

THE GLOBAL CONNECTIONS OF INTELLECTUAL WORKERS: AN AUSTRALIAN STUDY

R.W.Connell, University of Sydney
June Crawford, University of New South Wales
Julian Wood, University of Sydney

Address for correspondence

R.W.Connell
Faculty of Education and Social Work A35
University of Sydney, NSW 2006
Australia

Email contact: r.connell@edfac.usyd.edu.au

BIOGRAPHICAL NOTE

R.W.Connell is professor of education at the University of Sydney, formerly at University of California, Santa Cruz, and Macquarie University, Sydney. He is author of Gender, Masculinities, Schools and Social Justice, Which Way is Up?, Ruling Class Ruling Culture. Julian Wood is Senior Research Associate at the University of Sydney. He has conducted social research in the areas of education, gender, media and intellectuals. June Crawford is a research consultant, formerly Associate Professor in Psychology at Macquarie University. She has wide experience in designing and analyzing surveys, her most recent research concerning sexual practice in the context of HIV/AIDS prevention.

THE GLOBAL CONNECTIONS OF INTELLECTUAL WORKERS: AN AUSTRALIAN STUDY

ABSTRACT

The sociology of intellectuals, long focussed on the metropole, needs to move to a world scale. Study of global connections in the intellectual labour process is the most promising way. A method is developed for defining the intellectual labour force and studying its international participation. Results are presented from a survey of 500 Australian intellectual workers. In this workforce international connections are common and communication technology is extensively used. Several dimensions of international connection form coherent scales. International connection is stronger in the university sector than the corporate sector. Metropolitan primacy is acknowledged but the intellectual workforce is being reproduced in the periphery. Patterns of international involvement differ by generation and by field, but not by gender. A statistical model predicting levels of international practice is developed, which highlights the importance of social recruitment processes and current institutional functioning. The study demonstrates that a national intelligentsia can be analyzed in relation to global processes and an empirical approach to the study of intellectuals on a world scale is possible.

KEYWORDS

Intellectuals, globalization, technology, labour process, sociology of knowledge.

THE GLOBAL CONNECTIONS OF INTELLECTUAL WORKERS: AN AUSTRALIAN STUDY

Introduction: intellectuals, globalization and labour process

In sociology and related disciplines, discussions of intellectuals have focussed on the intellectuals of Western Europe and the United States. The boundaries of this region have been the - usually unspoken - limits of debate about the "new class", the intelligentsia and the sociology of knowledge, from Mannheim and Benda in the 1920s to Gouldner (1979), Bauman (1987), Aronowitz (1992) and Eyerman (1994) in the last generation.

Yet it is widely acknowledged that questions about social structure and dynamics must now be considered on a global scale (Waters 1995, Lechner and Boli 2000). The world integration of economies, technologies, communications, political and military systems, is so far advanced that it is no longer conceptually useful to analyze a local "society" or culture in isolation from the whole. As Wallerstein (1999) convincingly argues, the perspectives of social science itself must be re-thought in this context.

Though business rhetoric presents "globalization" as a sweeping process of homogenization, and the global market as a level playing field where all compete on equal terms, the reality is very different. Massive disparities exist between regions of the world in economic resources and standards of living. Economic power is still concentrated in a core or "metropole" consisting of the rich, capital-exporting countries of North America, Western Europe, and Japan – in which almost all transnational corporations are based (Hirst and Thompson 1996).

This reflects the history of world integration. Contemporary "globalization" is the latest moment in an immensely complex and turbulent process, over the last five hundred years, in which the world's population has been brought under the influence of an economic, cultural and political system centred on the metropole just defined. The historical pathways in different sections of the periphery vary a great deal. They include direct colonial rule and partial industrialization (e.g. India), resistance and controlled westernization (e.g. Japan), shifts from political to economic dependence (e.g. Argentina), and settler colonialism (e.g. Australia).

The cultural processes associated with empire and post-colonial domination are far more than footnotes to the story of metropolitan capitalism and modernity. In these encounters, as traced by historians such as Kiernan (1986) and Bitterli (1989), much of what we understand as "modernity" was constructed. Contemporary theorists of postmodern culture such as Featherstone (1995) are right to emphasise the interplay of cultures, even if they miss much of its history. And contemporary theorists of globalization such as Bauman (1998) are right to emphasise its cultural dimension, and the fact that globalization processes often produce division rather than homogeneity.

However there is a tendency, in many discussions of postmodernity and the cultural dimension of globalization, for the arguments to become disembodied, to float free of social context. In harmony with Sklair's (1995) treatment of globalization as a process embodied in concrete social groups, we consider it is essential to study the cultural dimension of globalization by studying the specialist producers and transmitters of culture. We need, in short, to bring together the perspective of the sociology of knowledge with the perspective of globalization, to generate a world sociology of intellectuals.

Discussion of intellectuals on a world scale has begun. Said's brilliant and moving Representations of the Intellectual (1994) is the best-known example. Putting this together with studies of regional intelligentsias (e.g Konrad and Szelenyi 1979 on Eastern Europe, Bender 1993 on the USA), we have starting-points for analysis of the way intellectuals and intellectual life are related to the processes constructing global society. But studies like Said's, however illuminating about the relation between public intellectuals and politics, say little about intellectuals as a social group and their routine work.

Here another sociological literature becomes relevant. As the Arena group proposed two decades ago (Sharp 1983, 1985), the political intervention of the most visible intellectuals has to be seen against the background of a wider group of intellectually trained workers. It is a familiar point in discussions of post-industrial economies that tertiary-trained specialists form a key part of the workforce. This group has significance not only because of the growing importance of knowledge-based labour in the high-technology economy, but also because of the distinctive social relations embodied in that labour - which often pits them against the authoritarian logic of bureaucratic or business management, and can make them an important element of political oppositions.

Studies of knowledge workers (Kleinman and Vallas, 2001) have accumulated since that time, and have given us a better understanding of the specific forms of labour involved in intellectual production (Eyerma 1994, Gorz 1999). In the light of this work, an industrial sociology of intellectuals is conceivable; indeed some elements of it are already in place. Tancred-Sheriff (1985) in Canada opened the question of the academic labour process and the way it changed with the changing institutional context in universities. Becher's (1989) research emphasised the potential for different occupational cultures to develop in different areas of university work. A whole tradition of science studies (Bloor et al. 1996), when its epistemological concerns are bracketed, provides rich evidence about intellectual workplaces and the social relations within them.

When we consider the intellectual labour process, a number of otherwise abstract questions about globalization and intellectuals become concrete and researchable, because we are addressing the very practices through which international links are made and the social process constituting world society is (in this specific sphere) constructed. Five questions about these practices are the focus of this paper:

(a) Are there coherent patterns in intellectual workers' engagement with global institutions and processes? Can the phenomena be "mapped", or is global culture a realm of incoherence and dislocation, as some accounts of postmodernity suggest?

(b) Is there a process of "globalization" within intellectual work? Two forces are often presumed to be driving global integration: new technology, and global business. To what extent do intellectual workers actually use new technologies, and how important are they to contemporary intellectual labour? Does the corporate sector actually lead the process of globalization in this realm?

(c) How are global differences reflected in intellectual labour? What is the relation between intellectual work in the metropole and intellectual work in the periphery? To what extent is the intellectual workforce in non-metropolitan countries able to reproduce itself locally?

(d) What differences exist between groups in their participation in globalization processes? It is often thought that younger generations are Internet-savvy and globally literate in a way their elders are not. Is this reflected among intellectual workers? Are there other differences, e.g. gender or area of specialization?

(e) Given answers to the above, how are different influences on intellectual workers' global involvement related to each other? Technically, can we construct a multivariate model that will statistically predict patterns of involvement - and if so, what variables are the most important predictors in it?

In this paper we describe a method for studying these questions, and present the answers yielded by an empirical study of intellectual workers in Australia. The method is described in some detail, so it can be adapted for use in other contexts. We offer the findings as a regional case study. Of course local findings cannot be directly generalized to the world scene - that is the point we have been making about US and European research - but we think this case may be of more than local interest. It displays, in its own distinctive way, general issues about centre and periphery in world society, and about the structuring of cultural life in relation to world society.

Australia is geographically as "peripheral" as it is possible to be, being very remote from metropolitan countries, but culturally and politically it tends to identify with the metropole. In terms of social history, Australia is a product of European settler colonialism, with a small surviving indigenous population, a majority of European descent, and newer immigrant communities mainly from the Mediterranean region and south-east Asia. The education system is monocultural and Anglophone. A dependent capitalist economy, with a high level of foreign ownership (principally British, US and Japanese), has long relied on agricultural, pastoral and mineral exports to sustain a relatively high standard of living. A broadly social-democratic political system has in the last two decades been transformed by neo-liberalism (Pusey 1991). In international relations Australia is effectively a satellite of the USA, despite a recent period of orientation towards its neighbours in south-east Asia. As in other cases of settler

colonialism, much of Australian intellectual history has revolved around dependence and independence in relation to the metropole, in this case Britain; the "coming of age" of Australian literature, art and science has been repeatedly announced, and repeatedly denied, over the last hundred years.

Method

Conceptual framework. To plan an empirical study of intellectuals is to face an immediate barrier: there is no suitable sampling frame. Some people would think "intellectuals" an indefinable population: Bauman (1987) for instance insisted that intellectuals are not an occupational category but are self-recruited performers of a social role. This approach is self-defeating. Life-history interviews in a previous study (Connell and Wood 2002) show that many people who undoubtedly perform the relevant social function are uncomfortable about calling themselves an "intellectual". So defining a sample by self-selection is not feasible.

After considering alternatives we decided on an approach which develops a classification of fields of knowledge and culture, uses this to characterize groups of occupations, and then attempts to sample within those occupations. We treat intellectuals as workers, doing particular kinds of work. As Althusser (1969) recognized, intellectual labour has specific tools or techniques, and specific objects to which they are applied. What is distinctive about intellectual labour is that the tools or techniques are symbolic. Further, these tools are deployed in organized bodies of knowledge or symbolism.

Our classification therefore begins with the application of symbolic tools, organized as bodies of techniques and knowledge, to various objects. We distinguish four broad objects of knowledge and cultural practice: 1. Nature, meaning the material environment of human life, including human bodies as well as non-human objects and processes; 2. Economy, meaning the processes of production, circulation and accumulation that produce a social surplus, making products of human labour available for redistribution and investment; 3. Social relations, meaning the structures, institutions, patterns of conduct and relationship that make up life in civil society; 4. Knowledge and symbolism, meaning the products of intellectual labour itself, which are reflexively available as objects of cultural practice.

This classification is ahistorical, but all intellectual work is dependent on its historical location. New sets of intellectual tools appear from time to time, while others are modified or abandoned. This is emphasised in Kuhn's famous treatment of "scientific revolutions", which concerned the creation of new "paradigms" of research; and even Lakatos' (1970) sharp criticism of Kuhn admitted shifts in scientific frameworks, and historical trajectories for research programs. Lyotard's (1984) exploration of the postmodern condition suggested a general rupture of intellectual and symbolic frameworks, with the collapse of "grand narratives" and foundationalism.

Accordingly, we make a broad distinction about method, i.e. intellectual tools and techniques: 1. New fields: expanding, emerging, or newly-defined areas, created by recently developed techniques, addressing newly defined problems, or arising in newly-created institutions; 2. Old fields: established, stable or contracting areas, depending on established or long-familiar methods, addressing long-recognized or "classic" issues, or arising in well-established institutions.

Combining the two dimensions produces an eight-fold classification of areas of intellectual labour, which we call the "Grid". It is set out in Table 1.

Table 1: Grid of categories of intellectual labour (*italics*), and sample obtained (roman).

	HISTORY OF METHOD	
OBJECT OF KNOWLEDGE	<i>1. Nature – new</i> Research scientists, new areas (20), Applied scientists, sunrise industries (20), Information technology hardware professionals (20)	<i>2. Nature – old</i> Research scientists, established areas (12), Applied scientists, established industries (17), Medical, dental researchers & practitioners (10), Engineers (14), Architects (10)
	<i>3. Economy – new</i> Finance market operators and managers (13), Management consultants (13), Academics in business management programs (12), Managers in hi tech sunrise industries (10), Lobbyists, pressure group representatives (12)	<i>4. Economy – old</i> Managers in manufacturing industry and mining (15), Senior public servants (13), Economists (11), Politicians and political advisors (11), Trade union officials and researchers (12)
	<i>5. Social relations – new</i> PR consultants (10), Advertising managers and creative staff (10), Market researchers (managerial level) (10), Media buyers (10), Customer relations managers (10), Activists in social movements (11)	<i>6. Social relations – old</i> Social workers (9), Psychologists, psychiatrists, counsellors, therapists (14), Lawyers (barristers, solicitors, judges) (7), Priests and ministers (13), Actors, playwrights and scriptwriters (9), Journalists, social commentators (13)

	<p>7. <i>Knowledge & symbolism – new</i> Computer systems analysts, software architects & designers, web page designers (14), Database designers and managers (10), Cultural studies researchers and teachers, media critics (23), Designers in multimedia (13)</p>	<p>8. <i>Knowledge & symbolism – old</i> Librarians (10), Museum and gallery curators (9), Philosophers, mathematicians, theologians (9), Artists and musicians (9), Teachers - curriculum developers and managers (14), Publishers (9)</p>
--	--	---

Sampling. This Grid formed the conceptual basis of our sampling. The practical task was to define groups of people who could be interviewed about their labour. We listed occupational groups in whose working life one of these eight types of intellectual labour predominated. We made a sustained attempt to produce a frame for random sampling, using membership lists of professional organizations, commercial databases, staff lists of public institutions, etc. This attempt was abandoned when the inconsistencies of these data sources, and the cost and time required to correct them, blew out beyond the funding available. As a reasonable compromise we settled for a sample drawn from the existing contact list maintained by a reputable commercial market research organization, supplemented by "snowballing" and publicly available data sources.

In order to diversify the sample, we used a relatively large number of occupational groups with a relatively small quota for each. The 40 occupations used in the fieldwork, with the numbers interviewed in each case, are listed in Table 1. An effort was also made to achieve geographical spread across Australia. The result is a stratified quota sample, which cannot be treated as equivalent to a random sample for the purpose of statistical inference, but will make possible a useful investigation of relationships among variables.

This approach to sampling is imperfect. Occupational classifications are only partly based on the intellectual or cultural character of the work involved. But the approach is practicable, and has certain virtues – for instance including some groups who would not commonly be thought of as "intellectuals" but are doing knowledge-based work, such as finance market operators, public relations consultants, database managers and lobbyists. It is important to recognize new bodies of knowledge, new forms of symbolic action, and new occupational groupings, even when they are unlike the familiar figures of the novelist, the scientist or the philosopher. However this risks pushing the boundaries too far. Since knowledge is a central organizing force in modern economies, most occupations are connected to it in some way. So in all fields our focus was on people who create ideas or cultural artifacts, deal in broad strategies, or think in general terms.

Questionnaire. We developed a set of questions whose core was descriptions of practice in the respondent's working life; plus a selection of attitude/opinion items and personal data. The following areas were covered, mainly in this order (number of items in parentheses):

- Education and training (10)

- Career (9)
- Current job, labour process (17)
- Use of technology (18)
- Workplace & employment context (16)
- Opinions on culture and intellectual life (6)
- Networks, associations, links and travel (23)
- International orientation (6)
- Social background and personal life (14)

The questionnaire was designed to be used in face-to-face interviewing, in telephone interviewing, or as a self-administered questionnaire on the Web. Apart from face-to-face pilot work, only telephone interviewing was done in the main study. (Copies of the questionnaire, and details of the scale items discussed below, are available on request from the authors.)

Interviewing. A telephone survey was conducted in April-June 2000, by interviewers employed and trained by Market Equity Pty Ltd, with operations based in Perth, Australia. 500 interviews were completed. Answers were recorded on disk by Market Equity, which provided the raw data and frequency tabulations by Grid categories. Further statistical analysis was carried out by the authors.

Respondents. The sample obtained was very close to the quota plan. The 500 interviews were spread across all states of Australia, but with a bias away from the south-east (the reverse of the usual pattern in Australian social research, and an advantage of telephone interviewing).

Broad social characteristics of the sample were those to be expected in such a set of occupations. 28% were women and 72% were men. Median age was 45, with an interquartile range 36 to 52, so we are mostly dealing with a group in middle age. 81% held a university degree, about half of these having a higher degree. 72% were born in Australia or New Zealand; 76% had first gone to school in Australia or New Zealand, broadly reflecting the national background of the population. The largest group of non-Australian born came from Britain.

From two questions on employment situation, a composite variable of "employer type" was constructed. The numbers of respondents in each of five categories is shown in Table 4 below. It is clear that the sample, including corporate and government employees and independent professionals, reaches well beyond the academic world that has been the focus of most empirical work on intellectual labour to date.

We now turn to the results of the survey, presenting them in the order of the five questions posed in the Introduction to this paper.

Findings (a): Patterns of international connection

The first question is whether there are definable patterns in intellectual workers' involvement in global processes. We sought a detailed picture of participation. The interview contained 31 items dealing with overseas training, travel and work experience, current participation in conferences and networks, work with overseas collaborators, current use of overseas vs local resources (journals, databases, etc), and the emphasis or importance accorded to international reputation and to overseas sources of ideas and information.

Our immediate test of "pattern" is interconnections among these items. We explored intercorrelations among the items and especially whether groups of items would combine into scales providing more or less robust measures of different aspects of international connection. This proved to be the case for the following issues:

Overseas training and employment (OST). Five items covering different aspects of training and employment (e.g. country where first went to school, holding a fulltime job overseas for more than a year) proved to be intercorrelated, and formed a short scale of satisfactory reliability ($\alpha = .80$).

International orientation (INO). Four Likert-type attitude questions were asked about orientation to international rather than Australian peers and developments. Three of these formed a moderately satisfactory scale ($\alpha = .63$).

Current international practice (INP). Fourteen items covering different forms of participation in international intellectual work in the present (e.g. use of specialist journals from outside ANZ, travelling overseas to give presentations) were examined. This was a more diverse set of items and did not immediately form a satisfactory scale. After the least connected items were deleted, and two items which had conceptual overlap with another scale (technological orientation, below) were deleted, a set of eight items remained which formed a satisfactory scale ($\alpha = .78$).

Use of technology (TEC). Eighteen questions concerned with use of technology, mainly information technology, were examined to see if they would scale. An adequate scale of twelve items resulted ($\alpha = .81$). This scale is not in itself a measure of international connection; rather, it is a measure of use of techniques that are now an important form of international connection.

The four scales were intercorrelated as shown in Table 2. We read the significance test results on an "as if" basis, as the significance that would be attached to a correlation of this strength if a sample of this size were randomly selected.

Table 2: Product-moment correlations among scales. *** means $p < .001$ (2-tailed test).

	INO	INP	TEC
OST	.28***	.29***	.09

INO		.56***	.19***
INP			.30***

The notable features of this table are: (a) There are generally positive relationships among the scales, indicating a broad differentiation within this sample between groups which are more, and groups which are less, internationally connected. (b) There is little or no connection, however, between overseas training and use of technology. In effect, the use of technology runs at the same levels between "immigrant" and "home-grown" intellectual workers. (c) There is a strong connection between international practices and the attitudes that value international connections. This is not surprising, but it could have been otherwise.

Findings (b): Globalization processes within intellectual labour

At least one of the familiar processes of globalization is widely present in our respondents' working lives. As a group, Australian intellectual workers are active users of electronic technology. To the proposition "My work has been strongly affected by changes in technology in the last 5 years", 84% agreed. We asked a series of questions about which aspects of technology they actually used, and how regularly. Examples are shown in Table 3.

Table 3: Use of selected items of electronic technology.

TOOL	PERCENT OF RESPONDENTS WHO USE THIS		
	REGULARLY	OCCASIONALLY	NOT AT ALL
Personal computer	94	3	2
Phone or fax	95	4	1
Mobile phone	48	21	31
E-mail	89	7	4
Internet	73	21	6
Spreadsheets	38	37	25

Obviously, there is near-universal access to the Internet, and a very high level of use of e-mail. These are impressive levels of penetration of the techniques of electronic communication. We can be reasonably confident that the answers do not just reflect an unthinking endorsement of "technology", since the use reported for other tools, including mobile phones and spreadsheets, is much lower. Also, there is enough variation in the use of new technology to make possible the construction of the TEC scale, as noted in the previous section.

The scales defined in the previous section make possible a direct test of the idea that the process of globalization is being led by the corporate sector. The composite variable "employer type" classified respondents into five groups. One-way analysis of variance showed all four scales were clearly associated with this variable (F test $p < .001$, except for OST where $p = .016$). Group scores are summarized in Table 4.

Table 4. Employer type and scales of international involvement. Group means are shown, with standard deviations in parentheses.

	OST	INO	INP	TEC
Corporate (N=179)	.89 (1.40)	.82 (1.53)	6.78 (3.27)	28.70 (4.03)
Government (N=92)	.86 (1.46)	1.09 (1.69)	7.93 (3.50)	27.91 (4.01)
University (N=86)	1.47 (1.56)	2.63 (1.95)	10.55 (3.39)	29.30 (3.56)
Other org (N=50)	1.04 (1.62)	1.08 (1.48)	7.42 (3.40)	24.38 (6.24)
Independent (N=93)	.82 (1.29)	.84 (1.55)	6.32 (2.89)	25.74 (6.26)
Total (N=500)	.98 (1.46)	1.21 (1.76)	7.62 (3.57)	27.68 (4.96)

In all comparisons the "University" sector was the highest, i.e. the most connected or internationally oriented. With OST, INO, and INP the university group stood out strongly from the others. That is to say, in comparison with other groups of intellectual workers, university staff are more likely to have been trained and have work experience overseas, more likely to value overseas arenas, and more likely to be involved with international meetings and colleagues. Corporate sector employees and "independent" workers (some of whom are in the private sector as individual businesses) are below the mean, and are either the two lowest groups, or nearly the lowest, on INO, OST and INP.

The pattern is, however, different with TEC. With this scale the differences between groups are not as marked as with INO and INP. While university workers are still in the lead, corporate sector employees are next. The use of technology seems more evenly spread across sectors of employment than does international connection per se.

Findings (c): Participation from the periphery

Australia is not a poor country, but it is also not part of the world metropole. Intellectual workers in this country face problems of participation from a remote location, and the intellectual workforce here faces problems of reproduction and quality, because of its small size and dependent cultural history.

Most of our respondents maintain a connection with overseas sources in their local working lives. Asked if they use specialist journals from outside Australia or New Zealand, 83% say they do, with 36% indicating "a great deal". Asked how often they "access specialized data or professional information held in another country", 84% say

they do occasionally or frequently (16% never). A substantial minority, 37%, report being members of at least one international association in their field. Asked how often they "provide services, advice or information to someone in another country", 69% said they do so occasionally or frequently (31% never).

Prima facie, then, we find a high level of connection to global networks or processes. This is consistent with our life-history findings about successful Australian scientists (Connell and Wood 2002). More is involved than electronic communication. Our respondents as a group are personally mobile, with substantial levels of overseas work experience and travel. 29% say they have held a full-time job outside Australia and New Zealand for more than a year. In the last 3 years, 35% of them report going to conferences outside Australia and New Zealand, 36% have travelled abroad for work reasons apart from conferences, and 49% have travelled abroad for non-work reasons (e.g. holidays and family occasions).

But it seems that for most, global connections were established after their intellectual formation. 84% obtained their highest qualification in Australia or New Zealand, a higher figure than the number actually born locally. Two-thirds of the respondents said they could identify a specific person who had been a mentor for them, and of this group, 85% said the mentor worked in Australia or New Zealand

There is anxiety in Australia about a "brain drain" to the metropole. What we see here is the other side of this issue, the local reproduction of an intellectual workforce in the periphery. Our respondents defend the quality and significance of the local arena. To the proposition "In my field of work, Australian standards are as high as anywhere in the world", 83% agreed. To the proposition "In my field of work, it is more important to be known internationally than known in Australia", only 24% agreed.

Yet this does not mean the intellectual focus can be mainly local. Australian intellectual workers keep up international connections so carefully because they need to. Asked whether "In order to keep up with developments in my field, one must read books and journals published abroad", 75% of our respondents agreed. Perhaps the most important issue is where people would look for innovation. Asked "When you are in search of new ideas or methods, which country are you most likely to look to?" only 27% of respondents said Australia or New Zealand. Nearly twice as many, 48%, said North America. 16% nominated a European country (including the UK), and few mentioned anything else. As a group, it seems, our respondents are acknowledging the realities of cultural dependence.

Findings (d): Group contours in international participation

The social contours of participation were examined by studying the variation in the four scales associated with age, income gender, migration and intellectual field.

Generation. Age in years was correlated with each of the scales as follows:

OST	$r = .15$ ($p = .001$, 2-tailed test)
INO	$r = .05$ (not significant)
INP	$r = .16$ ($p < .001$, 2-tailed test)
TEC	$r = -.30$ ($p < .001$, 2-tailed test)

There is a modest tendency for the older respondents to have more overseas training or work experience, and to be more involved in current international connections. But there is a firm tendency for the younger respondents to be more involved in the use of electronic technology.

This does not support the hypothesis that the younger generation is leading the process of globalization. But it does suggest a subtler relationship, where the pattern of international connections differs between generations. The older generation is more dependent on travel and traditional contact formats, and the younger is more dependent on the new electronic media.

Income. Income, self-reported in 8 categories, was correlated with each of the scales as follows:

OST	$r = .05$ (not significant)
INO	$r = .02$ (not significant)
INP	$r = .24$ ($p < .001$, 2-tailed test)
TEC	$r = .21$ ($p < .01$, 2-tailed test)

So having overseas training is not reflected in higher income; nor do higher-income and lower-income intellectual workers place different value on international peer connections. But those with higher incomes are distinctly more likely to be involved in international practice. The INP scale includes items on overseas travel, as well as joint work with an overseas colleague. Our life-history study shows such connections in the present are often built on overseas travel in the past. This correlation may therefore indicate either that organizations are more likely to send higher-level employees abroad, or that people on higher incomes can afford international travel more easily, or both.

Gender. One-way analysis of variance showed no significant relationship (using .01 significance level for the F test as a criterion) between gender and any of the four scales. The only one which approached significance at this level was the relationship with INO, where the men showed a tendency to greater concern with international connection. The negative result is interesting, especially for TEC, given the widespread understanding of new technology as "men's business".

Migrancy. Countries of birth were classified into six groups. One-way analysis of variance showed a very strong relationship with OST, as should have happened since some respondents had their training and first jobs before coming to Australia. A relationship with INO was just at the .01 level of significance, with immigrants showing

stronger orientation to international audiences than the Australian-born; this seems a meaningful relationship. Neither INP nor TEC varied with country of birth.

Intellectual field. We examined differences between fields by means of the Grid (Table 1), designed to distinguish broad areas of intellectual work. Scale scores for respondents in each of the 8 categories of the Grid are summarized in Table 5.

Table 5. Intellectual field and scales of international involvement. Group means are shown, with standard deviations in parentheses.

	OST	INO	INP	TEC
1. Nature – new (n=62)	1.29 (1.52)	2.57 (1.86)	9.74 (4.04)	30.19 (3.02)
2. Nature – old (n=65)	0.80 (1.20)	1.47 (2.09)	8.06 (3.64)	27.58 (4.65)
3. Economy – new (n=60)	0.92 (1.41)	1.00 (1.96)	7.72 (3.43)	27.83 (4.01)
4. Economy – old (n=62)	0.56 (1.05)	.54 (1.56)	6.84 (3.36)	27.65 (4.78)
5. Social relations – new (n=65)	0.86 (1.43)	.34 (1.34)	5.88 (2.74)	28.08 (4.14)
6. Social relations – old (n=65)	0.96 (1.59)	.74 (1.32)	6.97 (3.08)	24.06 (6.70)
7. Knowl. & symbolism – new (n=60)	1.43 (1.74)	1.87 (1.55)	8.18 (3.69)	29.62 (4.00)
8. Knowl. & symbolism – old (n=61)	1.08 (1.51)	1.23 (1.12)	7.67 (3.35)	26.62 (5.04)
Total (n=500)	0.98 (1.46)	1.21 (1.76)	7.62 (3.57)	27.68 (4.96)

The measure of overseas training and work experience, OST, varied only modestly between Grid categories (F test $p = .03$). The other three scales were markedly and consistently connected with Grid category, at probabilities less than .001 for the F test on one-way analysis of variance. In each case, Grid category 1 (nature - new) was highest, and either 5 or 6 (social relations - new and old) was lowest. The "new" side of the Grid is more strongly connected to the international scene. The notable exception is "social relations", where the new-field workforce are the least internationally oriented of any field in the whole sample.

Findings (e): A predictive model for international involvement

Given that we can define scales of international involvement, and that these have intelligible correlates, how do they and their predictors fit together in an overall pattern? We studied this by developing multivariate predictive model.

The basis of the modelling was an underlying causal argument. We theorised that variation in levels of international involvement would be related to three blocks of variables, which have a specific ordering:

- (1) Deep background variables, which shape a person's entry to the intellectual labour force: country of origin, overseas training (measured by the OST scale), gender, generation.
- (2) Location in the broad intellectual labour force, i.e. professional field, which is usually determined early in an intellectual career (measured by the Grid).
- (3) Current work situation: employer type, aspects of the labour process (measured by TEC), income.

The statistical model developed is a strictly hierarchical model, which assumes that the explanation of levels of international involvement goes in this specific order. At each step, we test whether the variables in each successive block are adding to the predictive power of the model, after adjusting for the contribution of the previous block(s).

The dependent variable in our main analysis was INP, the measure of "international practice". Results of the analysis of variance, following the order defined above, are shown in Table 6. Variables which did not contribute to the explanation of variance were dropped.

Table 6: Predictive model for International Practice. Analysis of Variance Table showing sums of squares, R^2 values and increases to R^2 at each stage in the hierarchical regression analysis of INP.

Block	Variables added	Regression SS	d.f.	R^2	Increase in R^2	Significance of increase
1	Age, Country of Birth, OST	767.28	5	.121		.001
2	Object of Knowledge, New/Old	1164.45	4	.183	.062	.001
3	Interaction: Object of Knowledge by New/Old	1259.84	3	.198	.015	.009
4	TEC, Employer type, Income	2477.41	6	.384	.186	.001

Total SS 6360.038 499

The salient results are these. The first block of predictors, the deep background variables, together account for 12% of the variance in INP. All variables are significant, except for gender. The second block, the Grid, explains 8% of the variance after the first block is accounted for. When the two dimensions of the Grid are examined separately, "object of knowledge" makes more difference than "history of method" (the new/old field dimension of the Grid); there is also some interaction between them. The third block, current situation variables, also has substantial predictive power after the first two blocks are included. This block accounts for a further 16% of the variance in INP.

Overall, then, the model accounts for 36% of the variance in INP. This is a solid finding. It appears we have considerable capacity to explain variation in international practice along the lines hypothesised.

A parallel analysis was conducted with the dependent variable being INO, the measure of "international orientation". A broadly similar picture emerged. But in this case "generation" was not a predictive variable, and the whole model was weaker, accounting for 27% of the variance in INO.

We explored variant predictive models for INP, to check the robustness of the findings and consider alternative lines of interpretation. For reasons of space we will not present the details here. The main new point to emerge was an interplay between "employer type" and the categories of the Grid, which we interpret as showing the role of occupational cultures within our sample, in shaping international practice and orientation.

Discussion and conclusions

Our survey reached a broad sample of Australian intellectual workers in both private and public sectors. For this regional case, the data provide answers to the five questions posed in the Introduction:

(a) There are detectable patterns in intellectual workers' relation to global processes; the approach we advocate in this paper seems to produce coherent and meaningful results. We can construct reliable scales for several aspects of international connection.

(b) Intellectual workers collectively have impressive levels of connection with international arenas, and high usage of current technologies that facilitate international communication. The Australian intellectual workforce is oriented to, and operates in, a global context. The highest levels of connection appear among university workers, not among corporate sector workers. This contradicts common beliefs about the business world leading globalization. The specificity of university workers is also noteworthy because most empirical research on intellectuals is about academics.

(c) The survey shows many traces of Australia's peripheral position in global intellectual culture. Our respondents as a group actively pursue overseas connections, often through travel, and attribute importance to stimulus from overseas. The orientation is specifically to the United States and Europe rather than to other parts of the world. This pattern of "quasi-globalization" appears also in our life-history study of Australian scientists (Connell and Wood 2002). However the Australian intellectual workforce is for the most part locally trained, and is satisfied with the quality of local work.

(d) There are contours in the process of making international connection. The younger generation is more electronically oriented, though this does not (so far) make them more globally integrated. Higher income is associated with higher levels of international connection. Differences also appear between intellectual fields, with "new" fields of natural science standing out. The overall pattern suggests that collective growth and innovation in Australian intellectual life is associated with the international arena. To put it another way, those areas with strongest international links are those of recent development - except where the links are anyway weak.

(e) The multivariate model shows background variables, field, and current situation all influencing levels of international participation. When background variables are taken into account, income *per se* is no longer significant. The influence of intellectual field (and the new/old distinction specifically) seems to be bound up with the influence of "employer type", suggesting the importance of occupational cultures within the intellectual workforce.

The model points us to a more complex understanding of the intellectual workforce and its involvement in the globalization of culture. People come into this workforce on different terms. Some have training overseas, and therefore already have some international connections. People also come into the intellectual workforce at different points in history. Their involvement with global arenas at a later point in time reflects both the accumulation of resources in a career, and specific generational experiences.

The institutions which they enter as workers also have specific patterns of global connection. Our data suggest a particularly high level of international connection in the university system. Current discussions of culture may focus too much on new patterns of commercial globalization and not enough on traditional patterns of international intellectual cooperation. However our data are consistent with the view that the adoption of new technology is an autonomous determinant of global connection for intellectual workers.

Our findings about training and mentoring suggest that the reproduction of an intellectual workforce is now successfully occurring outside the metropole, in the Australian case. However the multivariate analysis indicates that this reproduction does not occur on the same terms in all fields. The combined effects of recruitment and institutional functioning mean that some fields of work are less connected to international arenas. The model suggests that such differences are not autonomously produced by the intellectual

field itself. They may therefore be open to the influence of policies addressed to recruitment and institutional functioning.

Returning to the issues raised at the start of this paper, we hope to have demonstrated that intellectuals as a group can be studied from a perspective very different from the problematics of metropolitan class relations and cultural change which have so far dominated the literature (e.g. Bauman 1987, Aronowitz 1992). So far as the Australian case takes us, the collective labour of intellectual workers is tied in to global networks, and their careers and consciousness are in significant ways structured by their position in world society.

We can further show, considering the intelligentsia as a workforce, that this collectivity is internally differentiated, e.g. by employment situation, generation and field of work, and that such differences represent contours in the process of global connection. As we build a sociology of intellectuals on a world scale, the findings of this case study warn that a local intelligentsia should not be assumed to be homogeneous. On the contrary there are very significant differences, among individuals and between groups, in patterns of participation in the processes constructing world intellectual cultures. The findings of this study give us some ability to explain those differences, and thus understand the importance for global processes of social difference and inequality within the local scene.

ACKNOWLEDGMENTS

We are grateful to the respondents in this survey for their time, thoughtfulness and their gift of information. The fieldwork was conducted with care and intelligence by Market Equity P/L. We are particularly indebted to Ian Stewart and Roy Jopson of Market Equity. The study was funded by an Australian Research Council large grant. We are grateful to colleagues and friends who submitted to pilot interviews. We are also grateful to colleagues at the University of Sydney, the University of California, Berkeley, and the University of Essex, who participated in early discussions of the findings.

REFERENCES

- Althusser, Louis. 1969. For Marx. London, Allen Lane.
- Aronowitz, Stanley. 1992. "On intellectuals." Pp. 125-174 of The Politics of Identity. New York, Routledge.
- Bauman, Zygmunt. 1987. Legislators and Interpreters: On modernity, post-modernity and intellectuals. Ithaca, Cornell University Press.
- Bauman, Zygmunt. 1998. Globalization: The Human Consequences. Cambridge, Polity Press.

- Becher, Tony. 1989. Academic Tribes and Territories: Intellectual enquiry and the cultures of disciplines. Buckingham, Open University Press.
- Bender, Thomas. 1993. Intellect and Public Life. Baltimore, Johns Hopkins University Press.
- Bitterli, Urs. 1989. Cultures in Conflict: Encounters Between European and Non-European Cultures, 1492-1800. Stanford, Stanford University Press.
- Bloor, D., J. Henry and B. Barnes. 1996. Scientific Knowledge: A sociological analysis. Chicago, University of Chicago Press.
- Connell, R. W. and Julian Wood. 2002. "Globalization and scientific labour: a life-history study of intellectual workers in the periphery". Journal of Sociology, vol. 38 no. 2, 167-190.
- Eyerman, Rod. 1994. Between Culture and Politics: Intellectuals in Modern Society. Cambridge, Polity Press.
- Featherstone, Mike. 1995. Undoing Culture: Globalization, Postmodernism and Identity. London, Sage.
- Gorz, Andre. 1999. Reclaiming Work: Beyond the Wage-Based Society. Cambridge, Polity Press.
- Gouldner, Alvin. 1979. The Future of Intellectuals and the Rise of the New Class. New York, Continuum.
- Hirst, Paul and Grahame Thompson. 1996. Globalization in Question. Cambridge, Polity Press.
- Kiernan, V.G. 1986. The Lords of Human Kind. New York, Columbia University Press.
- Kleinman, Daniel Lee and Stephen P. Vallas. 2001. "Science, capitalism and the rise of the 'knowledge worker': the changing face of knowledge production in the United States". Theory and Society, vol. 30, no. 4, 451-492.
- Konrad, G. and I. Szelenyi. 1979. The Intellectuals on the Road to Class Power. Brighton, Harvester.
- Lakatos, I. 1970. "Falsification and the methodology of scientific research programs". Pp. 91-196 in I. Lakatos and A. Musgrave, ed., Criticism and the Growth of Knowledge, Cambridge, Cambridge University Press.
- Lechner, Frank J. and John Boli, ed.. 2000. The Globalization Reader. Oxford, Blackwell.
- Lyotard, J.-F. 1984. The Postmodern Condition: A Report on Knowledge. Minneapolis, University of Minnesota Press.
- Pusey, Michael. 1991. Economic Rationalism in Canberra. Sydney, Cambridge University Press.
- Said, Edward W. 1994. Representations of the Intellectual. London, Vintage.
- Sharp, Geoff. 1983. "Intellectuals in transition", Arena, no. 65, 84-95.
- Sharp, Geoff. 1985. "Constitutive abstraction and social practice", Arena, no. 70, 48-82.
- Sklair, Leslie. 1995. Sociology of the Global System. 2nd edition. Baltimore, Johns Hopkins University Press.
- Tancred-Sheriff, Peta 1985. "Craft, hierarchy and bureaucracy: modes of control of the academic labour process". Canadian Journal of Sociology, vol. 10 no. 4, 369-390
- Wallerstein, I. 1999. The End of the World As We Know It. Minneapolis, University of Minnesota Press.
- Waters, Malcolm. 1995. Globalization. London, Routledge.

APPENDIX : MULTIPLE CORRELATION ANALYSIS

Regression coefficients for the model predicting INP (see Table 6).

Variable	Raw coefficients B	Standardized coefficients Beta	Significance
Age	0.050	.153	.000
Country of Birth			
Australia/N.Z. ^a	0	0	
U.S.A./Canada	-1.871	-.066	.063
U.K.	-0.848	-.082	.047
Europe	-2.118	-.129	.001
Asia	-0.527	-.023	.670
Other	-0.570	-.034	.336
OST	0.651	.266	.000
Intellectual Field			
Nature - new	0.929	.086	.057
Nature - old	0.675	.064	.090
Economy - new	-0.226	-.021	.520
Economy - old	-0.721	-.067	.512
Social Relns. - new	-1.206	-.114	.058
Social Relns. – old	0.316	.030	.451
Knowledge - new	-0.182	-.017	.988
Knowledge - old ^a	0	0	
TEC	0.195	.271	.000
Employer type			
Corporate ^a	0	0	
Government	0.871	.095	.064
University	2.720	.288	.000
Other	1.290	.109	.062
Independent	-0.463	-.051	.178
Income	0.340	.185	.000
^a Reference category			