attention has slowly begun to turn to the periphery - small cities, regional centres and remote locations - places that don't easily fit the urban creativity script but where nascent and established creative industries can be found. Creative practitioners operating away from dense urban centres must negotiate what Susan Luckman in *Locating Cultural Work* (zorz) describes as the various affordances and hurdles that marginality and remoteness present. Detailed mapping of the ways that creative economies function in such places is therefore vital for the development of tailored planning strategies, reducing the reliance on concepts developed from and for urban creativity. Despite being readily deployed in cultural and economic planning circles, the term 'mapping' is usually used figuratively, to describe the categorising of creative businesses and employees and for cursory examination of locational dynamics influencing the creative sector. Taking a more literal or visual approach to 'mapping', this chapter seeks to illustrate some of the possibilities that a combination of ethnography and cartographic mapping can offer cultural planning. Drawing on geographic information systems (GIS) and qualitative methods, in-depth information on geographic networks and the everyday geographies of regional and remote practice can be brought to the fore.

## **Keywords**

gis, cultural, regional, remote, planning, mapping, methods

## **Disciplines**

Education | Social and Behavioral Sciences

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cultural strengths. And by combining such locally-harvested knowledge with locally-based data, such as Australian Bureau of Statistics (ABS) datasets, a powerful picture can be drawn about a community's strengths, assets and aspirations. Yet, such information and processes need not be viewed as relevant only to that particular community. Again, Phil Nyden and others: '[W]e have also challenged the notion that community-based research is parochial. Community-based research can be a basic building block of regional, national and international research'. The Toolkit was produced partly in response to an expressed need by local government staff and cultural decision-makers to share with and learn from others. Hopefully, the exchanges will not only be horizontal ones, but from the ground up, too.

#### Acknowledgements

Thanks to all who contributed their stories: Andrew Warren from CAMRA; Scott Howie from Eastern Riverina Arts; and Jeni Pollard, Heather Chaffey and Cali Vandyk-Dunlevy from Penrith City Council.

### **Mapping Methods: Using GIS for Regional and Remote Cultural Planning**

Chris Brennan-Horley

Culture and creativity have never been found exclusively in urban domains, yet only recently have researchers begun to examine creative geographies beyond axiomatic creative cities from the global north. As Chris Gibson observes in 'Creative Geographies: Tales from the "Margins"' (2010), attention has slowly begun to turn to the periphery – small cities, regional centres and remote locations – places that don't easily fit the urban creativity script but where nascent and established creative industries can be found. Creative practitioners operating away from dense urban centres must negotiate what Susan Luckman in *Locating Cultural Work* (2012) describes as the various affordances and hurdles that marginality and remoteness present. Detailed mapping of the ways that creative economies function in such places is therefore vital for the development of tailored planning strategies, reducing the reliance on concepts developed from and for urban creativity. Despite being readily deployed in cultural and economic planning circles, the term 'mapping' is usually used figuratively, to describe the categorising of creative businesses and employees

and for cursory examination of locational dynamics influencing the creative sector. Taking a more literal or visual approach to 'mapping', this chapter seeks to illustrate some of the possibilities that a combination of ethnography and cartographic mapping can offer cultural planning. Drawing on geographic information systems (GIS) and qualitative methods, in-depth information on geographic networks and the everyday geographies of regional and remote creative practice can be brought to the fore.

### Cultural mapping in remote locales: Problems and opportunities

When deployed in the context of regional and remote creative industries, mapping analyses predicated on business or employment statistics are often faced with a paucity of available data. While government data collection efforts such as the census do include locational referents linking employment figures to specific spatial boundaries like Local Government Areas (LGAs), suburbs or postcodes, these measures are known to vastly underestimate the actual involvement of creative workers due to the part-time and semi-professional nature of many creative occupations. Furthermore, low population densities in rural locations can render cartographic mapping useless, especially when disaggregating employment data down either to finer spatial scales or to smaller occupational groupings.

As an alternative to employment figures, qualitative methods are a viable means for understanding how creative work is carried out. By focusing on the workers themselves, ethnographic inquiry can aid in understanding the underlying conditions, opportunities, expectations and precariousness of creative work. In regional and remote locales, revealing how creative practitioners operate day-to-day, and are linked into localised or indeed wider flows of goods, services and ideas, is vital in planning for their future success. By taking qualitative methods a step further and

combining interviewing with a mental mapping exercise, space can be brought to the fore – not only in the abilities to spatially analyse results but by placing the interviewee 'in space' through the inclusion of actual physical maps in the interview.

With a lineage going back to the seminal work of Kevin Lynch, *The Image of the City* (1960), and today including research by myself and Chris Gibson among others, mental mapping, or sketch mapping as it is otherwise known, is a powerful means for revealing detailed information about individual perceptions of the spatial environment. Appropriating mental mapping methods for regional cultural planning, a qualitative mental mapping exercise becomes an important way to uncover community cultural and creative industry planning needs where often there is a scarcity of available statistics or secondary measures.

In both examples discussed in this chapter, our qualitative mapping activities centred on an easy-to-deploy, low-tech approach: A3-sized paper maps were introduced into the interview setting alongside a small selection of different coloured pens. Respondents were encouraged to draw upon the maps when answering questions about their place. The paper map had a simple schema of streets and major topographical features, but did not list everything on the map so as not to inadvertently lead respondents (refer to Figure 1). All interviews were recorded for later transcription and analysis alongside each map. Such an approach allows for mappable, empirical data to emerge without precluding the unfolding of detailed narratives during the interview about living as a remote creative practitioner. This method is a relatively simple means to collect both geographic and qualitative data and is easily scaled up to larger cohorts. Furthermore, markings made upon the map can be transferred into a GIS for further analysis either individually or by collation alongside other respondents.

This chapter draws on two case studies where qualitative cultural mapping methods were applied. The first project, *Creative Tropical City: Mapping Darwin's Creative Industries, 2007–2009*, set out to map and document instances of creative activity in the

remote capital of Australia's Northern Territory. The project turned to qualitative mapping methods to document creative activity in the context of a small tropical city, with a diverse population and dominant suburban form. Our paper-based mapping method was beneficial in getting respondents talking and reacting to the everyday spaces of their lives in the city. The mapping interview method and analyses developed during the Creative Tropical City project were then applied to the second case study: Cultural Asset Mapping in Regional Australia (CAMRA), 2009–2013. CAMRA set out to map vernacular cultural assets across several council regions, including the Central Darling Shire region, in New South Wales's far west. A mapping exercise was carried out with Central Darling-based creative workers, with creative industries used as a starting point for discussions around what their community cultural assets might be, where they might be found, and how creative practitioners operate in such an isolated and remote environment.

### Analysis techniques

Recent theoretical development in human geography and allied disciplines seeks to understand how cultures, economies and material things are brought into being through relational networks spanning diverse spaces and scales. This topological approach can equally be applied to regional cultural economies, for visualising supply networks or flows of materials, people or concepts between sites. When relational data is imported into a GIS, the system has the ability to display topological linkages between sites as well as the relative strength and direction of connections, illustrating the degree to which places are embedded within wider relational networks.

A mental mapping exercise is one such means for gathering data for later topological analysis with GIS. To illustrate two ways that topology can aid in understanding the geography of regional creative industries I examine supply networks for creative

practitioners based in the Central Darling, New South Wales (NSW), and second, through making sense of the complex topology of creative workplaces in Darwin, Northern Territory (NT).

### *Mapping networks: Revealing supply lines in the Central Darling*

Located in the far west of NSW, the Central Darling region covers 50,000 square kilometres of predominantly grazing land, with small pockets of irrigation along the Darling River. The area is sparsely populated with only 1,991 residents, most residing in and around the four towns of Wilcannia, Menindee, White Cliffs and Ivanhoe. Connections over the vast distances between Shire towns and major centres outside the area are predominately by road. During the mapping exercise with local informants from each of the four towns, different coloured pens were provided for drawing upon their Central Darling map their responses to questions about where they worked, where they sourced their supplies, where their markets were located and where the most inspiring parts of the surrounding landscape that influenced their creative practice manifested (refer to Figure 1).

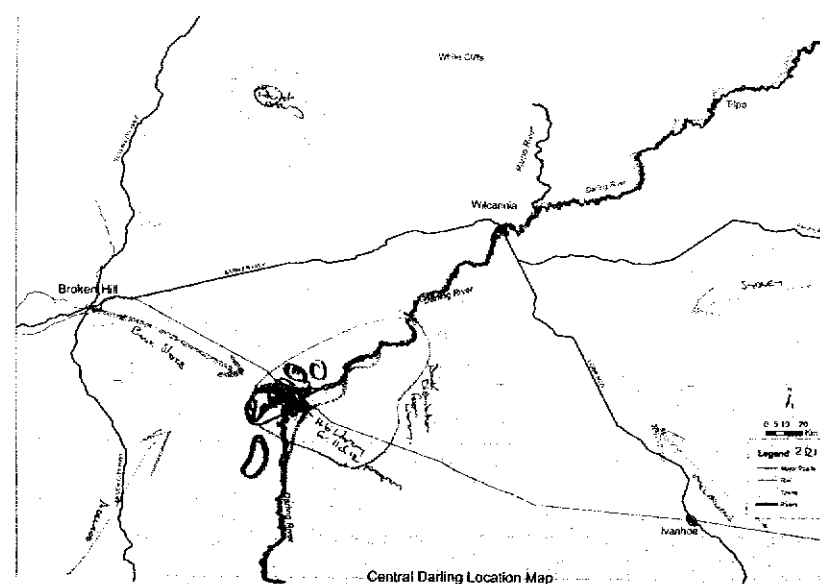


Figure 1. Mental mapping example, Central Darling Shire, NSW.

The term 'supply' covers a range of physical objects and materials that artists and makers indicated in their mapping interviews as necessary inputs into their creative practice. Paints and canvases, camera lenses and batteries, scrap materials from the local tip, wood sourced from nearby forests and opals mined beneath the desert are a few examples of the range of materials that were necessary to sustain the varied creative practitioners who took part in the interviews. These materials go on to become creative end products emblematic of the region and simultaneously are bound up in wider circuits of production and material mobility.

To create the topological maps displayed in Figures 2 and 3, each respondent's map was scanned and turned into a digital file. Respondents' work locations were placed into the GIS database by georeferencing their map (assigning location) and pinpointing worksites. All sites mentioned as being a place where supplies were sought either on or off the map were also added to the spatial database (the map used in interviews only covered the Central Darling Shire and surrounds but many places beyond the map were discussed and often listed along the margins). A one-to-one matrix was generated with a tally of connections between each site. Computing relative connection frequencies becomes possible, for example, between Menindee and White Cliffs or between Menindee and Sydney.

From the thirty-four interviews conducted, twenty-two supply sites were revealed. Figures 2 and 3 provide a cartographic display of the resulting topological network, illustrating supply connections crisscrossing the LGA and beyond. Two types of connections or supply 'flows' were mapped: connections contained within the shire, and connections extending beyond the shire's bounds.

Figure 2 displays the flows of supplies circulating internally within the Central Darling LGA. Lines of connection between locales indicate connections and the arrows along the line indicate where supplies are coming from. Increasing thickness and darkening colour denote greater frequency of connections. In the first frame of Figure 2, only those connections that are occurring internally within a town are shown (for example, a jeweller in White Cliffs

obtaining supplies locally). Only a relatively small number of internal connections were evident (seven sites in total), indicating that, generally, cultural practitioners needed to draw on resources further afield than just those of either their local town or LGA.

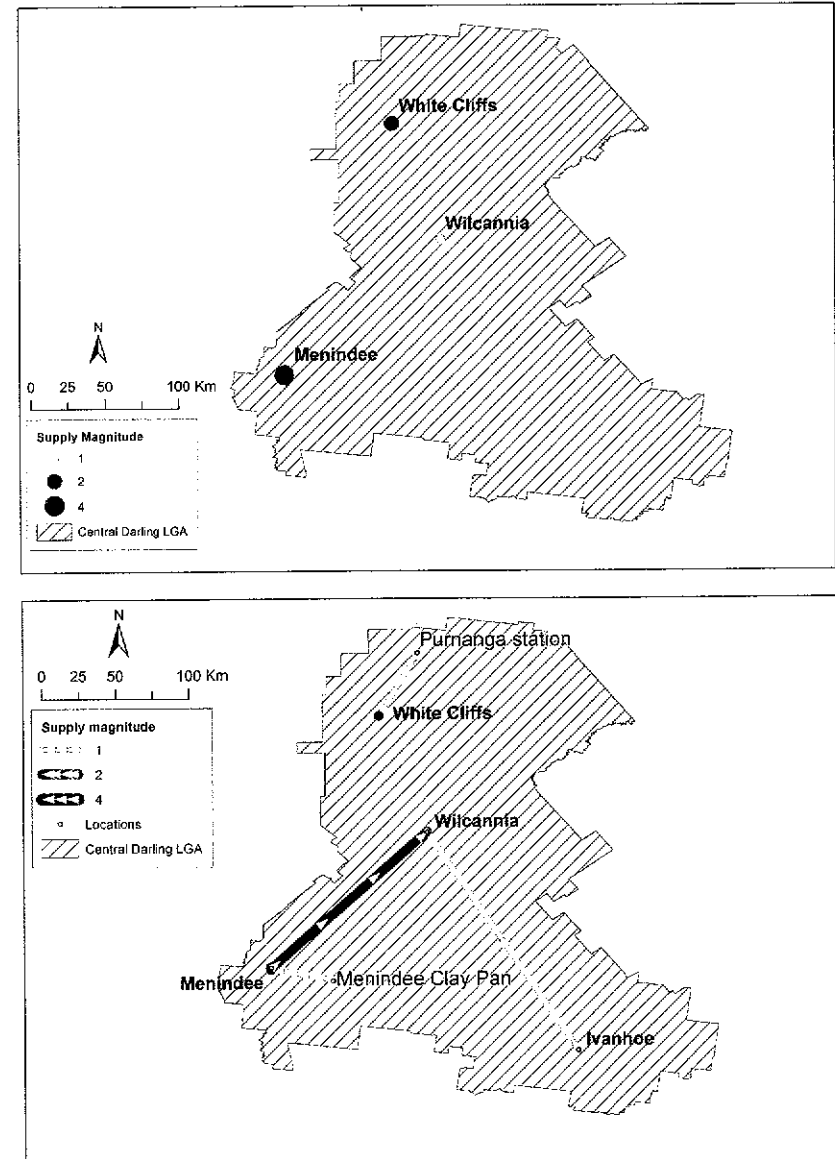


Figure 2. Internal supply flows for Central Darling LGA.

However, simply accessing another Central Darling town to obtain supplies is no simple matter, given the vast distances between locations. The second frame of Figure 2 highlights this quite prominently, with the paucity of supply connections for the region also numbering only in the single digits. The strongest link was two Wilcannia practitioners sourcing their materials from Menindee. Only a single link is evident between Ivanhoe and Wilcannia. No supply links were evident between White Cliffs and towns to the south. It is not only the sheer distances involved in making trips between these towns but, in some instances, the quality of the road network needs to be taken into account. For example, Ivanhoe in the south of the shire has no sealed road linkage to Menindee. A round trip between these two towns equates to around ten hours of drive time but can take even longer due to the variable unsealed road conditions. Dirt and dust take their toll on cars and drivers, and fuel expenses also become burdensome. This leaves many residents heavily reliant on the postal service rather than venturing out on their own to source supplies. Indeed, in Ivanhoe, the local postal service was highlighted by participants as a key cultural asset, providing a vital connection for those living on outlying stations (see Chapter 2, 'Having the Conversation').

Figure 3 displays the spatial arrangement of supply networks emanating beyond the Central Darling LGA. Each town sends out its own somewhat distinct radial network of connections. Explanations for the differing radial patterns are a mix of geographic location, infrastructure (or lack thereof) and the type of creative work taking place in that location. For example, jewellery makers located in White Cliffs maintain connections with other precious gem mining locales such as Lightning Ridge and Coober Pedy. Furthermore, the Central Darling Shire is so vast that certain towns are more closely and in some cases better linked to the comparatively close regional centre of Bourke or other state capitals than other shire towns.

MAPPING METHODS

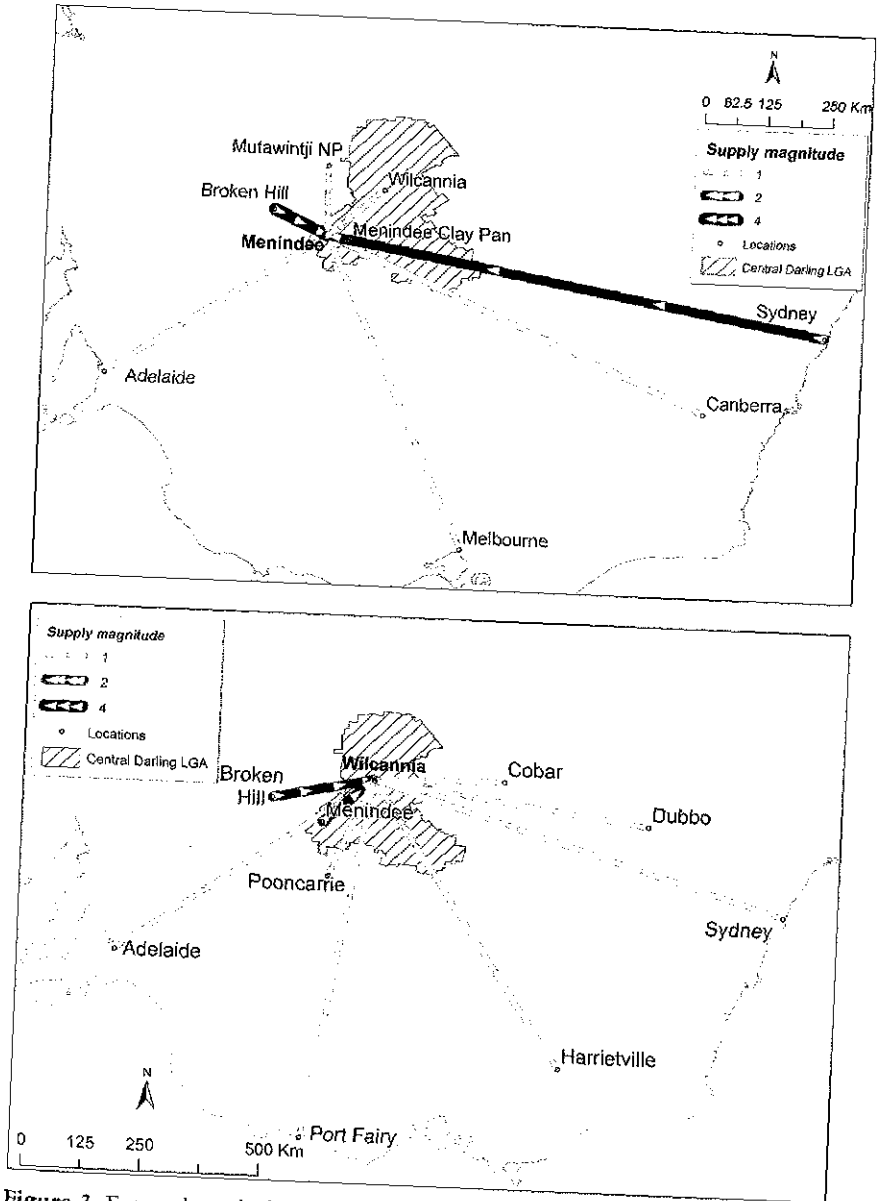


Figure 3. External supply flows, Central Darling Shire.

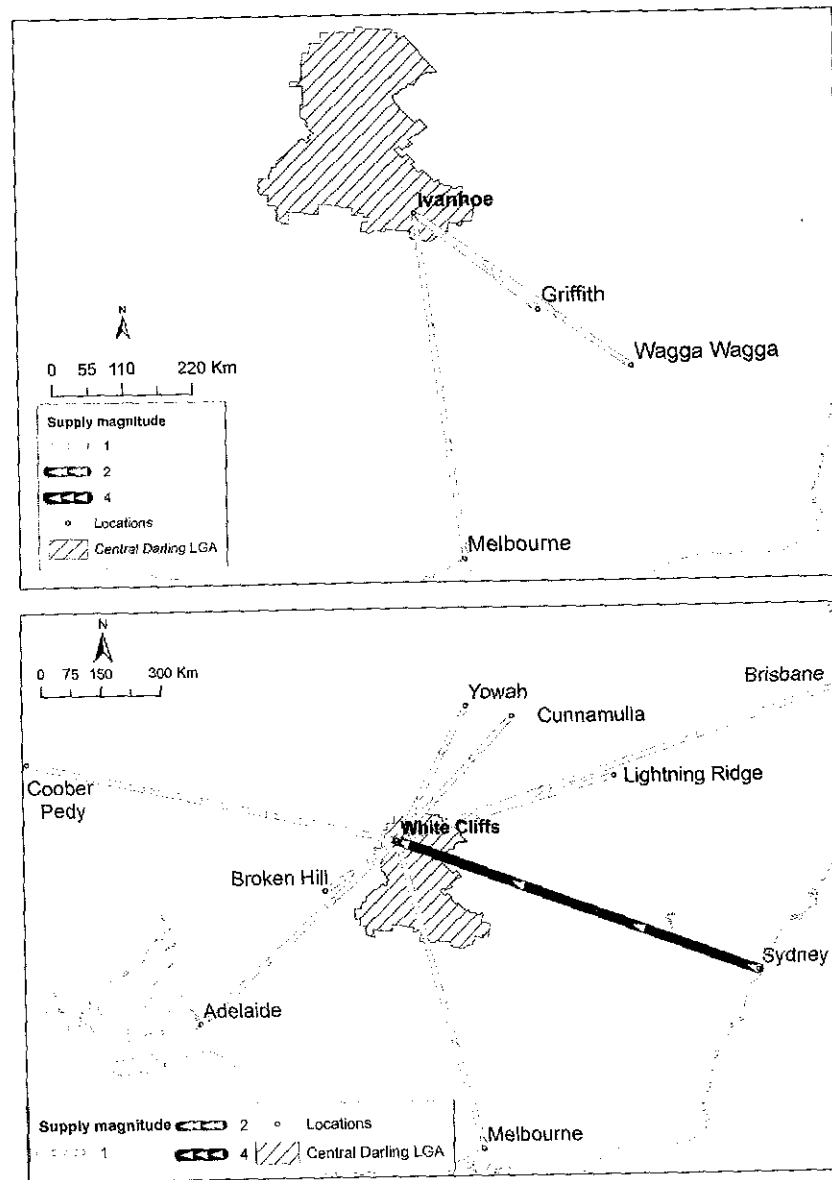


Figure 3 (continued). External supply flows, Central Darling Shire.

These supply network maps reveal a Central Darling creative economy that is heavily reliant on external inputs. This has implications for any regional creative industry strategy directed at the Central Darling, in that the individual needs of each town may benefit from tailored strategies based on the mix of creative practitioners, the peculiarities of their supply chains and how these orientate toward other centres further afield. Topological supply mapping goes some way to informing these decisions but would need supplementing with further topological analysis of product demand (where creative products end up) within and beyond the region.

*Mapping networks: Topological mapping within towns*

Topological mapping can also be deployed to uncover networks operating at finer spatial scales, such as those between workplaces within a town or city. This second example comes from a mental mapping exercise carried out with creative workers in Darwin, NT. Darwin is a small city with many physical and social characteristics that set it apart from other seemingly 'creative' post-industrial towns from the United Kingdom or North America. Its urban morphology is dominated by a suburban layout, with only a very small downtown area. According to official measures only a small percentage of the city's workforce was employed in creative occupations, yet our research for the Creative Tropical City project found visible evidence of semi-professional and grassroots creative activity, which revealed extensive networks and sites of ephemeral creative activity occurring across the city.

To gain greater insight into where creative activities were happening in Darwin, mental maps were completed during semi-structured interviews with 100 creative practitioners. On average, each interviewee indicated five different sites as workplaces, revealing to us the multiple and varied sites that may comprise a normal working day. For example, a musician might rehearse at home, gig at a variety of venues, teach music lessons at the local high school and record performances in a recording studio. All



these sites make up the working life of the musician and deserve to be documented and mapped as part of the city's creative workplace network. Topological mapping provides an excellent means for summarising the multiple connections created by each creative worker as they crisscross the city.

Mapping out the strength of connections emanating between suburbs was chosen as a means to make sense of the data and provide a city-wide summary of the city's workplace topology. Returning to the example of the musician, participants were asked to indicate a main place of work (in this case, the home rehearsal space) and all other sites were listed as secondary work locations. Links can be made between the major worksite and the other secondary sites. Each site sits within a particular suburb and a tally records the instances of either primary or secondary worksites falling within their bounds. A one-to-one matrix for connections between suburbs was then imported into the GIS for subsequent topological mapping.

Figure 4 shows the result of mapping all 377 topological connections for Darwin's creative workforce. A dense network of interdependence between suburbs is revealed, comprising 141 suburb-to-suburb flows of creative workers moving between workplaces. Despite the inner city maintaining 50 internal connections between the 34 workplaces within its bounds, there were numerically more connections emanating between workplaces residing in the suburbs. This reflects a networked interdependence between inner, middle and outer suburbs rather than simply an oppositional binary, pitting the inner city as the premier creative hotspot against suburbia bereft of creativity. Rather, what was revealed were symbiotic relationships emerging across the city, between inner-city locations and suburban gardens, between outer-suburban garage workshops and inner-city galleries. Theories of where creativity is found in the city can be advanced by thinking beyond simplistic proximity-based clustering and by turning instead to narratives that emphasise actual everyday movements, connections and stories. A qualitative mapping

approach followed up with topological mapping illustrates that even non-proximate suburbs are drawn together in the cultural life of the city (I have explored this in more detail in 'Multiple Work Sites and City-wide Networks', *Australian Geographer*, 2010).

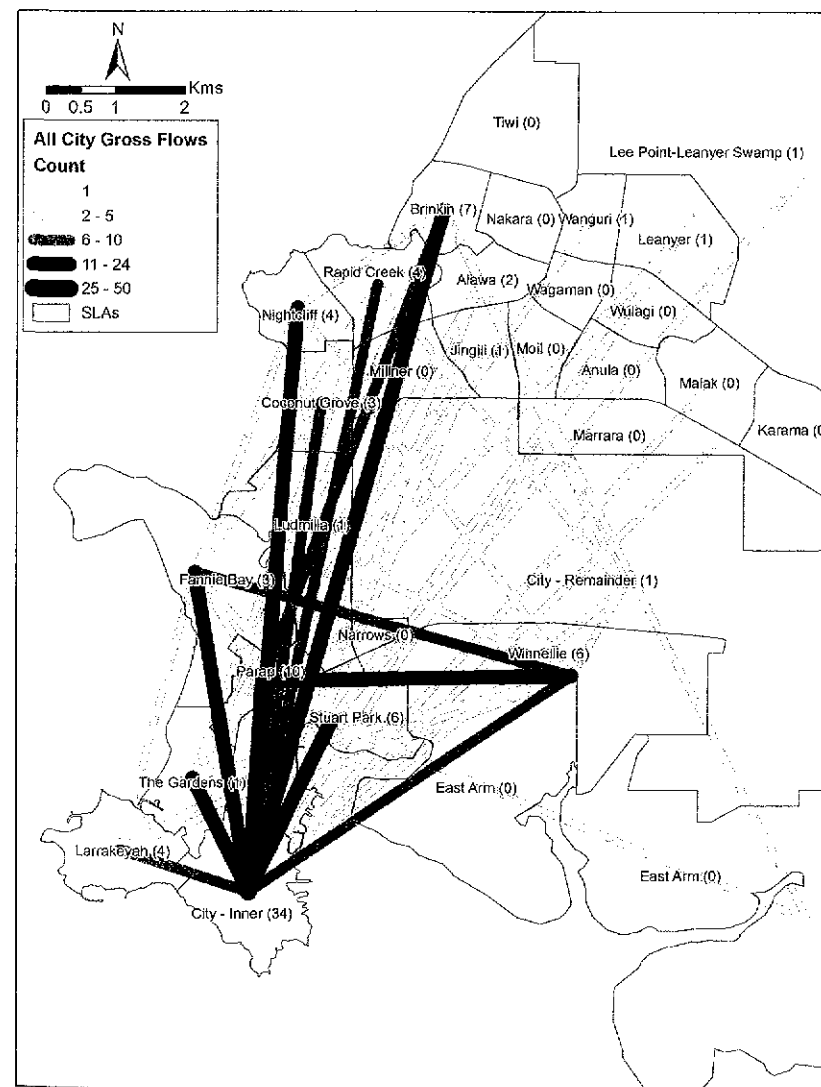


Figure 4. Workplace topology, Darwin.

## Surface mapping

Often when questions are asked in mapping interviews about 'where' certain phenomena might exist, respondents choose to denote an area rather than pinpoint a precise location. This data can be imported into a GIS and collated with answers from other respondents, revealing zones of the map where multiple responses were most evident. This section will illustrate the interpretive power of this approach by mapping the most inspiring places for creative practitioners in the Central Darling and Darwin.

Figure 5 displays all thirty-four responses from creative practitioners in the Central Darling to the question 'Where do you find inspiration?' Colours ramp up from light green to dark blue, denoting instances where more respondents agreed that a particular part of the map was an inspirational place. The map is displayed in 3D by exaggerating the dataset about the z-axis. As respondents were asked to mark up a regional map at such a large scale, a fine-grained reading of inspirational sites cannot be discerned from this data. Rather, in this instance, what is mapped is a broadscale regional interpretation of the inspirational landscapes and locales. Definitive peaks were evident, centred on each of the towns where workers resided, reflecting practitioners' place attachment to where they lived and worked. Yet beyond the towns, the wider natural landscape of the Central Darling exerts a discernable effect on creative practice. For example, waterways were important for some practitioners, with the Menindee Lakes showing up distinctly as well as the Darling River, snaking its way in a south-easterly direction between Wilcannia and Menindee. There was also an indication from some respondents of the affective qualities of mobility. Driving through the desert and negotiating a variable road infrastructure can be seen in the main roads rising from the map, highlighting the sparse arterial network connecting each of the towns. The affective qualities of outback mobility, including experiencing the wide open landscapes and the desert light while driving at different times of the day, exert an inspiring influence on creative practice.

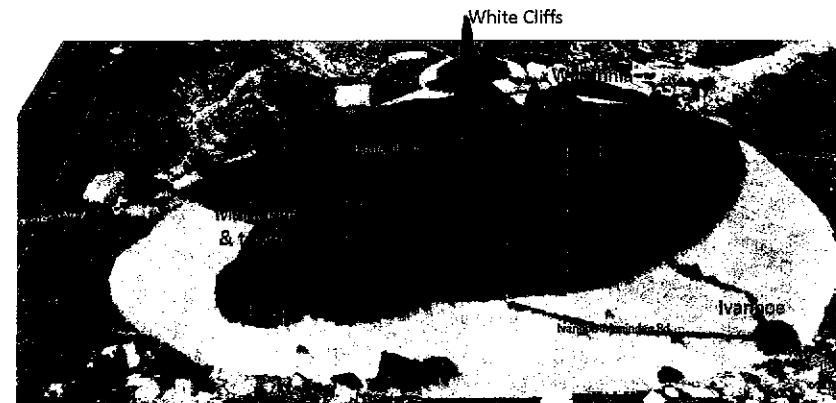


Figure 5. Spaces of creative inspiration, Central Darling Shire.

Turning now to a similar line of questioning conducted with Darwin's creative practitioners, Figure 6 maps the spatial distribution of Darwin's most inspirational places. Evident in the resulting map was a strong correlation between elements of the natural environment – the coastlines, parks and gardens – and an inspiring quality that influenced creativity. In particular there was a propensity amongst respondents to note down shorelines, especially the picturesque headlands and beaches of Fannie Bay and Nightcliff.

The outdoors were viewed as places where designers, visual artists and photographers could source inspiration and, in some instances, insert the locale directly into an artwork, a magazine article or a photographic piece. Others whose creative practice centred on performance spoke more of the indirect and affective qualities of Darwin's parks and gardens. These were described repeatedly as a place to come and unwind and reflect upon their creative practice. A musician put it to us this way:

Yeah, I find being outdoors [inspiring] because, things come to you a bit more, you can relax more, I find I relax more when I'm outdoors and when I'm near water...I can start the creative process by sitting down with my notepad and writing stuff out.

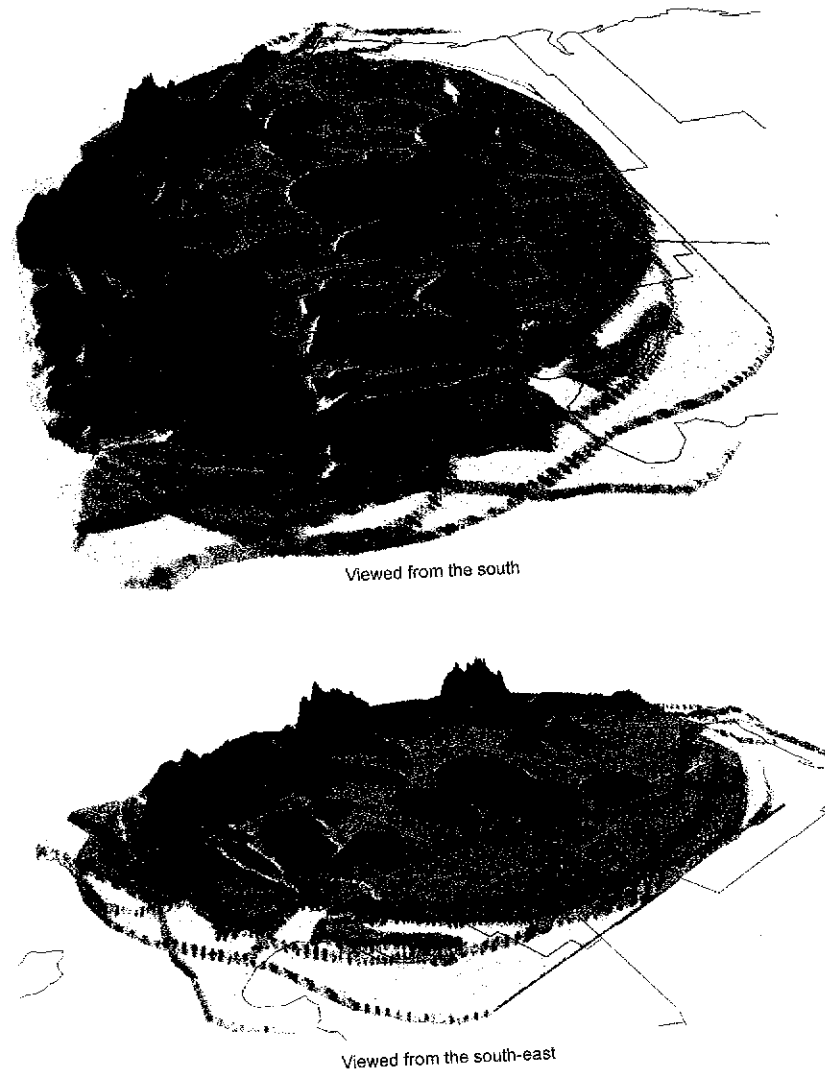


Figure 6. Spaces of creative inspiration, Darwin.

In a different sense then to more strict definitions of what are creative workplaces and the tasks that fall under the category of 'work', Darwin's natural environment was both a primary and secondary source of inspiration, necessary to the functioning of the wider creative economy. Future spatial planning decisions should recognise and value Darwin's open spaces, especially as the foreshores come under increasing pressure from high-rise construction. Future developments need to be sympathetic not only to physical changes such as views and access, but also to the impacts that increasing use of these areas may exert on the overall feel of these vital open spaces. This point is shared by Susan Luckman in *Locating Cultural Work* (2012). In contrast then to the dense networks and clusters evident in urban creative milieu, access to and the sense of space provided by the natural environment is perhaps the unique competitive advantage that rural, regional and remote places can provide to regional creative economies.

### Conclusion

Combining ethnographic methods such as interviewing with the spatial analysis possibilities of GIS provides creative industry researchers with a productive means for generating new and valuable insights about how creative economies function beyond the inner city and beyond the realm of quantitative employment statistics. Methods sympathetic to the everyday experiences of creative workers were needed to uncover how creative economies operate in places without obvious creative clusters or hubs. In the Darwin examples, qualitative mappings of inspiration and work went beyond the usual creative city script that fetes downtown zones as the hotbeds of creative production and consumption. Darwin's urban form precludes that kind of interaction which might give rise to creative clusters full of knowledge-workers living and working in close proximity. But instead of assuming that Darwin is 'uncreative' for not displaying those particular

attributes, the results from the mapping exercise present a much more nuanced picture of creative life in a small, remote city.

Creative geographies generated through mental mapping are often messy, and may not neatly intersect. For example, Darwin's geography of inspiration was vastly different to that of its creative workplace topology. In the Central Darling, the patterning of supply lines, while useful for understanding how the region's creative economy ties into wider flows and consumption practices, say little about the everyday affective relations between creative practitioners and their landscape. However, qualitative mapping and GIS provide a way to triangulate between different results and data streams, inviting us to broaden our conceptions about what can be mapped about rural, regional and remote creative economies. Physical arts and cultural infrastructure like halls, galleries or workshops are important but mapping other, more intangible, embodied qualities of place are vital in understanding what is unique in rural, regional and remote creativity.