

REPORT ON SURVEY OF ALUMNI OF MASTER'S LEVEL APPLIED ANTHROPOLOGY TRAINING PROGRAMS¹

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NAPA sponsored a survey of alumni of master's level applied anthropology training programs that was conducted in January 2000. The purpose of the survey was to determine what specific skills practicing anthropologists, with master's degrees, are using in the workplace. Question 1 asked respondents to list the skills they use. Question 2 asked that they list skills that were taught in their respective applied anthropology training programs. The third item asked for suggestions to improve training program curricula, and a fourth item inquired whether the alumnus experienced continuity or discontinuity going from training program to the workplace.

The survey instrument was mailed to nearly 500 graduates of applied master's programs at California State University-Long Beach, the University of Kentucky, the University of Maryland (College Park), the University of Memphis, Northern Arizona University and the University of South Florida. All those programs provided assistance in contacting their alumni. Over 20 percent (100 plus) of the addresses, however, were no longer valid, reflecting, most likely, a high rate of mobility of many graduates. One hundred thirteen alumni, approximately 30% of the survey recipients, responded.

The survey was designed to be brief, one page (Appendix A). We wanted to be certain that responses reflected the way that the applied alumni think about skills in the workplace. We took pains to emphasize an emic approach by requesting that the respondents make a free-listing of the skills they use at work, and make a separate listing of the career skills that were taught in their training programs. We also asked them to make suggestions for applied anthropology curricula for additional training in skills that were not part of their own educational experience, which they consider to be needed in the workplace. And, we asked the respondents whether they see continuity or discontinuity between their academic-based applied anthropology training and their current career needs.

¹ Contact Robert Harman (rhorman@csulb.edu) or Jim Hess (j2hess@uci.edu). Readers have our permission to copy this report. If you copy, please cite as Harman, Robert, Jim Hess & Amir Schafe 2004 *Report on Survey of Alumni of Master's Level Applied Anthropology Training Programs*.

The survey was essentially a type of needs assessment instrument. We considered the alumni to be the ideal evaluators of master's level programs, which are designed to prepare graduates for practicing, non-academic careers.

Demographic Profile

Figure 1. Year of Graduation from Applied Anthropology Training Program (5 Year Intervals)

Five of the participating anthropology departments offer a specialized terminal master's degree program in applied anthropology. Four of the programs have graduated the vast majority (104) of the 113 survey respondents: Maryland (16), Memphis (24), Northern Arizona (29) and South Florida (35). The number of respondents reflects somewhat the number of years that a program has been active. Long Beach offers the same type of degree but, as a newer program, it has had fewer graduates and only four survey respondents. Kentucky, which has a well-known and respected applied Ph.D. degree, does not have a master's level applied training program, and just three individuals in the sample are from Kentucky.

Graduation from the applied training programs covers a period of 25 years. One respondent from South Florida, the original master's program in applied anthropology, graduated in 1975. Eleven respondents graduated in the immediate past year, 1999, prior to the survey. Thirty percent of respondents graduated after 1996, and those recent alumni are clearly over-represented in the sample. At least part of that over-representation is due to the greater availability of accurate current addresses for the recent graduates in contrast to the difficulty for departments of locating many earlier alumni. Figure 1 is a histogram that shows responses for year of graduation in five-year intervals. We believe that the extreme negative skew stems from the likelihood that the researchers were able to contact recent alumni at their correct addresses, and that there has been a substantial increase in the late 1990s of applied program graduates.

Each alumni respondent identified his/her alma mater and year of graduation from that applied anthropology program. Respondents also provided current job

titles and titles for their most recent previous employment. Age and gender were the other demographic items included in the questionnaire. Respondents ranged in age from 20 to 59. The mean age was 40, as was the median. Five of the 113 respondents did not provide data on age. Females (68) outnumbered males (42), and three individuals did not provide data on their sex. We do not know whether the gender discrepancy reflects a preponderance of women going through the master's level applied anthropology programs or whether female alumni were more likely to respond to the questionnaire.

The current job titles are numerous and diverse. We coded the jobs in 19 categories within three occupational areas--similar to those utilized in the NAPA/SfAA Directory (Table 1). Our categories were not mutually exclusive, so one respondent may fall into two or three job categories. Some of those categories are based on occupational roles and others are substantive or sectoral in nature.

Table 1. Nineteen Job Categories of Applied Anthropology Program Alumni in Three Areas of Employment.*

JOB CATEGORIES Occupational Roles		JOB CATEGORIES Substantive Area	
Researcher	35	Archaeologist	20
Manager	25	Medical	11
Planner	17	Development	5
Administrator	11	Environment	1
Program Services	9		
Teaching	7	Sector	
Information Specialist	6	Government	22
Student	6	Private	11
Entrepreneur	5	Education	11
Consultant	4	Other	7

* Categories are not mutually exclusive.

Coding and Descriptive Findings

We discerned six general categories in response to the skills' questions put to respondents. Those were Communication, Workplace Environment, Research, Anthropological Perspectives and Knowledge, Computer Technology Expertise and Substantive Areas of Competence. We considered them to be level I in a hierarchical classification of categories, from the most general to the most specific. Below level I in generality are 15 level II categories. The actual alumni responses constitute level III, a third and most specific level. The hierarchy of categories is inscribed in our coding labels (Table 2); the first letter identifying the level I category, the second letter for coding categories at level II, and the third letter for level III categories. ("U" stands for "unspecified", denoting a response

that was not coded at the second or third level.) There are 60 level III skill categories².

Table 2. Respondents Aggregate Listing of Skill Categories at Levels I, II, and III*

Skill	Codes	Response Frequency	
		Workplace	Training
Communication			
Communication (in general)	<i>CUU</i>	10	3
Writing (in general)	<i>CWU</i>	37	33
Writing Reports	<i>CWR</i>	26	14
Grant Writing	<i>CWG</i>	18	19
Writing (other than above)	<i>CWO</i>	15	3
Oral Communication (in general)	<i>COU</i>	17	12
Public Presentations	<i>COP</i>	19	8
Vocal Communication (in general)	<i>COO</i>	16	13
Teaching	<i>COT</i>	10	1
Total		168	106
Workplace			
Interaction (in general)	<i>WIU</i>	20	3
Supervision/Personnel	<i>WIS</i>	35	3
Organizing	<i>WIO</i>	25	7
Coordinating Activities	<i>WICR</i>	19	4
Public Interaction	<i>WIP</i>	16	4
Teamwork	<i>WIT</i>	11	6
Listening/Advising	<i>WIL</i>	10	4
Management (in general)	<i>WMU</i>	19	6
Project planning	<i>WMD</i>	21	3
Evaluation	<i>WMEV</i>	20	7
Budget/Finances	<i>WMB</i>	19	2
Training	<i>WMTR</i>	13	0
Time Management	<i>WMTM</i>	11	6
Personal Strategies	<i>WPO</i>	18	5
Problem Solving	<i>WPS</i>	15	8
Total		272	68
Research			
Data Analysis (in general)	<i>RAU</i>	23	18
Quantitative Analysis	<i>RAN</i>	24	25
Data Analysis (other than above)	<i>RAO</i>	17	2
Data Management	<i>RAD</i>	14	8
Qualitative Analysis	<i>RAQ</i>	13	14
Data Collection (other)	<i>RCO</i>	25	19
Interviewing	<i>RCI</i>	19	23
Ethnography	<i>RCE</i>	20	30
Archaeology Field Methods	<i>RCAR</i>	16	14
Surveys	<i>RCS</i>	12	10
Archival Research	<i>RCL</i>	10	8
Research Design	<i>RDU</i>	16	12
Total		209	183
Anthropological			
Anth Perspective & Knowledge (in general)	<i>AUU</i>	6	20
Anth Perspective (in general)	<i>APU</i>	5	24
Anthropology Basics	<i>APB</i>	17	21
Critical Thinking	<i>APC</i>	11	11
Anthropological. Knowledge	<i>AKO</i>	14	9
Total		53	85
Technical - Computing			
Computer (in general)	<i>TCU</i>	23	11
Computer (other than above)	<i>TCO</i>	19	9
Word Processing	<i>TCW</i>	15	4
Total		57	24

² We originally coded over 90 skills' categories; low frequency codes were later combined or dropped.

*The table acknowledges skills used at work and/or learned at training programs, and mentioned by a minimum of 10 respondents for either setting.³

Question 3 of the survey requested respondents to give suggestions for applied program curricular changes that would encompass necessary workplace skills. Table 3 lists the number of respondents out of 112 (#113 arrived too late) who volunteered comments. We found few suggestions to modify the teaching of basic anthropological concepts. We found dozens of suggestions, however, to add specific work management and workplace interaction skills, as well as more teaching of substantive work skills. Responses also focused on a need for students to develop more, and better, writing skills and, in particular, better report and grant writing abilities. A smaller number of respondents were concerned about improving oral communication skills while in training. A number of suggestions addressed research shortcomings. Alumni stated that students need better survey and other data collection skills. They indicated that programs should teach more statistics and, to a lesser extent, more qualitative analysis. A large number of alumni suggested that programs teach their students more computer skills.

Several alumni commented that they are not actually working in anthropology. Thirteen volunteered that information. Some of those individuals appear, from their statements, to feel disenfranchised. Others acknowledge that, while they are working outside of an area they consider to be anthropology, they are quite satisfied with the program that prepared them at the master's level. In response to the question of continuity or discontinuity between training program and work, we coded "continuity" as 1, "both continuity and discontinuity" as 2 and "discontinuity" as 3. The 101 alumni who responded to the question had a mean score on the item of 1.75. The four large master's programs' alumni were all within .13 of that mean, indicating that the alumni of all those programs perceive a relatively high degree of continuity between their training and their work. Recent graduates experience more continuity than those who completed their applied studies in earlier years. This may mean that the training programs are successfully updating the skills taught in their programs to meet the needs of the workplace.

Some elicited material in the questionnaire's space for comments did not fit into the same coding system developed for the initial two questions. Eighteen of the 113 respondents suggested that the programs should emphasize practice more and theory less. A number of other respondents addressed the nature of alumni interaction with the alma mater. Three alumni would like to be invited to contribute to the program; five would appreciate having the program offer workshops or other means for alumni to update their skills; two would like to have more interaction with faculty and four wish to mentor students in the program.

³ Substantive Areas do not appear in Table 2 because of their low frequency.

Table 3. Alumni Suggestions for Skills to be Offered in Applied Program Curricula*

SKILL	CODE	SUM
Computer (other)	TCO	20
Quantitative Analysis	RAN	15
Management (in general)	WMU	13
Data Collection (other)	RCO	11
Marketing self/organization	WIM	11
Computers (in general)	TCU	10
Writing Reports	CWR	10
Supervision/Personnel	WIS	8
Data Analysis (in general)	RAU	8
Grant Writing	CWG	8
Policy Decisions/Analysis	WMPL	7
Business	WSB	7
Evaluation	WMEV	7
Anthro. Basic Concepts	APB	7
Interaction (in general)	WIU	6
Oral Communication (other)	COU	6
Networking	WIN	6
Budget	WMB	6
Writing (in general)	CWU	6
Planning	WMD	6
Coordinating	WICR	5
Surveys	RCS	5
Knowledge of Organization	WIK	5
Research Design (in general)	RDU	5
Qualitative Analysis	RAQ	4
Public Interaction	WIP	4
Organization	WIO	4
Legalities	WSL	3
Public Presentations	COP	3
Medical	WSM	3
Time Management	WMTM	3

*Listing in this Table Shows Items Mentioned by 3 or More Respondents.

Multidimensional Scaling Results

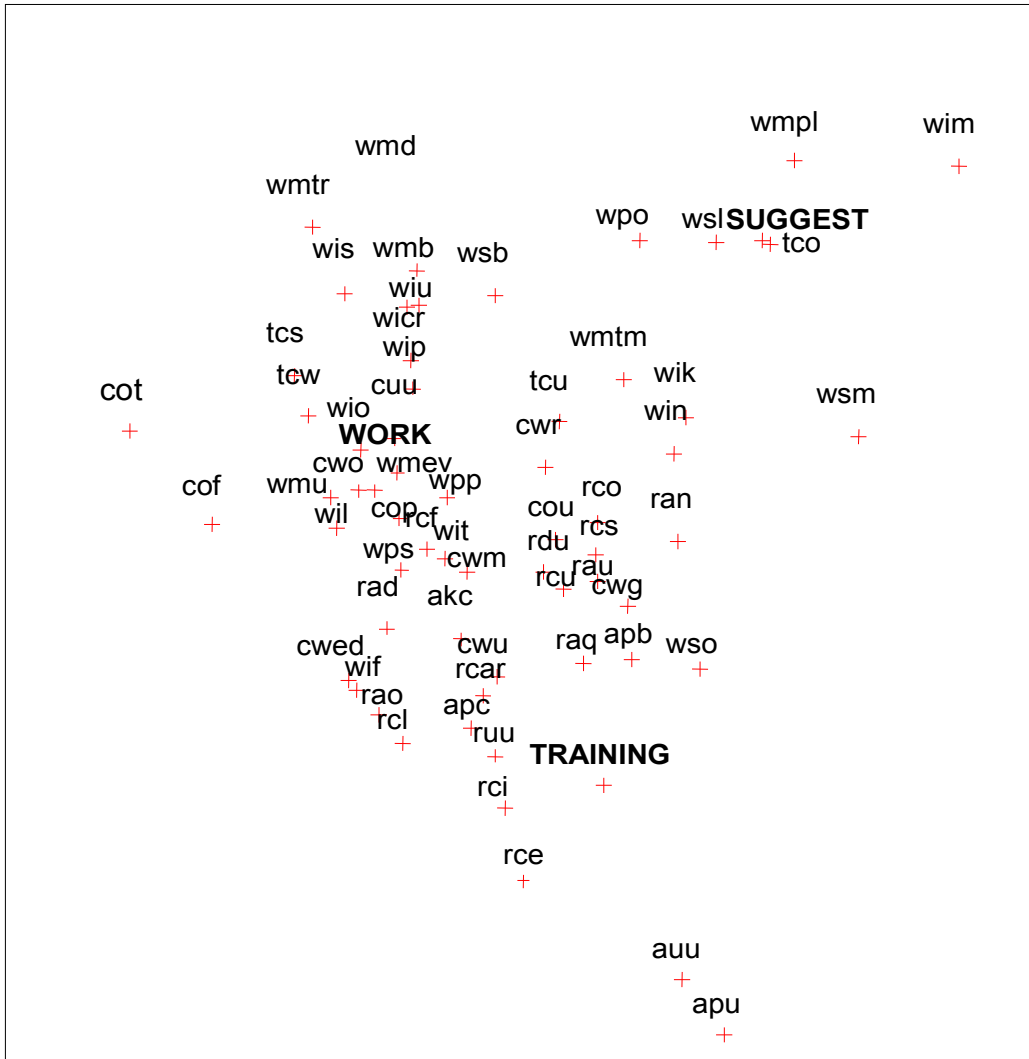
A more concise comparison of skill lists appears in Figure 2 as a graphic presentation. When the combined work, training, and suggestions items were subjected to a correspondence analysis a visual map was produced, where the distance between two points shows relative frequency of skill responses to the different questions. Skills closely associated with the work skills question, for example, "organizing" (*wio*) and "evaluation" (*wmev*) are seen close to WORK in

the figure. Skills that do not distinguish between Work, Training, and Suggestion contexts are equidistant from these labels. Skills mentioned predominately as needed in the Workplace are nearest to its label; skills taught in the Training programs but not mentioned for the Workplace are at the bottom and skills mentioned as Suggestions are in the upper right.

A clearly visible gradient exists here; "anthropological perspectives and knowledge" are most closely associated with Training program. The gradient runs through research, communication, and computer skills related to both Work and Training. The gradient moves toward "workplace" skills and specialized or "substantive knowledge" associated with workplace only, yet considered by some respondents to be valuable potential additions to Training program content. As might be expected, Training and Suggestions are somewhat opposed, highlighting contrasts between workplace skills taught in the applied programs and those that are probably learned on the job. The latter are quite often the interaction and managerial skills. This distribution may also reflect career paths over time, as people move up from entry-level through managerial and administrative jobs.

Figure 2. Correspondence Analysis of Skills Listed for Work, Training Program and Suggested Changes.

Skills by Contexts



Skills by Context and Frequency

Figure 3 provides additional information on the identification of skills. Vertical axis positions the skills by relative frequency, and the horizontal axis plots skills by absolute frequency on a log scale. Our interpretation, given the general pattern of responses across questions and respondents' comments, is that applied anthropologists value the cultural perspective and general orientation inculcated throughout their applied Training, and that those become more or less unconsciously embedded in their work activities. The specific items recalled in

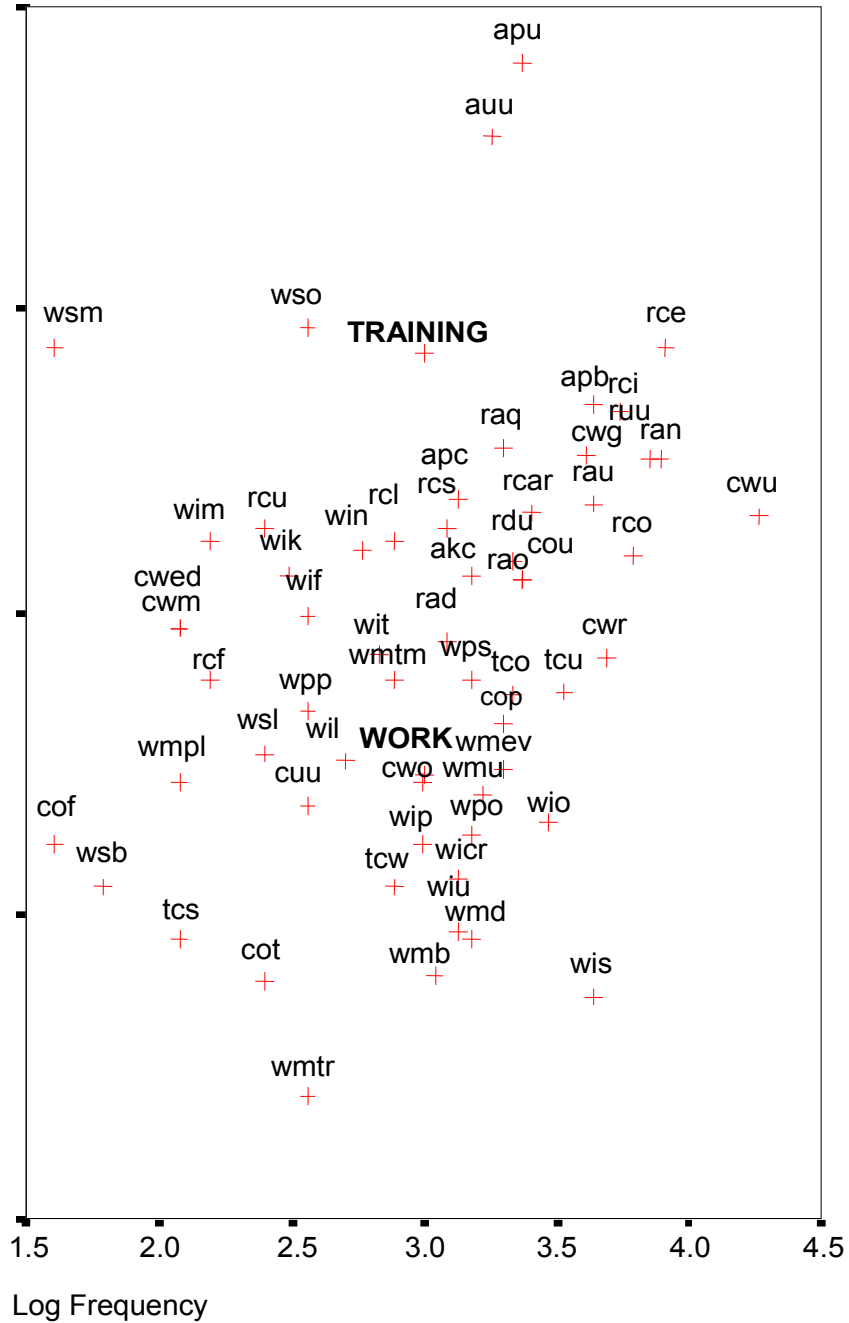
connection with Work, on the other hand, are more often concrete activities and overt practices.

Research skills are also highly associated with the Training programs. Ethnography and interviewing are mentioned most often as kinds of data collection. Their positions, closer to Training on the plot, but reaching toward Work, reflect that these are pertinent skills to a class of the respondents who are mainly involved with primary research. As applied careers evolve, many individuals move into managerial, planning, and administrative positions in which research skills become a backdrop, rather than the focus, of their work.

This figure reiterates the importance of communication skills, particularly writing. General writing, *cwu*, with 71 citations, by the respondents, had 40 percent more cites than ethnography, *rce*, the second most cited. Report writing, *cwr*, is the most frequently cited specific item, and it is more closely associated with Work than with Training. Grant-writing, *cwg*, is mentioned third most often, and is important in both Work and Training settings (18 and 19 citations respectively.) It lies closer to Training on the plot because people identified more skills on question 1 (regarding work) than on question 2 (regarding training); thus, its relative frequency is higher with respect to Training than Workplace. Public presentations, *cop*, and general oral communication, *cou*, are both in the middle range by total citation frequency, and *cop* is the one more closely associated with Work.

A striking feature is both the variety and positioning of Workplace skills related to self-management (*wp_*), interaction (*wi_*), and enterprise management (*wm_*). Collectively, these comprise the most elaborated domain with 21 categories, followed by research with 15 categories. This domain also received the highest total number of citations (321, compared to 262 for research). We suggest that such elaboration reflects the salience of those skills in the workplace. If this judgement is correct, then human interaction skills at Work are, perhaps, the greatest single concern of applied anthropologists. Eleven interaction categories dominate over eight categories of data collection, the second most numerous subdomain and six categories of management (see Table 2). We think nobody is likely to be surprised that these skills are highly associated with the Work environment and not the Training programs. Further analysis below will also show that the skills are more associated with advanced career positions of management and administration, and less so with people working primarily as researchers. This suggests that those essential skills are learned primarily on-the-job and are important to advancement. While there are many differences in the patterns of skills cited for workplace and training, this does not seem to indicate any great deficiency in Training programs. Rather, it reveals a curricular focus on the skills necessary for entry-level jobs. Alumni graduating in 1995 or later were significantly more likely to see continuity between training and the workplace than those who graduated before 1995.

Figure 3. Correspondence Analysis of Skills Listed for Work and Training Program by Logged Frequency of Total Citations from 113 Respondents.



Computing skills are mentioned infrequently in connection with Training. High Work to Training ratios exist for word processing (15:3) and statistics (7:1). Are the skills learned in training relatively unsophisticated compared to those applied on the job? Or are the skills regarded as unremarkable except among those early graduates who had to learn them at work? Further analysis may suggest answers.

A correspondence analysis of question 1 (workplace skills) responses, aggregated at level I, is shown in figures 3 and 4. Skills mentioned more often by the same respondents are close together, while greater distances mean respondents are less likely to have mentioned both skills; their distribution is loosely complementary. The plots thus represent recall of the distribution of combinations of skills in the workplace. A is Anthropological Perspective and Knowledge, W is Work Environment, C is Communication, R is Research, T is Computer Technology, S is Substantive Areas. Dimensions 1 through 4 represent respectively 26, 21, 20, and 17 percent of the total variance. Our interpretation of these plots is that communication is central to everybody's concerns regardless of occupation. In figure 3, the horizontal dimension contrasts cognitive and technical research skills with personal, interpersonal and managerial workplace skills. The vertical dimension opposes technical (computer) skills of general application from specialized expertise in substantive knowledge, including anthropological knowledge. The distribution of these skills and knowledge reflects the differences in role requirements for different occupations. In figure 4, the horizontal dimension contrasts those who emphasize specialized knowledge from those for whom general skills are more salient. The vertical dimension distinguishes those who emphasize communications skills to the exclusion of all else.

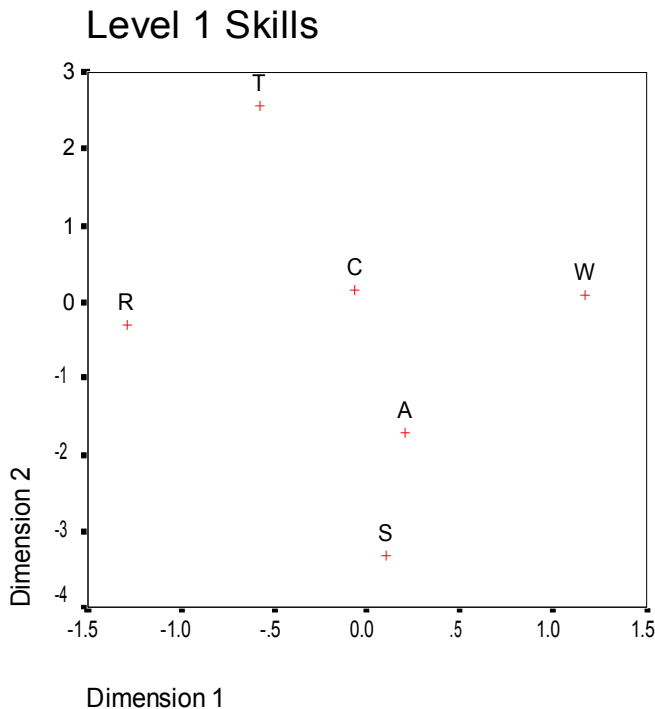
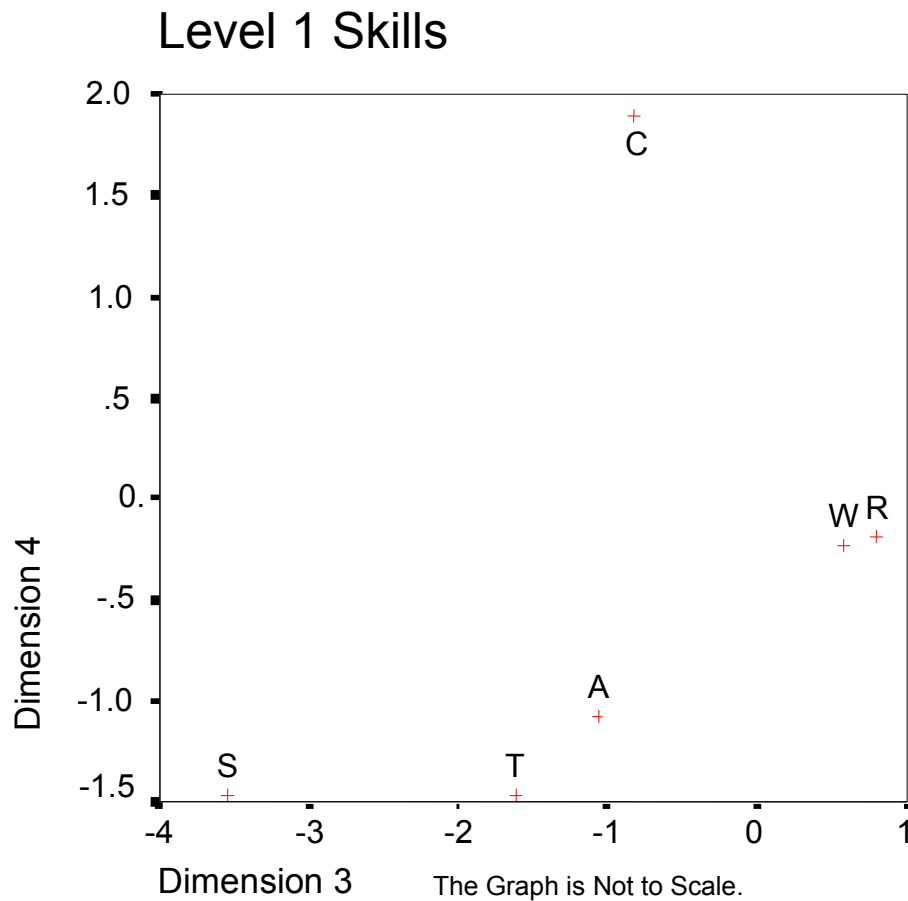


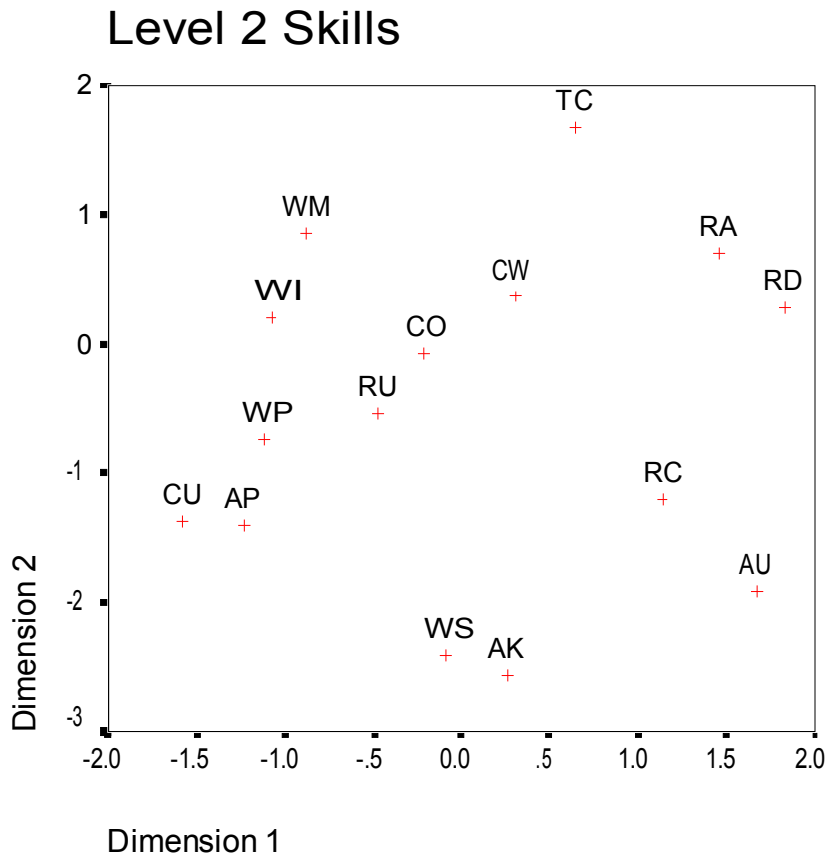
Figure 3. Dimensions 1 and 2 from Correspondence Analysis of Level I Workplace Skills. The Graph is Not to Scale.

Figure 4. Dimensions 3 and 4 from Correspondence Analysis of Level I Workplace Skills.



Correspondence analysis of level II skills shows the variability of level I skills (Figure 5). For instance, alumni in different work roles, substantive areas, and sectors communicate somewhat differently. Dimensions 1 and 2 in figure 5 shows written communications shifts slightly towards the research end of the plot, while oral communications moves towards the workplace skills, reflecting the division of labor among different jobs. More dramatically, the level II anthropological variables spread across the figure.

Figure 5. Dimensions 1 and 2 from Correspondence Analysis of Level II Workplace Skills.



**Not to Scale.*

Another challenge to using multidimensional scaling techniques on these data is that, contrary to the usual case where one hopes to find a few dimensions that can explain many variables, we achieve little data reduction here. There is not much redundancy in these data; the respondents are divided among six programs across 25 years, and among several substantive fields, job classifications, and levels of responsibility. In short, there are many differences in occupational roles. Since responses to the free-listing items were likely cued by memory of recent tasks, rather than a standardized list of tasks presented in a closed-response format questionnaire, another source of variability is induced. Hence, as we move from aggregated level I skills categories to specific level III skills, many additional dimensions are necessary to capture the variance. Scree plots of the variance captured by each additional dimension show no distinction between meaningful dimensions and "noise". The first two dimensions of level I capture 47% of the variance; an effort to interpret the plot is meaningful. With level II categories, the first two dimensions capture only 20% of the variance; the selection of how many dimensions to view becomes somewhat arbitrary as the differences in variance explained fall to a few percent.

In Appendix B we look at the relationship of occupational skills to the different kinds of jobs applied anthropologists find themselves in and for which programs attempt to prepare them. However, our presentation of the data is descriptive only; we do not intend to generalize from our respondents. The patterns are not very robust due to a great deal of variation arising in the differences between respondents and through the method of data collection, and too few respondents in any simple or joint occupational category. New methods of locating program graduates and increasing the response, such as cross-checking NAPA and SfAA membership lists against department records, and additional resources for data collection and analysis efforts would be required, before we would want to draw inferential conclusions from a survey.

Conclusion

The alumni of master's level applied anthropology training programs are gainfully employed in a broad spectrum of career pursuits. Alumni respondents report that there is a considerable overlap of skills acquired from one's training program and the skills required for work. They mention numerous skills with a high frequency.

Data on skills were collected through free-listing, an open-ended elicitation technique. Even though free-listing is usually not done for needs assessment, we wanted to ensure that the skills elicited would closely reflect the views of the alumni respondents. That is an advantage of the technique. The relatively high frequencies for a number of items is encouraging. Now that the cogent categories of skills at work and in the training programs have been determined, it would be ideal to conduct a follow-up with a more structured survey of a similar sample.

MASTER'S ALUMNI SURVEY

For Alumni of Applied Anthropology Training Programs

1. Please list the skills you possess for tasks that you perform at work. (List as many as you can in the order that they come to mind.)

1 _____	5 _____
2 _____	6 _____
3 _____	7 _____
4 _____	8 _____

2. Please list the skills you possess for career tasks that were taught in your applied anthropology training program. (List as many skills as you can in the order that they come to mind.)

1 _____	5 _____
2 _____	6 _____
3 _____	7 _____
4 _____	8 _____

3. Do you have any suggestions for applied anthropology training program curricula that might help provide additional training in skills that are needed in the workplace?

4. Do you primarily see continuity or discontinuity between your academic-based applied anthropology training and your current career needs? Either way, please explain.

5. Other comments: _____

** * * *

Name (optional): _____ Year of Graduation: _____

Applied Anthropology Master's Program alma mater: _____

E-mail address _____

Current Job Title: _____

Most Recent Previous Job Title: _____

Age _____ Gender: _____

APPENDIX B

OCCUPATIONAL CATEGORIES AND SKILLS

We look, here, at the relationships between occupational categories and skills. The presentation of our data here is descriptive only due to the limited number of respondents and responses, the variation in recall data elicited by free-listing, and the need to estimate occupational information from job title. It would be risky to generalize from the particular responses we received to make strong assertions about ideal training program requirements, job descriptions of average alumni, or even what the same alumni respondents might tell us the next month as new projects or project stages might require different skills and change recall patterns. Nevertheless, when we look at the general configurations of skills and jobs, patterns emerge which are intuitively reasonable and useful for the interpretation of the survey results. In some instances, associations of specific skills and occupation categories achieve statistical significance. Those associations are unlikely to be the result of random error in sampling or measurement, although we can't completely rule out systematic error in the process of coding.

We provide the reader of this appendix with figures B 1-9 and tables B 1-7 giving details on responses for different occupational categories.

We coded occupations according to responsibilities, substantive area, and labor market sector, as reported in Table 1. The categories of these domains are not independent or mutually exclusive. Entrepreneurs and consultants are found more frequently in archaeology than in medical settings, and it is not uncommon for an individual to have both research and management responsibilities. Hence occupation was recorded as a set of binary indicator variables. Many respondents are coded for more than one occupation category.

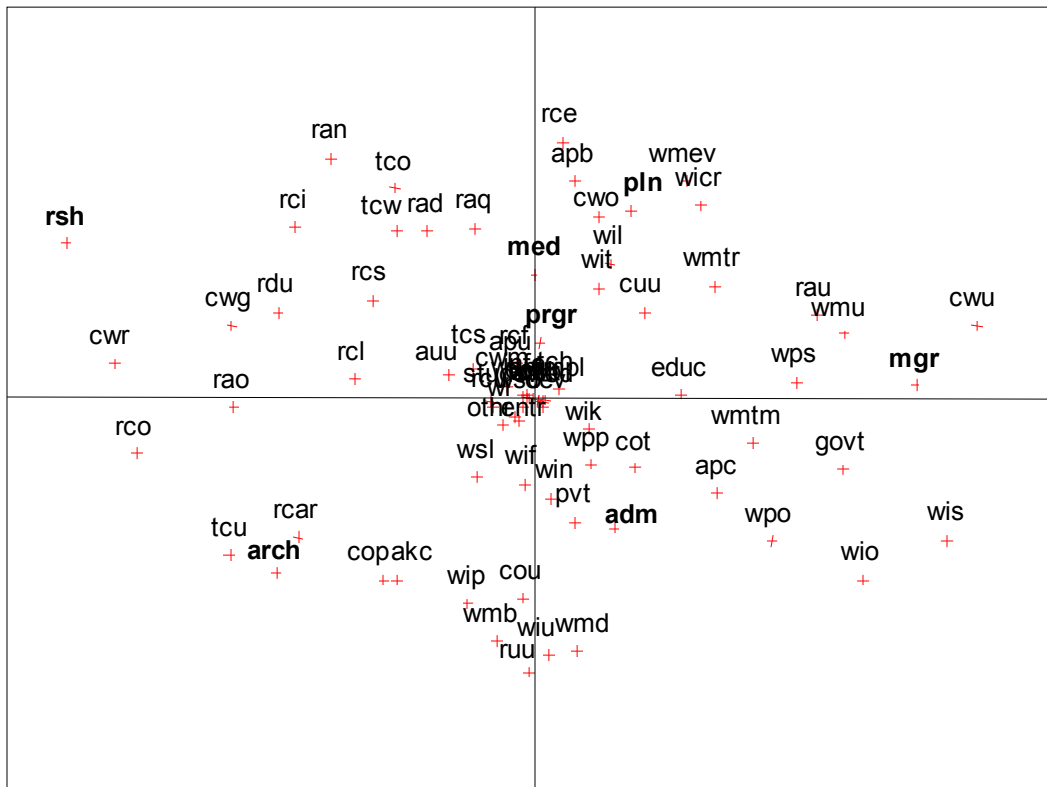
We looked at the relationships between occupation categories and skills at each of the three levels of skill codes, and we tried several methods for coping with the variability and high dimensionality of the data. We considered as well problems of interpreting results. Here, we provide an overview of the relationship between occupations and skills, after which we look in detail at the relationships within the most common occupations. The former approach facilitates a comparison of occupations based on the "typical" skills, while the latter emphasizes the variation within an occupational category and the range of skills employed.

To look at the overall relations we chose to use non-metric multidimensional scaling (MDS) with the third and most detailed level of skills data in order to maximize sensitivity to the specific demands of individual jobs. All occupations and skills were treated as variables; cases are respondents. This procedure makes no distinction between independent and dependent variables. MDS computes the distances between the variables on the basis of response patterns; then it seeks to plot them in a predetermined number of dimensions so that the differences between the calculated and plotted distances are minimized. We looked at two, three, and four-dimensional solutions. We eventually settled on the two-dimensional solution because it presents essentially the same picture as the other solutions while being easier to read. The result, which represents 53 percent of the variance of the scaled data, is presented in Figure B1. The points labeled as an occupational category represent the "average" position of all respondents who were coded as that category; the points labeled with skills similarly represent the "average" of all respondents who were coded as mentioning that skill.

This plot presents the interaction between skills and occupations. That is, the skills closest to an occupation category are not necessarily the most frequently recalled by respondents practicing that occupation. Instead, they are the skills that are most distinctive with respect to that occupation. For example, 55% of medical anthropologists recorded written communication in general, coded as unspecified, (cwu), a skill that is also important to many others, and only 27% indicated focus groups (rci), which are rarely used by other respondents. The focus groups are more distinctive of medical anthropology and are plotted in closer proximity to it than is unspecified written communication.

In this plot, high-frequency items are close to the periphery while items receiving few hits are clustered in the center. On the left is a cluster of research skills, computer skills, and report and grant writing. Collectively these skills distinguish research roles. Archaeologists are closely identified with specialized data collection methods, broad application of computer skills, oral presentations, and anthropological knowledge. Medical anthropologists, program specialists, and planners sit close together just above the center of the plot, suggesting a less specialized role than researchers. These positions are distinguished by more use of ethnographic methods and qualitative analysis, and various specialized forms of writing. Planners in particular are associated with evaluation. All these occupations are more concerned with workplace interaction than the more specialized researchers. Managers define the right side of the plot. Their role is distinguished by non-specified writing and analytic skills, alongside workplace management and interaction skills.

Figure B1: Occupations and Skills from MDS



Specific Occupations

The following figures show the relations between skills and those occupational categories of responsibility and substantive field that received the most survey responses. These may be the skills and occupations of greatest interest to applied training programs. We are not including the sector categories based on our judgment that the main effects on skills derive from job responsibility and substantive field and that our data are not sufficiently robust to tease out the independent effects of employment sector. We will present data on the role categories Researcher (n=35), Manager (n=25), Planner (n=17), Administrator (n=10), and Program Worker (n=9). Looking at substantive fields, while we did pick up a few people involved in Development (n=5) and Environment (n=1), we will restrict our presentations to those with more responses, Archaeology (n=20) and Medical (n=11).

For each occupation we present two kinds of data. A plot of the respondents from a correspondence analysis of the second-level skills data shows the interaction of occupation and skills, that is, which skills most distinguish the individual respondents within that category from all other respondents. Perhaps more importantly, it represents the range of variation within that group of respondents. Each of these plots comes from the same scaling, which includes all respondents, so the plots are directly comparable. The only difference is which respondents are labeled. The plots represent the first two dimensions from the analysis, which account for 11.1 and 9.6 percent of the variance. The plots have a limitation as tools for understanding the relation of skills to occupations, however. As the positions of the skill categories on the plot are determined by all respondents regardless of occupation, we cannot directly read off the importance of a skill to members of a specific occupational category. To look at which skills are most salient in absolute rather than relative terms, we also present frequency tables of skills for each occupational category. These allow us to move from comparing the importance of general skills between occupations to looking at the particular skills categories reported for a specific occupational category.

In the plots that follow, occupational roles are labeled with capital letters while skills are labeled with lower case letters. Respondents who played more than one occupational role are labeled accordingly: "R" designates a researcher, while "RM" designates someone with research and management roles.

Surprisingly, management skills are more central than interaction skills or self-management. More emphasis is placed on the processes of work than the use of computers in their execution.

Fig. B3: Researcher Workplace Skills

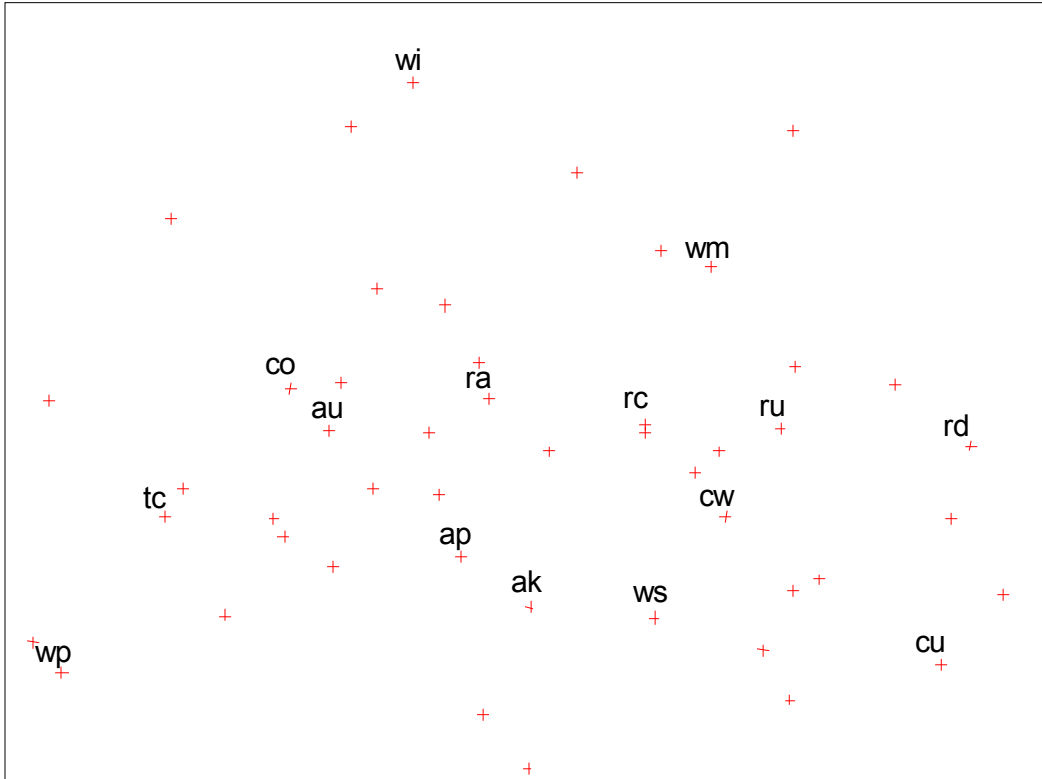
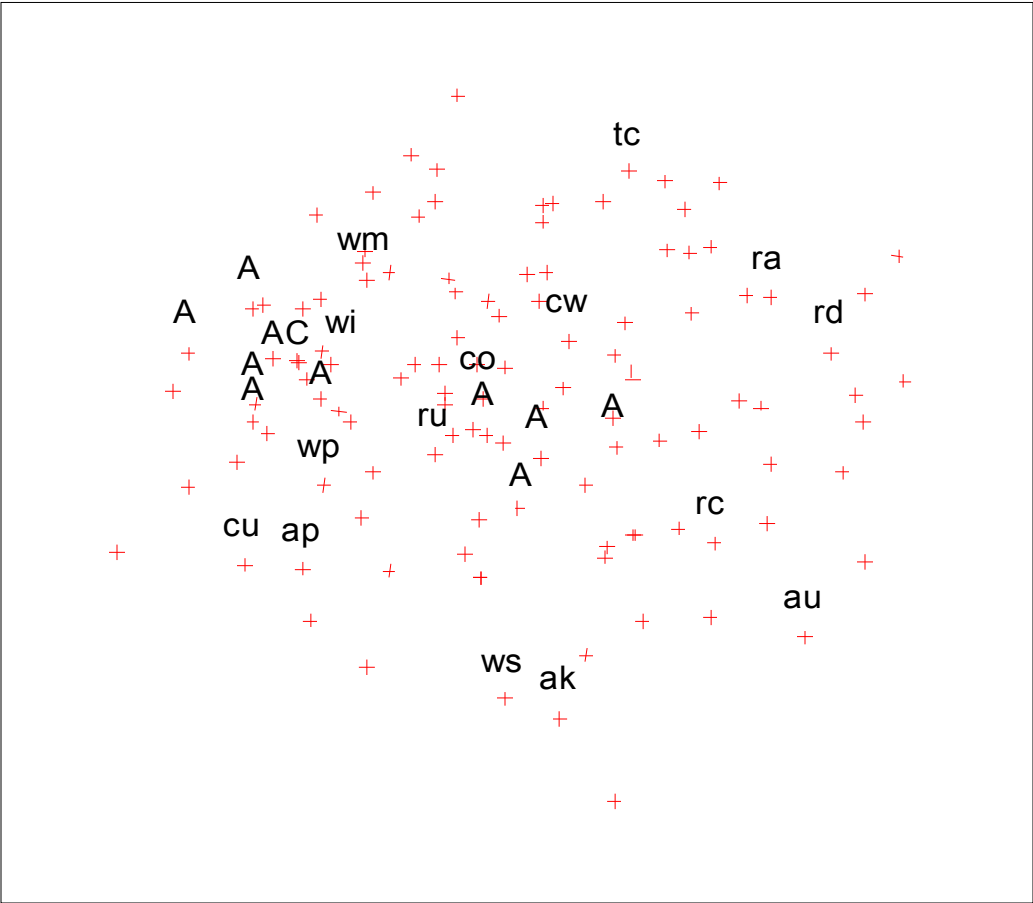


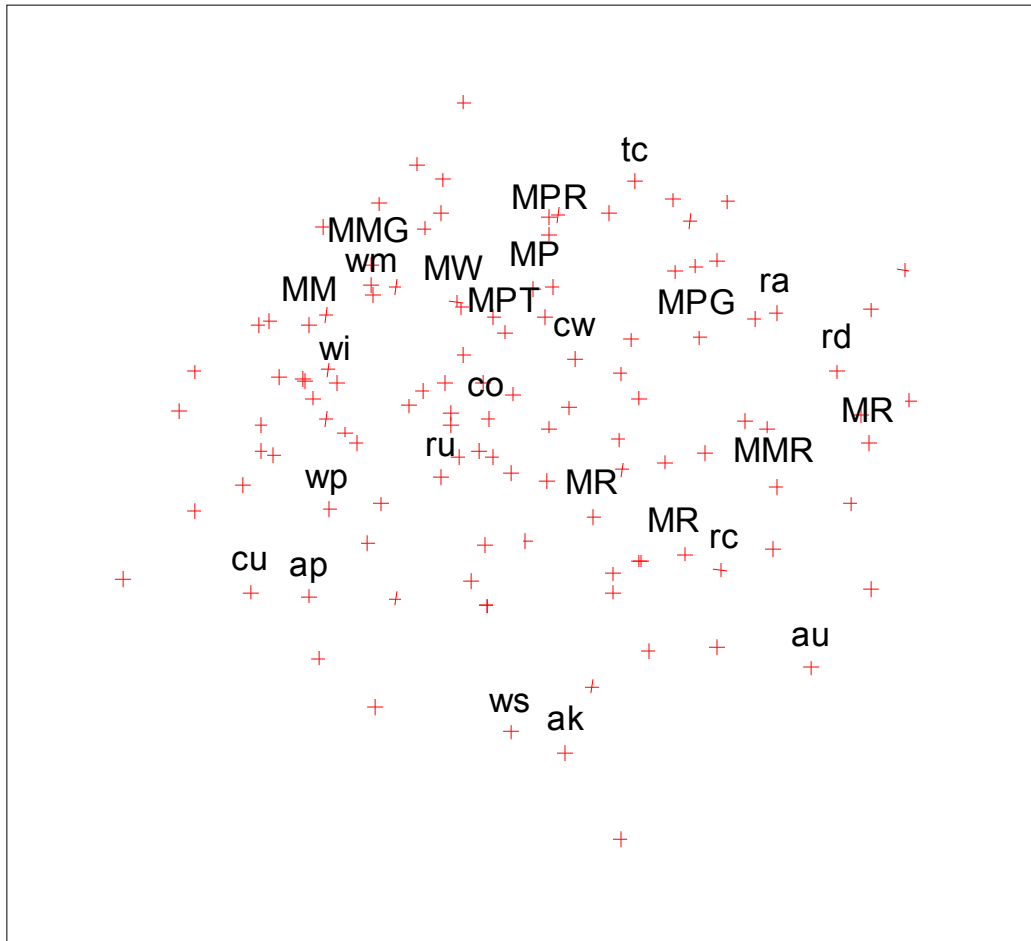
Fig B4: Administrators by Job Skills



Administrator

Administrators are identified here as individuals who hold high positions in large bureaucracies or identify themselves as administrative officers. Their distribution of work skills is the most constricted of the several job categories. The administrators are found in two groups figure B4). The largest group is dominated by the workplace skills of interaction and management, with a lesser presence of personal strategies. Together, these make up three-fifths of the top 15 administrator skills. Most administrators state explicitly that they engage in public interaction and that they supervise personnel. Many administrators are required to use public presentation and other oral communication skills. The second group shows administrators associated with oral communication and generalized research skills. The administrator skill frequency table (Table B2) shows that writing skills (unspecified) received the same number of citations as the two categories of oral communication in the top 15 skills. Administrators are not associated with specific research or computer skills. On the scatterplot (figure B4) administrators are not particularly close to anthropological background skills, even though these are well-regarded; anthropological critical perspectives is ranked second with as many citations as writing, and anthropological knowledge ranked fourth.

Fig. B9: Medical Anthropologists by Job Skills



Medical

Applied anthropology respondents who are working in medical settings utilize a wide range of skills and fill a number of roles (Figure B9). General writing is the most frequently cited skill; reports and other miscellaneous writing formats account for two more of the top 17 skills. Research skills are important; interviewing is the second-ranked skill, with focus group, survey, and ethnographic data collection skills also in the top 17 (Table B7). With analytic and design skills, research accounts for eight of the top 17 skills. The ability to work effectively with others is also emphasized; four of the top 17 skills concern interaction. The medical anthropologists do not mention anthropological perspective or knowledge.

Comparing the Substantive Fields

Comparing the plots for the two substantive fields of archaeology and medical anthropology, one sees substantial similarity. The pattern suggests that, when skills are coded at our second level, applied anthropologists in these two fields generally use the same skills and fill the same roles. Comparing the distribution of citations of third-level skills across second-level categories for the top 17 skills confirms this impression. They are highly correlated (Pearson's $r = 0.841$, $p < .001$). Differences appear not at the second level, but rather at our third-level codes which distinguish the specific forms of data collection and analysis or the balance of effort devoted to different forms of writing.

Closer inspection of the plots does reveal a subtle but important difference. Archaeologists fill administrative roles, and this is reflected in the fact that they extend further to the left side of the plots, while applied anthropologists in medicine seem to hit a glass ceiling at the manager level. Comments on the survey forms, furthermore, suggest that medical anthropologists find more of a disjuncture between the knowledge (not the skills) they are taught during training and what they need on the job. We suggest that both of these differences can be traced to the powerful institutional position medicine occupies viz a viz anthropology. Whereas archaeology is a relatively autonomous field in terms of research objectives and procedures, the agenda in medicine is set by the funding bodies and administrative positions occupied by medical doctors, bioscientists, and pharmaceutical company officers. Common concerns of academic medical anthropology, such as indigenous healing systems or analysis of the cultural biases of biomedicine, challenge important themes in the discourses of medical science. We anticipate that applied anthropologists working in development and environmental issues may similarly find themselves constrained by the domination of economics, biological sciences, and private interests. Training program directors may wish to consider whether this observation has any implications for program design.

Table B1: Researcher Skill Frequencies (N=35)

Code	Sum	Proportion
RAN	15	.43
CWR	14	.40
RDU	12	.34
RCO	12	.34
CWU	12	.34
RAO	11	.31
RCAR	10	.29
RAD	9	.26
TCU	9	.26
RAQ	9	.26
RCE	8	.23
CWG	8	.23
WIS	8	.23
RCI	8	.23
RCS	8	.23
COU	7	.20
TCO	7	.20
RAU	7	.20
TCW	7	.20
COP	6	.17
APB	6	.17
WMEV	6	.17
WICR	5	.14
AKC	4	.11
RCL	4	.11
RJU	4	.11
WPO	4	.11
WIO	4	.11
RCF	4	.11
CWO	4	.11

Code	Sum	Proportion
WMU	4	.11
TCS	4	.11
WIP	4	.11
WIU	4	.11
WMB	4	.11
RCU	3	.09
WSL	3	.09
WPS	3	.09
WIT	3	.09
WIL	3	.09
AUU	3	.09
WMD	3	.09
APU	3	.09
WIN	2	.06
CWM	2	.06
CUU	2	.06
WUU	2	.06
WSB	2	.06
WPP	2	.06
WIF	2	.06
WMTR	2	.06
APC	2	.06
WSM	2	.06
COT	1	.03
WIM	1	.03
CWED	1	.03
COF	1	.03
WMPL	1	.03
WIK	0	.00
WMTM	0	.00

Table B2: Administrator Skill Frequencies (N=11)

Code	Sum	Proportion
WIS	7	.64
CWU	6	.55
WIP	6	.55
APC	6	.55
WMB	5	.45
RUU	4	.36
WMD	4	.36
AKC	4	.36
COP	3	.27
COU	3	.27
WPO	3	.27
WMTM	3	.27
WPS	3	.27
WIO	3	.27
WIN	3	.27
RAU	2	.18
WIF	2	.18
TCU	2	.18
RCO	2	.18
WIU	2	.18
COT	2	.18
WMEV	2	.18
RAN	1	.09
RCE	1	.09
RCU	1	.09
RDU	1	.09
CWG	1	.09
WSL	1	.09
WPP	1	.09
WIK	1	.09

Code	Sum	Proportion
WICR	1	.09
WMTR	1	.09
APB	1	.09
RAO	1	.09
RCAR	1	.09
CWED	1	.09
CWR	1	.09
CWM	1	.09
WMU	1	.09
CUU	1	.09
WIM	1	.09
WIL	1	.09
WMPL	1	.09
TCO	0	.00
TCS	0	.00
TCW	0	.00
RAQ	0	.00
RAD	0	.00
RCF	0	.00
RCI	0	.00
RCS	0	.00
RCL	0	.00
COF	0	.00
.CWO	0	.00
WUU	0	.00
WSM	0	.00
WSB	0	.00
WIT	0	.00
APU	0	.00
AUU	0	.00

Table B3: Manager Skill Frequencies (N=25)

Code	Sum	Proportion
WIS	18	.72
WIO	11	.44
WICR	10	.40
CWU	9	.36
WMEV	8	.32
WMTR	7	.28
RAN	6	.24
CWO	6	.24
WMU	6	.24
WIU	5	.20
RUU	5	.20
WMD	5	.20
RAU	5	.20
RCE	5	.20
COU	5	.20
WPO	5	.20
RAQ	4	.16
CWR	4	.16
WPS	4	.16
RCS	4	.16
WMB	4	.16
COP	4	.16
WIK	4	.16
WIT	4	.16
TCO	3	.12
TCU	3	.12
RCO	3	.12
RDU	3	.12
RAO	3	.12
RCAR	3	.12

Code	Sum	Proportion
RCF	3	.12
CWG	3	.12
CUU	3	.12
WIL	3	.12
WMPL	3	.12
WMTM	3	.12
APB	3	.12
WIF	2	.08
APC	2	.08
RAD	2	.08
RCI	2	.08
TCW	2	.08
COT	2	.08
WSB	2	.08
WIP	2	.08
WIN	2	.08
APU	2	.08
WPP	1	.04
AKC	1	.04
RCU	1	.04
CWM	1	.04
WSL	1	.04
AUU	1	.04
TCS	0	.00
RCL	0	.00
COF	0	.00
CWED	0	.00
WUU	0	.00
WSM	0	.00
WIM	0	.00

Table B4: Planner Skill Frequencies (N=17)

Code	Sum	Proportion
CWU	8	.47
WMD	6	.35
RUU	6	.35
CWR	6	.35
TCO	5	.29
RCI	5	.29
WIO	5	.29
APB	5	.29
WIU	4	.24
TCW	4	.24
RCO	4	.24
COP	4	.24
WPS	4	.24
WICR	4	.24
WIT	4	.24
WMTR	4	.24
TCU	3	.18
RCL	3	.18
RCU	3	.18
WPP	3	.18
RCE	3	.18
WIP	3	.18
RAN	3	.18
COU	3	.18
CWO	3	.18
CWG	3	.18
WPO	3	.18
RAQ	2	.12
CWM	2	.12
WUU	2	.12

Code	Sum	Proportion
WSL	2	.12
WIL	2	.12
WMEV	2	.12
AKC	2	.12
RAD	2	.12
WMB	2	.12
WMTM	2	.12
TCS	2	.12
RAU	2	.12
RCS	2	.12
CUU	2	.12
WMU	2	.12
APC	2	.12
RAO	1	.06
COF	1	.06
WIK	1	.06
WIN	1	.06
AUU	1	.06
RCF	1	.06
COT	1	.06
CWED	1	.06
WIS	1	.06
RCAR	0	.00
RDU	0	.00
WSM	0	.00
WSB	0	.00
WIM	0	.00
WIF	0	.00
WMPL	0	.00
APU	0	.00

Table B5: Program Specialist Skill Frequencies (N=9)

Code	Sum	Proportion
RAN	5	.56
WIS	5	.56
RDU	4	.44
CWO	4	.44
CWG	4	.44
CWU	4	.44
WICR	4	.44
WMEV	4	.44
WMD	3	.33
RAQ	3	.33
WPS	3	.33
TCW	2	.22
RAO	2	.22
RAD	2	.22
COU	2	.22
WIO	2	.22
WIL	2	.22
APB	2	.22
TCO	2	.22
RCO	2	.22
RCF	2	.22
RCI	2	.22
RCS	2	.22
RUU	2	.22
CWR	2	.22
WIK	2	.22
WIT	2	.22
WIN	2	.22
WMB	2	.22
WMU	2	.22

Code	Sum	Proportion
TCS	1	.11
RCE	1	.11
RCL	1	.11
COP	1	.11
CWM	1	.11
WPO	1	.11
WMTR	1	.11
WMPL	1	.11
AUU	1	.11
TCU	1	.11
RCU	1	.11
WIU	1	.11
APC	1	.11
RAU	0	.00
RCAR	0	.00
COF	0	.00
COT	0	.00
CWED	0	.00
CUU	0	.00
WUU	0	.00
WSM	0	.00
WSL	0	.00
WSB	0	.00
WPP	0	.00
WIM	0	.00
WIP	0	.00
WIF	0	.00
WMTM	0	.00
AKC	0	.00
APU	0	.00

Table B6: Archaeologist Skill Frequencies (N=20)

Code	Sum	Proportion
RCAR	14	.70
CWR	10	.50
RAO	8	.40
RCO	8	.40
WIS	7	.35
TCU	6	.30
CWU	6	.30
WMU	6	.30
WPO	5	.25
WIP	5	.25
WIU	5	.25
AKC	5	.25
WIO	4	.20
RUU	4	.20
RAU	4	.20
RDU	4	.20
WMB	4	.20
RAD	3	.15
APB	3	.15
TCW	3	.15
COU	3	.15
COP	3	.15
WSL	3	.15
WIN	3	.15
RAN	2	.10
TCS	2	.10
RCL	2	.10
WIF	2	.10
APC	2	.10
RAQ	1	.05

Code	Sum	Proportion
WSB	1	.05
WIM	1	.05
WICR	1	.05
WIT	1	.05
TCO	1	.05
RCS	1	.05
COT	1	.05
CWED	1	.05
CWG	1	.05
CWM	1	.05
WUU	1	.05
WPP	1	.05
WPS	1	.05
WIK	1	.05
WMTR	1	.05
WMTM	1	.05
AUU	1	.05
RCF	0	.00
RCE	0	.00
RCI	0	.00
RCU	0	.00
COF	0	.00
CWO	0	.00
CUU	0	.00
WSM	0	.00
WIL	0	.00
WMPL	0	.00
WMEV	0	.00
WMD	0	.00
APU	0	.00

Table B7: Medical Anthropologist Skill Frequencies (N=11)

Code	Sum	Proportion
CWU	6	.55
RCI	5	.45
WIS	4	.36
WIL	4	.36
TCW	4	.36
RAQ	4	.36
RAN	4	.36
RAD	3	.27
RCF	3	.27
RCS	3	.27
CWO	3	.27
CWR	3	.27
WMTR	3	.27
RCE	3	.27
RDU	3	.27
WICR	3	.27
WIT	3	.27
TCO	2	.18
TCS	2	.18
RAU	2	.18
COP	2	.18
WIO	2	.18
WIP	2	.18
RCO	2	.18
WMPL	2	.18
WMEV	2	.18
WMD	2	.18
WMU	2	.18
TCU	2	.18
COU	2	.18

Code	Sum	Proportion
WSM	2	.18
RCL	1	.09
CWM	1	.09
WPO	1	.09
CWED	1	.09
WMB	1	.09
WMTM	1	.09
RAO	1	.09
RCU	1	.09
COF	1	.09
CWG	1	.09
WUU	1	.09
WPP	1	.09
WIU	1	.09
APB	1	.09
RCAR	0	.00
RUU	0	.00
COT	0	.00
CUU	0	.00
WSL	0	.00
WSB	0	.00
WPS	0	.00
WIM	0	.00
WIK	0	.00
WIF	0	.00
WIN	0	.00
AKC	0	.00
APC	0	.00
APU	0	.00
AUU	0	.00