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NET WORKING: Work Patterns and Workforce Policies for the New Media Industry

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NET WORKING: Work Patterns and Workforce Policies for the New Media Industry

Abstract
This report, based on a study of a group of highly accomplished professionals in New York City, is one of the first to take up labor market issues in the new media industry. It describes the challenges faced by professionals and employers alike in this important and dynamic sector, and identifies strategies for success in a project oriented environment with highly complex skill demands and rapidly changing technology. Our findings suggest three central issues.

Keywords
job, human resource, employee, work, firms, labor, market, skill, technology

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Working Paper Series

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Working Paper 00 – 19

ilr School of Industrial and Labor Relations
CORNELL UNIVERSITY
Advancing the World of Work

NET WORKING
Work Patterns and Workforce Policies for the New Media Industry

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This paper has not undergone formal review or approval of the faculty of the ILR School. It is intended to make results of Center research available to others interested in preliminary form to encourage discussion and suggestions

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In doing this research, we were impressed by the enthusiastic cooperation we received from the new media community and its observers. The people we interviewed were generous with their time and ideas, and responsive to follow-up requests for more information. Leaders of professional associations invited us to meetings to learn more about their organizations and meet their members. Other researchers shared their ideas, studies and surveys with us. The conversations in the hallway were frequently more thought-provoking than the ones in the meeting. No encounter was without some new understanding, and we are grateful for all of them.

We are especially grateful to Steve Sieck of PricewaterhouseCoopers and John Gilbert of Rudin Management Company for getting us started; to Howard Greenstein and Richard Winkler for linking us to their important new media organizations and a host of useful conversations; to Red Burns, Sunny Bates, Anezka Sebek, Anthony Townsend, Steve Mitra, and Mitchell Moss for sharing their special insights about the industry; to Pat Kaufmann, Linda Nessel, Elyse Golob and Susan Arroyo for providing us with a perspective on New York workforce and economic development issues; and to Allen Scott, Matt Zook, and Ake Sandberg for putting our findings in a broader context.

Finally, our thanks to Kathleen Christensen of the Alfred P. Sloan Foundation for her support and Katherine McFate of the Rockefeller Foundation for her continued interest and investment in our work.

Executive Summary

This report, based on a study of a group of highly accomplished professionals in New York City, is one of the first to take up labor market issues in the new media industry. It describes the challenges faced by professionals and employers alike in this important and dynamic sector, and identifies strategies for success in a project oriented environment with highly complex skill demands and rapidly changing technology. Our findings suggest three central issues.

The Skills Challenge

- New media workers are largely self-taught and invest a significant amount of time learning and upgrading their skills. The New York new media professionals we studied spend, on average, 13.5 unpaid hours per week in obtaining new skills. Skill acquisition has been an individual responsibility both because the interactive nature of computer tools allows new media workers to learn new skills at their own pace and within their own learning style, and because formal learning programs have not kept pace with skill needs in this fast changing industry.
- The informal approach to acquiring skills in new media makes recruitment and selection more difficult for employers because they cannot assess the skill level and sophistication of potential employees or contractors.
- In addition to technical skills in programming or the use of authoring tools, the skills that are viewed as most important to success in new media include general problem-solving, grasping the big picture of a project or business, managing relationships with colleagues, managing information and resources, and managing customer relations. The most sought after professionals are those people who combine technical knowledge with sales, marketing, or managerial skills. These "hybrid" professionals need both a facility with new media technology and more traditional business skills that can be applied to new media enterprises.

Policy Response

The new media professionals in our study identified better access to skills training as their most significant policy issue. Employers, professional associations and other industry stakeholders need to work with training providers to insure that their offerings reflect current industry requirements. A skill hierarchy in the different segments of new media work (e.g. web page design and management, digital design) needs to be developed to enable entry level workers to undertake a career-building skill development program. Training programs must reflect the pace and hands-on nature of skill acquisition in new media. A more efficient, reliable and standards-based system for skill certification is needed. All this will become increasingly important as the industry grows beyond a relatively small community where prior personal connections are sufficient to establish one's ability and reputation.

The Sustainability Challenge

- New media professionals are rarely "employees" in the way that term is typically understood. Most work by moving from project to project, providing specialized inputs into the creation of products such as movies, advertisements, and webpage designs. Social networks are central to job search and employment security in new media. Respondents rank friends and colleagues far above any other source of jobs.
- Full time does not necessarily mean long term. Even among workers with full time jobs, their tenure with each employer averages only 6 months. Career paths are organized around the acquisition of a marketable portfolio of specialized skills and prestige projects rather than tenure with a long term employer. Successful careers often involve movement from full-time employment, to independent contractor status, to entrepreneur.
- The average work week for respondents is 53 hours per week. Yet, on average, they reported that they spend only 49% of their work time in new media on direct production. The remainder is spent looking for new work, client relations, and administrative tasks. This time spent on indirect functions (and the associated "transactions

costs") is in addition to the time spent on unpaid learning. Thus, new media workers spend more time trying to maintain steady employment and future "employability" than they do on current projects..

Policy Response

Personal networks and professional associations are central to the ability to maintain employment in the new media industry and to the reduction of transactions costs for both employers and the workforce. The capacity of professional associations needs to be increased so they can better play the role of labor market intermediary in this industry. This is especially true for organizations that serve women and minorities, who rely on associations more than personal networks in obtaining jobs and building a career.

The Security Challenge

- Though this study covers a more successful and established segment of the new media workforce, only slightly more than half of survey respondents were satisfied that their current job is secure. Moreover, even with the industry growing dynamically, only two-thirds of respondents felt confident that they would have steady employment over the next two years.
- Despite the fact that this group of professionals had relatively high wages and wage growth in the 1990s, their satisfaction with their pay and their confidence in future income security were not as robust. On average, only about half of the professionals we surveyed believed that their pay was fair. Slightly more than 60% were satisfied with their future career prospects or felt that their income would be sufficient to meet their future family needs.
- Our survey documents a benefits gap between full time employees and independent contractors and entrepreneurs. However, even full time employees in this study had low benefits coverage. Only 77 percent of full time professionals receive basic health insurance from their primary employer and but 72 percent have comprehensive

health care. Only 63 percent have some type of retirement plan from their primary employer and 55 percent have a deferred income plan such as profit sharing or stock options. For independent contractors and entrepreneurs, less than one quarter receive any of these benefits from their primary employer or client, and only 11 percent receive comprehensive health coverage.

Policy Response

The new media professionals in our study identified access to health insurance and other protections as a key policy concern. In a flexible, project-based industry such as new media, mechanisms need to be developed which provide necessary securities, such as health insurance, outside the boundaries of the firm. A precedent and model for providing benefits in project oriented industries exists in "old media" institutions such as the Motion Picture Health and Welfare Fund.

A Way Forward: The Importance of Regional Partnerships to New Media's Future

New media people eschew the concept of a new media "industry" in favor of a notion of membership in a "community" of new media artists and professionals that encompasses employers and members of the workforce. Successful development of new media will require strategies that are:

Workforce oriented -- focusing on the people who are the industry, on the workforce as well as firms and their clients;

Sectoral -- building on the common interests of employers and new media professionals to create a sustainable industry;

Regional -- utilizing the personal networks and local connections that sustain a project-based industry.

Strategies that foster training programs, infrastructure, and services available to many firms within a sector produce far greater benefits than the conventional approach of helping individual firms.

New media associations play an important role as labor market intermediaries. Survey respondents said that associations were particularly important as sources of information on new media products, services, equipment, and software; and as sources of learning about the latest technical advances in the field. What is needed in new media is a commitment of the public sector, professional association, and private actors to make a collaborative model -- one that will meet both workforce and employer needs -- the center of efforts to build the industry. We provide several models.

I. Introduction

Many cities across the United States want to find ways to attract new media professionals and to build the kind of environment that will enable Internet oriented activities to thrive and grow. As public officials have recognized the potential of the Internet to create jobs and revitalize cities, studies of new media firms and industrial districts have multiplied. Yet, almost all of these studies have solicited firms for their perspective on what problems need solving and policies need implementing. Although the viewpoint of firms is critical, we need a broader base of information if we are to understand the Internet driven portion of the economy and take advantage of its potential. In particular, we need to know more about Internet oriented work and about the challenges facing people who do that work.

This study is one of the first to take up the labor market issues facing professionals and employers in the new media industry. We focused on a group of highly accomplished professionals in New York City to identify lessons for success in a project oriented environment with highly complex skill demands and rapidly changing technology. The professionals we surveyed earned an average of $99,000 from new media work in 1999, far more than the national average for people employed in this type of work. Yet, we found that they faced significant challenges in acquiring new skills, managing their career, and establishing employment and income security. This report describes the labor market strategies of new media professionals as well as the challenges faced by professionals and employers alike in this important and dynamic industry. We focus on three central issues.

The skills challenge:

What is the demand for skills in Internet-driven work activities? How do high-skilled professionals working with rapidly changing technology acquire and maintain their skills? How do employers find the right workers in a labor market with no established standards or means of certification?

The sustainability challenge:

In a labor market characterized by short-term projects, where turnover is high and employment stability is low, how do new media professionals build stable and rewarding careers? How do employers secure a steady stream of skilled professionals?

The security challenge:

How do new media workers create long term security and income growth in an industry dominated by short-term contracts? What solutions exist to ensure that this growing portion of the workforce has long term health care and retirement security? What are the trade-offs for employers who lack the commitment of a long-term workforce?

This study is based on interviews and survey data from new media professionals in New York City, but the lessons apply in varying degrees to other project oriented workers and to new media workers in other locales. We found, for example, that in contrast to the Internet's spaceless, placeless image, new media workers are very much rooted in a place and to the personal networks that help them find jobs, identify and learn new skills, build a career, and secure a future. Building the strength of these connections, in new as well as tried and true ways, is key to creating sustainable careers in new media, and by extension, a sustainable industry.

II. Who Are New Media Workers?

One of the fastest growing areas of skilled employment in the U.S. is found in the set of activities encompassed in new media occupations. Who and what is included in "new media" is a matter of dispute, although the computer and the Internet are central to most definitions. In this study, we follow the conventions of New York new media professionals in defining new media as the new convergence of existing media with Internet distribution and computer-driven technologies that combine and manipulate text, sound and images (this includes "multimedia" products such as CD-ROMs). The latest industry study sponsored by the New York New Media Association (NYNMA) offers the following definition:

> The New Media industry combines elements of computing technology, telecommunications, and content to create products and services which can be used interactively by consumers and business users.

Because new media professionals produce all kinds of information, communications, and entertainment products in a wide variety of settings, they cannot be encompassed within any traditionally defined industry. Instead, their activities, are transforming these conventional industries. New media workers are taking part in a movement toward the restructuring of sectors as a consequence of the application of new technologies and the evolution of information as a commodity. According to Zook (1998):

> The Internet industry is not so much a unified new industry as a method for the reorganization of existing systems of production and redistribution.... The Internet allows existing fragmented supplier and customer chains to connect into an easily accessible global network.... Thus, the Internet industry is best defined around its intensive use of information rather than as a high technology per se.

The Growing New Media Workforce

As in many cities that have become centers of new media activity – such as Los Angeles, San Francisco, and Toronto – the new media workforce in New York has grown dramatically in recent years. Between mid-1997 and 2000, for example, the number of new media establishments in New York City grew by 25%, while the average number of payroll employees per establishment grew by 14%, and total payroll grew by 55% (PricewaterhouseCoopers, 1997, 2000). In 2000, the new media workforce in New York City is estimated to total almost 140,000 people (PricewaterhouseCoopers, 2000).

New media professionals are rarely “employees” in the way that term is typically understood. Many work by moving from project to project, providing specialized inputs to the creation of products such as movies, advertisements, and webpage designs. In 1997, nearly

half of New York City's new media workforce were part time or temporary workers or independent contractors (PricewaterhouseCoopers, 1997, 2000).

Moreover, full time does not necessarily mean long term. In our survey, we found that the job tenure even of those who are classified as "full time" workers averages about six months (our respondents average over three jobs per year, and full time respondents still average two jobs per year). And in our interviews, we found that professionals and human resource managers routinely emphasized the short term character of employment in the New York new media industry. According to one human resource manager:

> "While some are part time, all are regular -- that is, benefit receiving -- employees. We use no independent contractors, although our new media people behave as though they are. They will quit in a minute and go across the street for five dollars and then return again three months later. The velocity is very different."

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- a human resource director, New York City

Thus, it appears that the vast majority of new media workers move from employer to employer in a much shorter span of time than the typical American worker. Some of this mobility is a consequence of the nature of work in the industry, much of which is organized around short term projects such as developing a website, an advertisement, or the special effects for a film. But it is also a consequence of opportunity, ethos, and career paths organized around the acquisition of a marketable portfolio of specialized skills and prestige projects rather than long term tenure with one employer.

This "velocity" may not be the same in every city where new media is a growing occupation because of different types of business, firm, and project characteristics (emphasizing longer term rather than short term projects, for example), but reports indicate a high level of turnover in new media across the nation, even by the relatively high standard of turnover in the U.S. labor market.

The New Media Workforce in Our Study

To tap the insights of new media professionals, we carried out a Web-based survey of members of 5 intermediary associations that serve workers in the industry. The associations included The Alliance for Downtown New York (ADNY), East Coast Digital Consortium (ECDC), New York New Media Association (NYNMA), Webgrrls, and the World Wide Web Artists Consortium (WWWAC).

Our survey respondents are highly educated professionals, with 54 percent having at least a four-year college degree, and one-third having at least a masters' degree. Eighty-one percent are white and the average age is 33 years old, with 26 percent of the total 30 years or younger, and 46 percent 41 or older. Almost one-third of the sample is married and 21 percent have dependents.

From this distribution, their survey answers, and our interviews, we regard our respondents as more successful than many of their counterparts in new media, and substantially invested in efforts to develop the industry. For example, two-thirds of the sample are permanent full time employees and one third are independent contractors or entrepreneurs. We do not include temporary workers or agency temps, who tend to have lower skills and experience and to be paid less than those in the other categories. Thus, this study features professionals who have had relatively more success in their new media careers, and therefore, may offer examples of better strategies for surviving in this industry. Their work and career experiences are likely to reflect a better case scenario relative to the workforce as a whole.

Table 1: Demographic Characteristics

	All	Full time	Indpt./ Entrep.	Male	Female	Age <=30	Age 31-40	Age =>41	White	Minority
Demographic Characteristics:										
Gender (% male)	32.1	32.2	32.0	--	--	31.2	28.6	42.2	34.0	25.4
Age	32.9	31.3	36.1	33.4	32.6	26.1	33.5	46.2	33.1	32.5
Number of yrs employed	15.0	13.8	17.4	15.7	14.7	8.7	15.7	27.2	15.1	15.1
Race	81.4	81.8	82.3	85.4	79.5	79.7	82.4	82.5	--	--
Education level	16.3	16.3	16.3	16.1	16.4	16.0	16.4	16.5	16.3	16.1
Marital status	29.5	25.0	36.1	41.7	23.6	16.2	33.6	50.8	33.5	13.6
% w/ dependents	20.6	18.8	20.8	32.7	14.9	6.7	20.7	49.2	20.9	17.2
% voted in last year's election	62.9	59.9	67.7	55.0	66.7	56.4	64.1	75.0	64.0	60.3
% voted in 1996 presidential election	76.1	75.7	79.8	64.0	81.8	71.6	77.8	81.7	78.1	69.0

III. What Challenges Do New Media Professionals Face ?

1. The Skills Challenge ...

Obtaining the skills necessary to produce products and services in the new media industry is a top concern of both professionals and their employers. It is a difficult issue because the demand for skills is constantly changing and includes not only technical skills but more elusive abilities such as creativity and innovative problem-solving. According to a recruiter at a Palo Alto based IT recruiting firm:

> "The ones whose personal contribution save a company from disaster are those who bring grounded or factual intuition to bear on the job ... people who can assimilate large amounts of data in a very analytical way, and can synthesize it, and then step back and let their intuition kick in" (Koprowski, 1998).

> "Great directing and design skills are rare -- plus a command of the tool -- so those people pop to the surface first."
>
> *- a producer, digital design firm*

In addition to a long list of technical skills, the ideal new media worker should be able to work in a team, manage client relationships, demonstrate creativity, and solve complex problems as they arise. That is, while technical skills are in great demand, the most sought after people are those who combine technical skills with non-technical or managerial skills. The areas in which demand is increasing include:

- skilled programmers, especially those knowledgeable about financial services and linking websites to existing systems or databases;
- hybrids or interface people -- people with business skills such as finance or sales or human resources as well as knowledge of the Internet;
- project managers who combine a knowledge of both content and Web technique (skills akin to those of a producer in old media);
- line managers capable of crossing the gulf between conventional company cultures and their iconoclastic new media employees.

The demand for people who combine technical and managerial skills was echoed by many human resource managers we interviewed. One noted:

> "The big problem is recruiting interface people, people with new media expertise but also with expertise in related fields like sales or finance, the interface and integration people. We're still very unclear about how advertising and finance should be applied to new media. All the old models don't apply and its still so amorphous. New media people are intuitively passionate about it, but can't articulate why and aren't helping to develop new integration models."

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>
> *-a human resources director, New York City*

Another new media recruiter stated:

> "The big push is for sales people to get ad revenue. We really need people who know how to sell, to make a conceptual sale, even in the face of lousy returns. They need media sales or interactive experience, and they need an understanding of the categories of audience for the customer. The second push is for marketing people, with brand experience, with real P & L responsibility, and who are <u>really</u> interested in new media."

As we describe in the section *Finding the Time* below, one reason why hybrid or interface people are difficult to find is that they must invest enormous amounts of their own time just to keep up with the rapidly changing technology of new media.

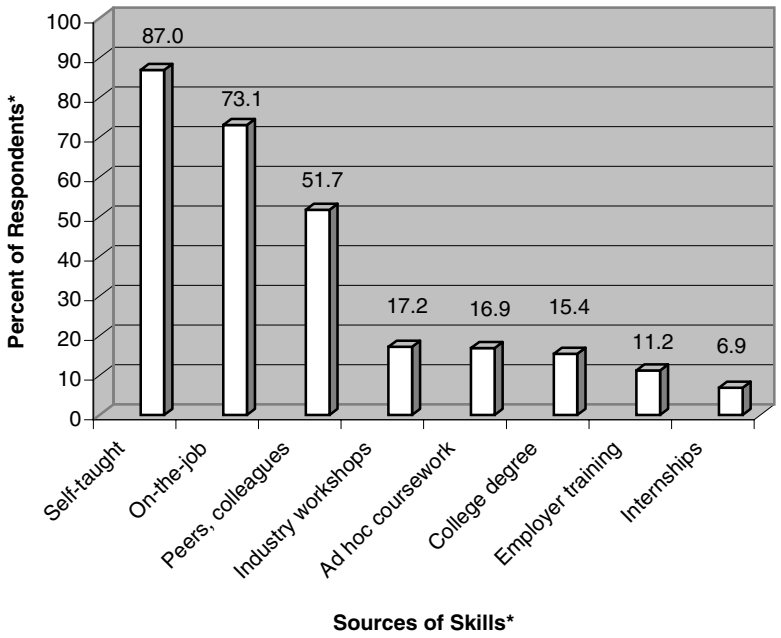
<u>... For the Workforce:</u>

Acquiring Skills

The overwhelming majority of professionals in this study learned their new media skills on their own, informally, or through colleagues and friends. Formal education programs have difficulty keeping up with the rapid advances in technology, changes in skill demands, and the learning style, complexity, and overall pace of new media work. This pattern holds even among the sample of professionals in our study, the vast majority of whom have college or post-graduate degrees. When asked to rank the top three most important sources of new media

skills, 87 percent of our survey respondents listed self-teaching and 51 percent ranked friends, peers, and colleagues.

Figure 1: Most Important Sources of New Media Skills



*Percent of respondents who rated item as one of the top 3 most important sources of skills.

By contrast, only 15.4 percent of respondents indicated that their college or university degree was one of the most important sources for their skills, and only 16 percent said that additional course work was important.

College and university programs are only beginning to respond to the demand for new media skills. One of the more sophisticated programs in the field, the Program in Interactive Telecommunications at New York University, recognizes that training in technical skills is necessary but not sufficient. According to Red Burns, Director of the program:

> "We're a graduate program but we're not a training program. The success of our program is due to its holistic approach to the Internet. We're not interested in the technology

per se, we're interested in what can be done with it, the ideas behind it. Our graduates leave with a spirit of experimentation."

The role of educational institutions is especially important in digital design, that segment of new media that requires a particularly high level of creativity and a developed aesthetic sense. As one producer at a digital design firm noted, "The quality of kids coming into new media is contingent on the art schools."

Employer-provided formal training ranked even lower than college course work as an important source of new media skills, with only 11.2 percent of respondents ranking this source as important. This finding is particularly striking given that two-thirds of the sample in this study describe themselves as full time employees, and these are the workers most likely to receive employer-provided training. Clearly, the short-term nature of all work in new media mitigates against firm investments in formal training.

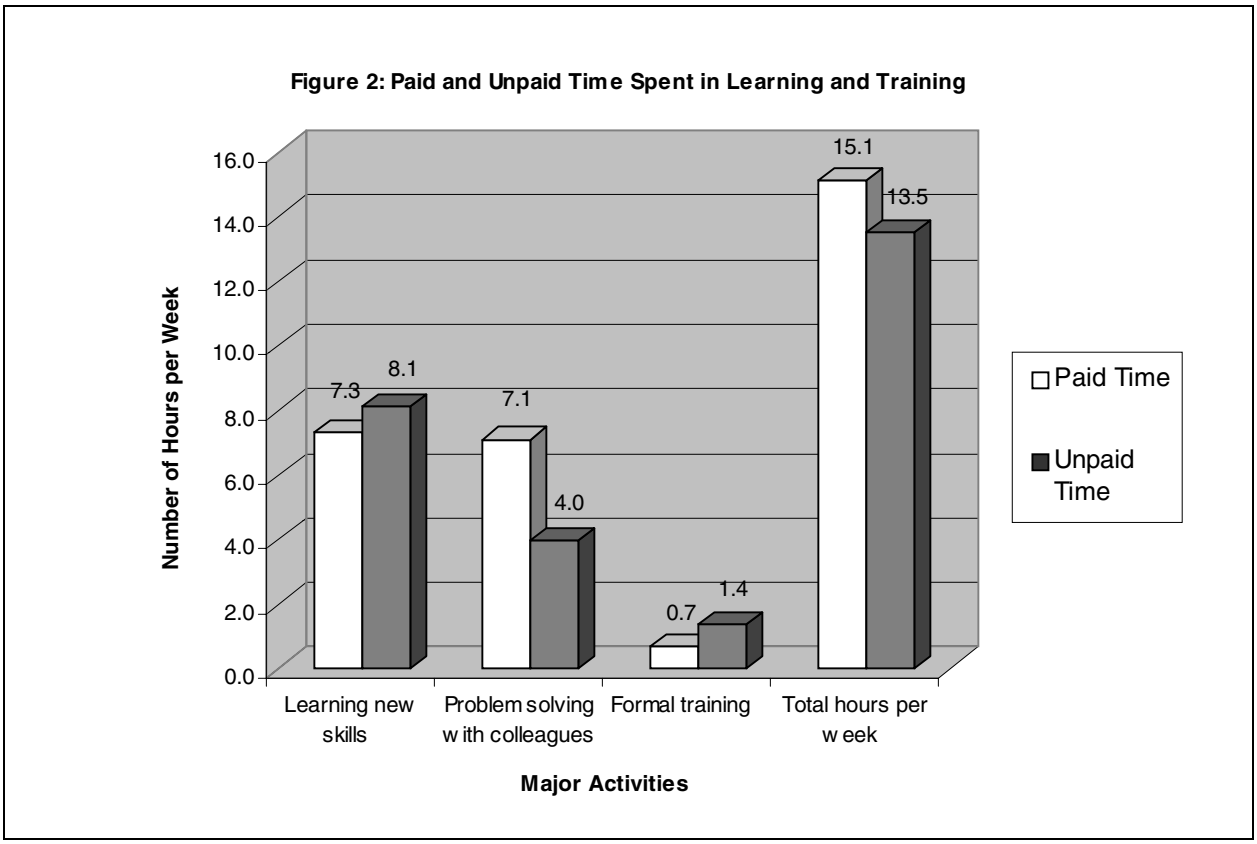
In contrast to formal training provided off-the-job, however, employers do appear to be subsidizing considerable amounts of informal on-the-job training. Almost three-quarters of those surveyed ranked on-the-job training as an important source of skills. It appears that on-the-job training is significantly more useful than formal training because of the fast pace of change in the technology and the complex, interactive nature of learning computer tools. The most useful sources of training -- self-teaching, on-the-job training, and friends and colleagues -- are informal and may be incorporated into daily work. By contrast, workshops, college courses and degree programs, and employer-provided training are more formally structured and provided off-the-job. The primacy of informal learning and training is underscored by the fact that the top three choices of respondents – self-teaching, on-the-job training, and friends – do not vary across the major demographic and employment subgroups we analyzed. Independent contractors and entrepreneurs rank the sources of training in the same order as do full time employees, as do supervisors and workers, and all gender, race, and age groups.

In other words, while employers do not appear to be investing directly in formal training, they are subsidizing training indirectly because workers are integrating ongoing learning into the daily work that they do. There, both workers and their employers and clients are investing in learning and training on-the-job.

Keeping Up

In the business and popular press, a conventional wisdom has emerged that employment stability and career success depend intimately on the extent to which workers invest in their own skills and development. So, how much do new media workers invest in their own training and development? To explore this question, we asked survey participants to estimate the amount of time they spent in a typical work week on learning new skills. We asked them to distinguish between paid time (on-the-job) and unpaid time devoted to three activities: a) accessing new information or learning new skills; b) talking with colleagues to solve problems or find better ways to get work done; and c) taking formal education or training classes, including conferences or professional meetings.

New media professionals in this study spent by far the most time learning on their own (on average, 7 hours of paid time and 8 hours of unpaid time). They reported spending almost as much time solving problems with colleagues (7 hours of paid time and 4 hours of unpaid time). By contrast, they spent very little time (0.7 hours paid, 1.4 hours unpaid) in formal training. In total, they reported spending 15 hours of paid time and 13.5 hours of unpaid time in on-going learning and skill development each week.



The motto of one new media worker sums up this strategy: "Utilize 90% of current skills and gain 10% for every new job ... She looks for work where she isn't pigeonholed into project management but can stay somewhat hands on" (Radcliff, 2000)

These patterns vary somewhat by demographic and employment subgroups in predictable ways. The most dramatic differences are between independent contractors / entrepreneurs (who report a total of 32.7 hours of weekly learning) and full time workers (who report 26.6 hours); whereas the independent contractors report 18 hours per week in unpaid learning, full time workers report only 11 hours. Supervisors report spending more time on skill development than non-supervisors, and among demographic groups, men more than women, older workers more than younger workers, and minorities more than whites. Men also spend more time in independent learning, while women spend more time problem-solving with colleagues. In sum, it is striking that men, older workers, and supervisors – groups that

generally are in a stronger labor market position than their counterparts – report spending more time, not less, in learning both on and off the job.

Table 2: Workers' Investment in Learning and Training

	All	Full time	Indpt./ Entrep.	Male	Female	Age <=30	Age 31-40	Age =>41	White	Minority
In a typical week, respondent spends the following number of paid hours:										
Learning new skills	7.3	7.2	7.8	8.1	6.9	6.9	7.0	8.7	7.4	7.3
Problem solving with colleagues	7.1	7.7	6.4	6.8	7.3	7.6	7.6	5.5	6.8	8.6
Formal training	0.7	0.7	0.6	0.7	0.6	0.5	0.8	0.8	0.7	0.7
Total paid hours per week	15.1	15.6	14.8	15.6	14.9	14.9	15.4	15.0	14.8	16.7
In a typical week, respondent spends the following number of unpaid hours:										
Learning new skills	8.1	6.7	11.0	8.9	7.8	7.2	8.1	10.3	8.3	7.9
Problem solving with colleagues	4.0	3.1	5.2	4.4	3.8	3.6	4.2	4.2	3.8	4.5
Formal training	1.4	1.2	1.7	0.7	1.7	1.0	1.7	1.7	1.3	2.0
Total unpaid hours per week	13.5	11.0	17.9	14.0	13.3	11.7	13.9	16.2	13.4	14.5
Total paid & unpaid hours/week invested in learning and training:	28.5	26.6	32.7	29.6	28.2	26.6	29.3	31.3	28.2	31.1

Technical Skills

The technical skills of new media workers are typically thought of in terms of "tools" -- the programming languages and authoring tools that workers use to create digital images and web pages. We created a list of new media skills through interviews with industry experts,

managers, and new media professionals. We then asked survey respondents to check all of the programming languages and authoring tools they were skilled at using. The authoring tools included image editing, web tools, video tools, 2D tools, 3D tools, and audio tools. We also asked about the number of platforms (e.g. PC, Mac, Unix, and Alpha, among others) they were skilled at using.

While this count does not take into consideration the qualitative variation in skills, we do know that the most complex tools require knowledge of less complex tools. Therefore, the cumulative number of tools that an individual is able to use is a reasonable indicator of that person's technical skill level and determines their compensation. An example comes from a producer at a digital design firm, who stated:

> "In general, artists get more money for 3D than traditional 2D animation. Its partly a function of the price of the software: a Quantel seat costs a quarter of a million dollars and the person in it commands over $100,000 a year, whereas the person doing 2D on a Mac, where the software costs $25,000, makes $30-60K."

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- a producer and entrepreneur, a digital design firm

We found that respondents in our study are skilled in an average of 3.5 programming languages and 6.6 authoring tools, or 10.1 tools; they are able to work on at least 2 types of platforms. There are significant differences in skill levels by gender, age, race, and supervisor/non-supervisory position. On average, women are competent in 8.6 skill areas

compared to 13.6 for men. Women cite half as many programming languages as men, and in all but one of the authoring tool sub-categories, women average fewer skills than do men.

Table 3: Technical Skills of New Media Workers

	All	Full-Time.	Indpt./ Entrep.	Male	Female	Age <=30	Age 31-40	Age =>41	White	Minority
Number of technical skills:										
Total tools*	10.1	10.2	10.5	13.6	8.6	9.7	11.1	9.7	9.8	11.6
a) Programming languages	3.5	3.7	3.5	5.4	2.7	3.0	4.1	3.7	3.5	3.8
b) Total authoring tools, including:	6.6	6.6	7.1	8.3	5.9	6.8	6.9	6.0	6.4	7.8
- Image editing	2.5	2.4	2.6	2.8	2.3	2.4	2.6	2.3	2.4	2.6
- Web tools	2.5	2.6	2.4	2.7	2.4	2.7	2.5	2.1	2.4	2.7
- Video tools	0.6	0.6	0.7	0.9	0.5	0.6	0.7	0.6	0.6	0.8
- d2D tools	0.2	0.2	0.3	0.5	0.1	0.2	0.3	0.2	0.2	0.5
- 3D tools	0.4	0.4	0.5	0.8	0.2	0.5	0.4	0.4	0.4	0.7
- Audio tools	0.4	0.3	0.5	0.6	0.3	0.4	0.4	0.4	0.4	0.4
Total platforms	2.1	2.2	2.1	2.4	2.1	2.2	2.2	2.0	2.1	2.3

The variation by age is somewhat less predictable. Interestingly, those in their thirties have more skills (11.1) than either their younger or older counterparts (both of which cite an average of 9.7 tools). In comparing the older and younger cohorts, those over 40 are familiar with more programming languages (3.7) than the workers in their twenties, but the twenties generation have more authoring tools (6.8) compared to those in their forties (3.0). One interpretation of this pattern is that as older workers move away from involvement in direct

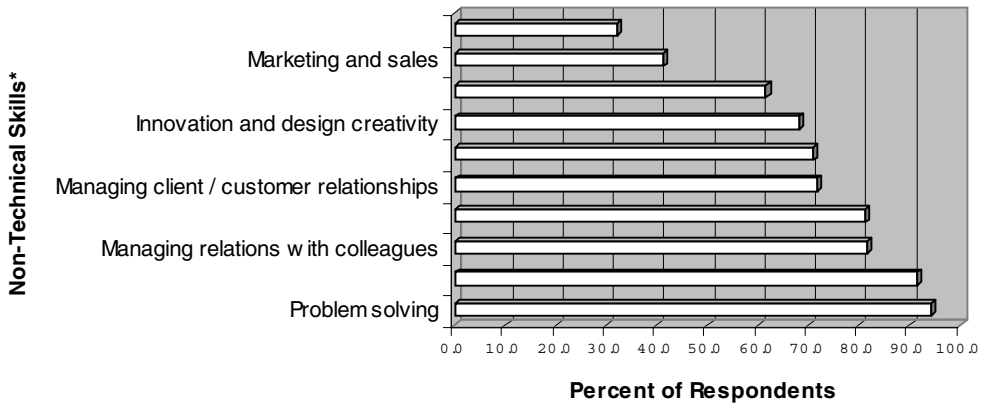
production and into managerial and administrative positions, they are not keeping up with new authoring tools as they become available.

Surprisingly, minority respondents are familiar with significantly more tools (11.6) than white respondents (9.8). Minority workers are familiar with more programming languages (3.8) than their white counterparts (3.5), and more authoring tools as well (7.8 versus 6.4). In every sub-category of authoring tools, minority respondents are skilled in a larger number of tools than are their non-minority counterparts.

Non-Technical Skills

Beyond the technical skills associated with web and Internet design, non-technical skills are in great demand. The non-technical skills viewed by new media professionals as most important include general problem-solving skills (94%), grasping the big picture of a project or business (92%), managing relationships with colleagues (82%), managing information and resources (81%), and managing customer relations (72%).

Figure 3: Demand for Non-Technical Skills*



* Percent who rated a skill as one of the top 3 most important ones in new media employment.

Skills more directly related to design projects, such as creativity in design, the ability to learn on the job, project management, and building a network of contacts were rated as less important. Across all of the subgroups in our survey, this pattern of responses regarding the importance of non-technical skills was consistent.

Table 4: Demand for Non-Technical Skills*

	All	Full Time	Indpt./ Entrep.	Male	Female	Age <=30	Age 31-40	Age >=41	White	Minority
Most important non-technical skills (in order of importance):										
Problem solving	94.2	95.7	92.9	95.2	93.6	94.9	92.4	95.3	94.2	94.9
Grasping the big picture	91.4	90.8	93.9	93.2	90.5	86.1	95.0	95.3	91.1	94.9
Managing relations with colleagues	81.5	86.9	71.4	80.6	81.7	81.8	81.4	79.4	81.5	80.4
Managing info, time or money	81.2	79.1	86.7	73.8	84.9	78.1	83.1	84.1	79.7	89.8
Managing client / customer relationships	71.9	66.8	82.7	75.0	70.3	68.6	76.5	68.8	73.3	66.1
Ability to learn & teach others	71.0	72.6	69.7	74.0	70.0	68.8	68.1	81.3	71.4	71.2
Innovation and design creativity	68.3	59.0	84.9	73.8	65.1	61.8	72.9	73.4	66.5	74.1
Building a network	61.7	53.4	79.8	63.1	60.7	54.4	66.4	67.2	60.1	72.4
Marketing and sales	41.3	36.7	54.6	45.6	39.1	38.7	39.5	46.9	42.3	40.7
Managing software projects	32.1	32.9	33.3	35.3	30.3	26.3	41.5	24.2	30.7	40.4

*Percent of respondents who rate this type of skill as very important or extremely important to their employment and career success (4 or 5 on a 5-point scale).

... For Firms:

Assessing Worker Credentials

The informal, self-taught approach to acquiring skills in new media makes recruitment and selection more difficult for employers, who need to assess the skill level and sophistication of a potential employee or contractor. Many employers we interviewed expressed frustration at their inability to judge candidates based on traditional sources of information. For example, one CEO of a large web development company commented, "Resumes have become really insignificant. Interviews don't tell much. I really don't know what I've got for thirty projects."

> "Resumes have become really insignificant. Interviews don't tell much. I really don't know what I've got for thirty projects."
>
> *- CEO, large web development firm, New York City*

Another human resource director explained that a whole new language is emerging to describe the nature of skills and competencies in new media, but that it is quite difficult to evaluate those skills given the lack of standardized credentials or accepted selection criteria:

> "Resumes are displays of project experience and skill competence. They are not linear with respect to jobs, they are project oriented, and there is a whole jargon they use about what pages they have created. If you probe on a specific project, you may be able to determine whether there is real substance there."

This lack of skill certification is one reason why employers prefer to hire locally, where they can get references from people they know and trust. One human resource director noted, "People find us. It's a small world, so we know all the places they've worked and what the projects they've worked on mean."

Web developers often rely on a resume site offering links to websites they have created, and digital designers on their "reel" (a video portfolio of their work), to demonstrate their creative talents and technical skills.

In addition, a wide range of Internet-based certification sites have sprung up (see, for example, *www.gocertify.com* or *www.brainbench.com*). Brainbench.com advertises that it offers 60 exams with certification recognized by many employers including Ernst & Young, EDS, CSC, PricewaterhouseCoopers, kforce.com, and JP Morgan. Over 500,000 of their exams were ordered in 1999.

Despite these approaches, employers acknowledge that they have no sure gauge of new employees' capabilities until after they have been on the job for a few months, and that checking out a potential employee in the new media community is an inexact science, inconsistently pursued. The risk and difficulty of this situation will likely get worse as the industry matures and grows larger, and the new media community less intimate. Employers say they need easier and less random ways to assess who has the ability to do the jobs they need done.

***

2. The Sustainability Challenge ...

Given the short term, project-oriented nature of much new media work, we wanted to gain a better understanding of how new media professionals obtain work, use their time, maintain steady employment, and build a career over time.

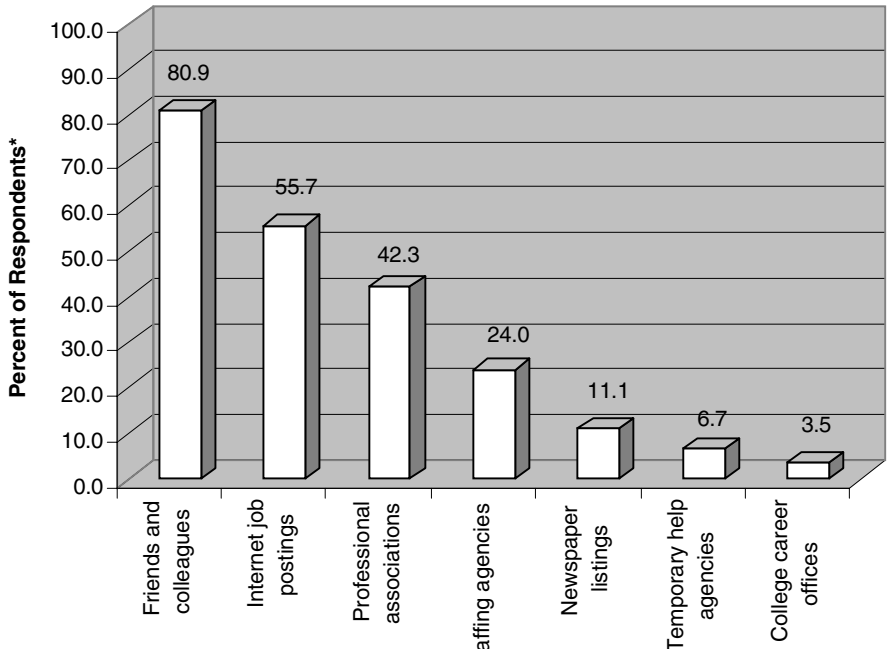
... For the Workforce:

Getting Work

We asked our survey respondents to rate the importance of various sources of jobs in new media, using a five-point scale (from not-at-all important to extremely important). Despite the rapid growth of on-line job boards and Internet-based recruiting, we found that personal networks continue to be the primary source of jobs.

Respondents rank social networks (friends and colleagues) far above any other source of jobs (81%), followed by Internet job postings (55.7%) and professional associations (42.3%). This ranking holds for all of the subgroups in our analysis except two: workers over 40 and independent contractors / entrepreneurs -- perhaps the more established professionals – who rate professional associations as more important than the Internet.

Figure 4: Employment Strategies



*Percent who rated this source of jobs as very important or extremely important (4-5 on a 5-point scale).

Our interviews also support the key role of personal networks in obtaining employment. One radio station web developer said:

> "I spent a couple of months looking through job sites and submitted my resume for probably 30 jobs, but when I look back on the interviews I got, one came through a guy I know from high school, one through a woman I met at a party, there was one call from a

guy I trained, and I was hired here by a guy I worked with two years ago. I'd actually applied here through a blind ad online, so when he called me, it turned out they already had my resume, but he called because he already knew me -- just like all the others."

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- *a radio station web developer*

Employers echo the centrality of personal connections in obtaining employees. According to a Vice President for Sun Microsystems, "2% of the jobs we fill are filled from resumes. Most of the jobs in our company are filled by referrals from other employees."

Even when personal connections are not job connections, both potential employers and employees appear to prefer a face to face encounter to the invisibility of the Internet. A New York recruiting firm, Hotjobs.com, recently created a "bricks and mortar" arm, Workworld, to bring prospective employees face to face with employers. They have found that running job fairs is more lucrative than their online service because employers and employees want to meet in person rather than on the net.

There is some variation in responses by demographic subgroup. Women and minorities report higher ratings for almost all sources of jobs; they are using a wider variety of job search strategies than their male and white counterparts. This finding suggests that: 1) women and minorities have less job stability or 2) they can depend less on personal networks to get them jobs. Across age categories, the under-30 group is more likely to find job opportunities through

Internet job postings (65%) whereas the 31-40 group (53.5%) and the over-40 group (43.3%) are less likely to use Internet job postings. The use of professional associations increases with age. The job sources used by independent contractor / entrepreneurs and full time respondents also differ. The former rely more on professional associations (50.5 versus 39%); the latter depend more on Internet job postings (64.5%), staffing agencies (29.6%) and newspaper listings (14.1%).

The degree to which social networks are central to employment strategies indicates how important it is to live and work in the cities where new media production takes place. New York new media people meet and get to know each other and potential employers at professional association meetings, informal "hang-outs" in the Flatiron District where the industry is concentrated, as well as from working together. There they gather information about new markets, new technologies, and "hot" jobs.

The dependence on personal networks may also be responsible for the apparent inequalities in pay and opportunity in new media work. In new media, who you know matters almost as much as what you know and that, in turn, determines how secure you are about your employability and what you can demand in wages.

Table 5: Employment Strategies

	All	Full-time	Indpt./ Entrep.	Male	Female	Age <=30	Age 31-40	Age =>41	White	Minority
Most important sources of jobs (in order of importance):										
Friends and colleagues	80.9	81.6	80.8	78.2	81.9	80.3	85.5	73.3	79.8	86.4
Internet job postings	55.7	64.5	38.4	43.6	61.9	65.0	53.5	43.3	56.2	55.9
Professional associations	42.3	38.2	50.5	37.6	43.9	39.7	42.2	45.0	41.4	44.8
Staffing agencies	24.0	29.6	13.3	18.0	27.0	23.7	29.8	15.3	22.6	31.6
Newspaper listings	11.1	14.1	4.1	7.9	12.7	10.2	11.3	12.1	10.4	15.5

Temporary help agencies	6.7	7.1	3.1	3.0	8.6	6.6	7.0	7.0	6.0	10.7
College career offices	3.5	4.6	2.0	5.0	2.8	3.7	2.6	5.2	2.4	8.9

Finding the Time

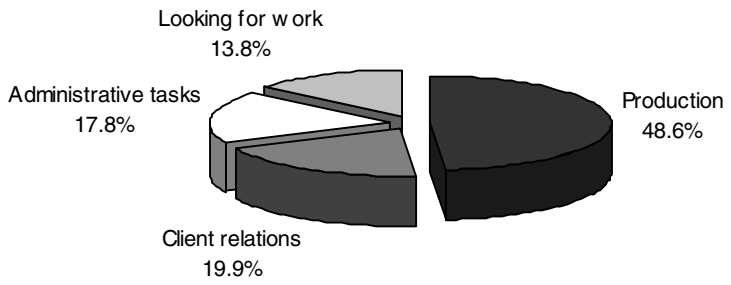
In addition to job search and skill development strategies, we also wanted to get a better understanding of what the average work week consists of for this group of high tech workers. We asked respondents about their work hours in a typical week and about how they allocate their time each week. We found that the average work week for this group is 53 hours per week, with an average of 42 hours per week (or 81%) devoted specifically to new media work. This pattern does not vary markedly across the distinct demographic and employment subgroups, although women, minorities, independent contractor / entrepreneurs, and non-supervisors report fewer hours in new media compared to their counterparts (men, whites, full time employees, and supervisors). Average hours per week devoted to new media production itself also decline slightly with age, presumably because of more time devoted to management or perhaps family responsibilities.

We were also interested in how new media professionals allocate their time, particularly given uncertain market conditions and the contingent employment status of many workers. How much time, for example, do new media professionals devote to direct production work, as opposed to transaction costs associated with managing clients and looking for new work? We asked respondents to estimate the percent of time they spend on four activities: a) direct production, b) managing client or customer relations, c) doing administrative tasks, and d) looking for new work.

On average, respondents reported that they spend only 49% of their work time in new media on direct production, but 20% on client relations, 18% on administrative tasks, and 14% on looking for new work. This time spent on indirect functions or "transactions costs" is in

addition to the time spent on unpaid learning. Thus, new media workers spend more time trying to maintain steady employment and future "employability" than they do on current projects.

Figure 5: Average Work Hours Devoted to Job Search, Client Relations, Administration, and Production



These patterns varied slightly by gender and race, with women and minorities reporting slightly more time on direct production than their counterparts, and (surprisingly) slightly less time on looking for work. More telling are the comparisons by employment status and by age. Independent contractors and entrepreneurs spend only 44% of their time on direct production and almost 20% of their work time looking for new work. Similarly, workers in their thirties and forties spend about 16% of their time looking for work, despite the fact that those over 30 are more likely to hold a managerial position.

Consistent with the data above, those groups that spent more time looking for work were also the groups with a higher than average number of employers for the year. For example, while the average number of new media employers for all respondents was 3.3 in the past year, the number was higher for males (4.3) than females, and for those over 30 (3.5) compared to those 30 or younger (2.8). The older age groups, 31-40 and over 40, report having more employers in the past year (3.5; 3.5) then the under-30 age group (2.8); whites

(3.3) more than minorities (3.1); and independent contractor / entrepreneurs (6.1) far more than full time employees (2.0).

If we combine respondents' assessments of the amount of time they spend looking for work with the time they spend on unpaid learning (described earlier in section *Keeping Up*), we have a picture of how much effort these people are spending to stay employed. If, on average, they spend 6 hours per week looking for work (14% of 42 hours/week) plus 13.5 hours per week in unpaid learning, then it appears they are spending close to twenty hours per week simply trying to maintain steady employment and future employability in new media. What is striking about these patterns is that even the most stable group (the full time employees) report spending 11% of their time looking for work plus 11 hours a week in unpaid learning, or a total of about 15 hours per week.

Table 6: Work Hours, Time Allocation, and Employers

	All	Full-time	Indpt./ Entrep.	Age <=30	Age 31-40	Age =>41	Male	Female	White	Minority
Hours per week:										
Total work	52.6	53.0	53.0	53.4	51.4	52.5	54.7	51.7	52.5	53.6
NM work	42.4	44.7	41.4	45.0	40.7	39.2	45.5	41.1	42.8	41.4
% of work time in NM	80.6	84.4	78.2	84.1	79.2	74.7	83.2	79.4	81.6	77.4
Percent of NM work time devoted to these major activities:										
Production	48.6	51.7	43.7	50.7	47.6	47.5	47.2	49.1	47.5	50.9
Client relations	19.9	19.3	20.7	20.2	20.5	18.5	19.8	19.9	19.6	21.1
Administrative tasks	17.8	18.3	17.2	18.5	16.4	17.8	17.1	18.1	18.5	15.2
Looking for work	13.8	10.6	18.5	10.6	15.5	16.2	15.9	12.8	14.3	12.7
Number of NM employers in past year:	3.3	2.0	6.1	2.8	3.5	3.5	4.3	2.8	3.3	3.1

The difficulty of balancing new media work with family responsibilities is echoed by both men and women. An IT professional and father of three, in an online forum, Fathers at Work:

> What used to be an extraordinary amount of hours is now a normal work week ... Now there are few days that I work less than 12 hours ... I love what I do. I love my family. I'm missing some of the most important years of their lives. Sometimes I feel guilty no matter what I'm doing. (Gaudin, 2000)

Building a Career

There are very different paths to building a career in new media work. Some new media workers continue to obtain more sophisticated technical skills and move from job to job without moving into management roles. According to a principal engineer with a Menlo Park company, "managing people takes me away from the technology". Those skilled professionals with the hottest skills "may even carry more weight than their management counterparts" (Kontzer, 2000).

Other new media professionals build their careers in much the same way as their predecessors in the design fields. Graphic artist Nancy Stahl vividly describes her move to digital design:

> "(In 1988) I went down to the post-production company; a guy spent an hour demonstrating how this giant Quantel worked, and then he suggested that I sit down with it for a while … At that point, all the computer work I'd seen appeared to be very pixel-based; so I was surprised to see how painterly this looked. I started working on the machine, liked what I saw, got more and more into it and suddenly, it was three in the morning … That night I had computer dreams. All of a sudden I saw myself cutting out friends' faces and moving them around." Over the next four years, Stahl straddled the fence of high-tech and low tech. She experimented with an early version of Adobe Illustrator and continued to have her computer dreams. Then in 1992 they came true when she bought a Macintosh IIci, a

UMAX scanner and a Wacom drawing tablet. "At that moment a lot of things changed for me." (Kaplan, 1997)

Our own interviews indicate two aspects of the career path.

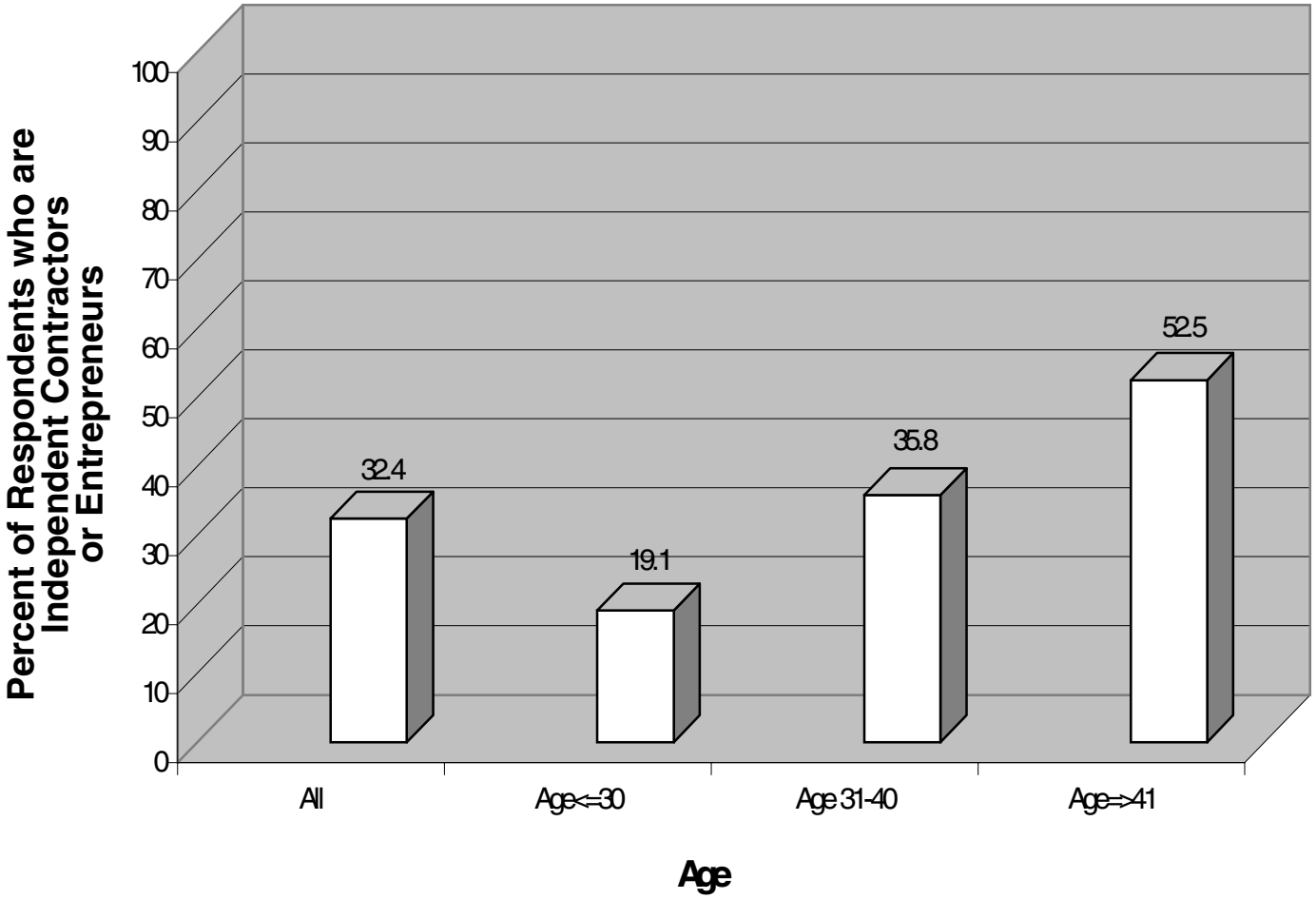
First, mobility typically occurs through a sequence of jobs, not within one company. For example, a new media recruiter commented, "New media people almost never move up within a company; they move up by moving on. In most industries, such a transition is to a similar role with a competitor. In new media, that's not the case."

Second, mobility and the increased earnings it brings require significant personal investment on the part of the professional. According to a member of the World Wide Web Artists Consortium:

> "The two biggest barriers to building a freelance career are: the time and money for continuing education and the money for software and equipment upgrades. When you work for a company, you get that paid for. When they hire you as a freelancer, the company gets the software and equipment for free along with you."

Respondents to our survey indicated, however, that the desired career trajectory for new media workers is not the conventional path from contingent worker to full time status with a company, but the opposite.

Figure 6: The New Media Career Path: From Full-Time Employees to Independent Contractors and Entrepreneurs



The oldest and highest paid professionals in our sample were independent contractors or entrepreneurs. These are the people who have been able to overcome the time and money barriers and establish their reputation for unique skill sets or products.

... For Firms:

New media employers face important challenges created by their demand for a skilled workforce to do largely short term project-based work. The absence of a workforce development strategy or a longer term perspective in the industry is demonstrated by two types of problems reported by new media employers:

Finding the Right Workers

Employers have indicated that "the skill shortage" is the biggest problem they face in growing the industry. This shortage is not so much an inability to find able new media professionals per se, but to find the "right" workers: those who have already mastered the precise complement of skills employers are seeking. As we have noted, developing and maintaining the battery of skills currently in demand is an arduous and perpetual challenge, and it is one that new media employers tend to leave to the workforce to master. For example, according to one industry analyst:

> Due to time and competitive pressures, many employers seek job candidates with exact fit and relevant experience, requiring no additional training. Many companies have concluded that they cannot afford the time penalty and uncertainty associated with "making" the employees they need through training or retraining. Instead, they pursue a buy strategy, seeking the exact skills and experience they need for a particular project and paying a premium for them.
>
> This "niche market" phenomenon (and low hiring selection rates, often below 5%) explains some of the diverse views held by business and employee groups. The employer who can't find the right person with the right skills sees a labor shortage. The employee advocate points to the many resumes employers receive and low hiring rates, arguing that

there are enough technically trained professionals in the United States but employers are just too picky (Carnes, 2000)

Both our interviews in New York and a recent study of Silicon Valley indicate that employers favor local recruiting because of the flexibility it allows them and because they do not believe they can commit to long term employment or relocation costs. The Silicon Valley study (Joint Venture, 2000) found that 63-69 percent of Silicon Valley's high tech cluster jobs were filled by local residents or people who moved to the area voluntarily. By contrast, 16-18 percent were filled by commuters and only 10-12 percent were recruited from other areas of California or the Country. About 5-7 percent of positions remained permanently unfilled. Thus, in a project based industry like new media, the perceived skill shortage is a function of the availability of desirable job candidates -- narrowly defined -- in a region, not nationally.

This strong preference for local recruitment is part of why the pressure on employers is more intense than if they were operating in a labor market where place and space were not important. Despite the space transcending potential of the Internet, the people who develop its products and services choose to live and work in urban locations that can provide them with a wide range of job opportunities. And, in a project-oriented industry, a ready, personal, mutually-enhancing network of skilled professionals appears to be favored by professionals and employers alike. A network is not mobile, so despite marketing campaigns to lure them away, new media professionals are less footloose than they are often depicted. This suggests that as the new media industry expands, the more specialized and creative jobs are likely to be concentrated in certain regions. With the rise of e-commerce, new media employers will increasingly favor those workers with knowledge of a client's industry, and the clients tend to be industries already prominent in a region. Therefore, it also suggests that these new media regions are quite specialized and not as competitive with one another as is usually thought.

Poaching

Because of this strong local labor market orientation and the perceived skill shortage,

poaching of workers by one employer in a region from another is commonplace. Skilled workers are recruited locally, for the most part, to reduce the costs of job turnover for both employers and new media professionals while maximizing the flexibility both need in a project-oriented industry. In New York, for example, one human resource director noted: “We use a few recruiting firms but also get people from financial service firms, which are hell holes to work in. Our firm is nicer and funkier."

Poaching creates particular problems for employers in an industry that depends on teams of specialists to complete production projects: no employer can be sure that their project team will hang together long enough to complete its work. Further, the range of specialized capabilities and overall flexibility to be garnered from a network of smaller producers is the lifeblood of this kind of industry. That range is undermined when those firms are constantly trading around key workers rather than expanding the overall capacities of their workforce. As we describe in our policy section, approaches that bring employers, new media professionals, and the public sector together to build the skilled workforce needed within the region are likely to provide an effective solution to the “skills gap” in the industry.

***

3. The Security Challenge ...

The project-based character of the new media industry has significant benefits for both employers and the workforce. Firms gain flexibility: greater opportunity to tailor the team to the project, less risk that they will be stuck with labor cost commitments to people for whom they do not have work. Many workers gain career acceleration: the chance to shop their skills to the highest bidder, to augment those skills with each new project, to have exciting work. Both get guilt free exit from one another. But the prevalence of short-term contracts means that employers are continually worried about having a pool of skilled and reliable professionals and workers are continually looking for work. It is an arrangement that requires of both employers

and workers a new way of thinking about their long term employment stability and income security.

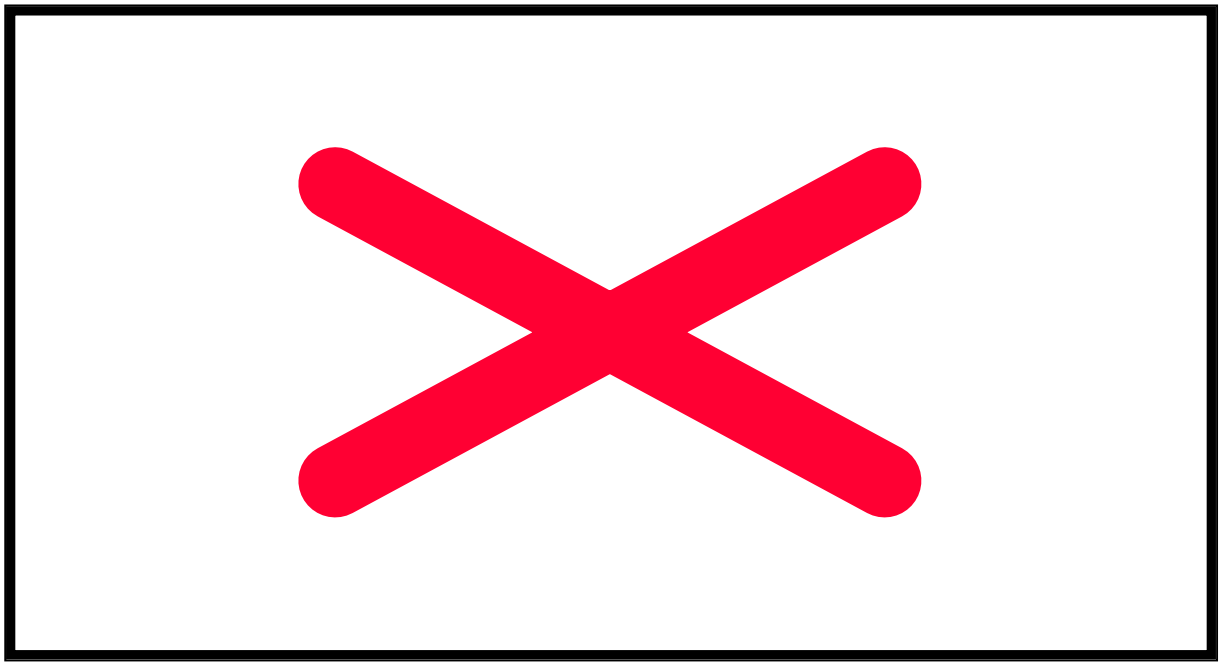
New media professionals currently absorb most of the risks associated with job loss, skill obsolescence, and unexpected illness. Their employment security depends not only on their current job performance but also their future "employability", and employability is based on building their professional network and investment in their own skills and training as well. Coping with these risks can be daunting to workers, but the current pattern also has serious implications for the viability of the industry.

... For the Workforce:

Employment Security

Despite the intense competition for their skills, new media professionals remain concerned about their employment security. Our survey covers more established and successful professionals in the industry, yet we found that only 56% are satisfied that their current job is secure. Moreover, even with the industry growing dynamically, only two-thirds of respondents felt confident that they would have steady employment over the next two years.

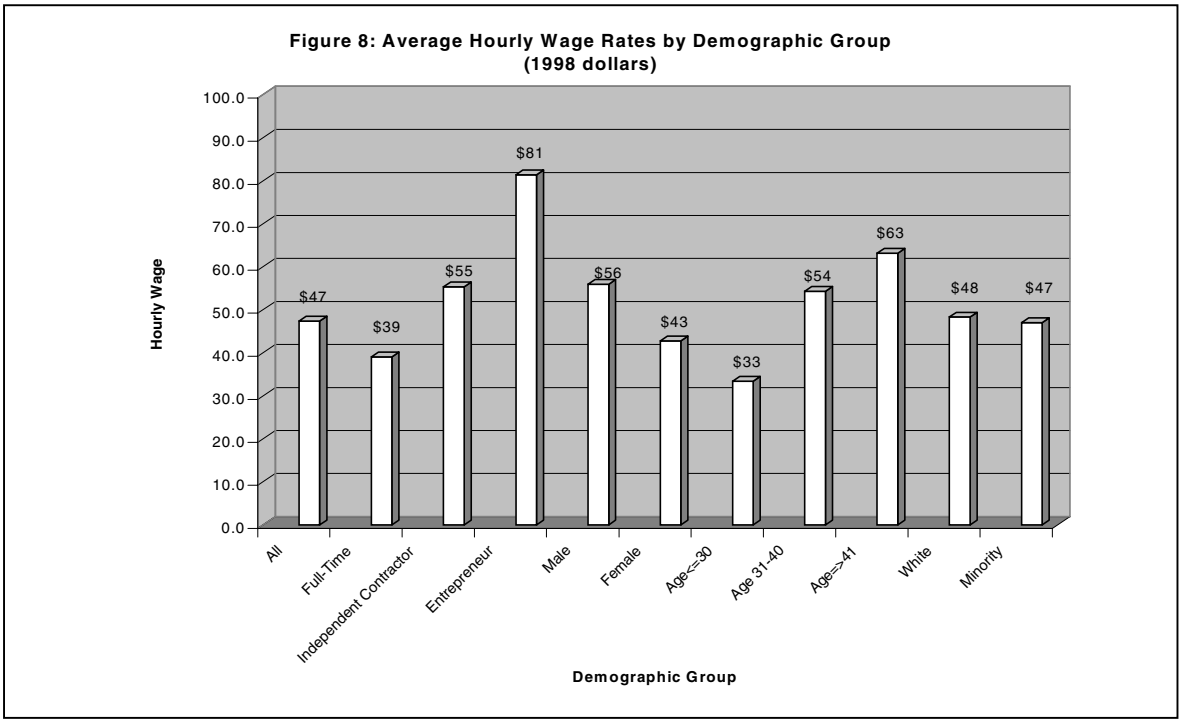
There were some notable differences across demographic groups as well. Women are more pessimistic than men, and minorities more pessimistic than whites about their future employment prospects. Similarly, older workers, workers with children, and independent contractors and entrepreneurs are also more pessimistic about their job security than were their counterparts who are younger, single, or who have full-time jobs.



*Percent who responded positively (4-5 on a 5-point scale)

Compensation

Notwithstanding their concerns about employment security, the new media professionals in our study have experienced relatively high wages and wage growth. National salary data shows that average salaries in 1998 ranged from a high of $64,472 for male consultants in the industry to a low of $32,091 for female graphic artists. By comparison with national standards, the new media professionals in our New York sample earn considerably higher pay. Their median annual pay from new media work was $78,000 in 1998, and the average pay was $102,154. Moreover, wage rates rose rapidly in the 1990s. On average, the workers in our survey saw their hourly wages double in 4 years. For example, the average worker who began new media employment in 1995 at a rate of $24 an hour was making $50 per hour by 1998.



These estimates may understate total compensation because compensation in the new media industry often comes from several sources, including the hourly wages, sales of intellectual property such as domain names or websites and stock options. Wage rates, however, vary in predictable ways for most demographic groups except by race. Compared to men, hourly wage rates for women in 1999 were significantly lower -- $42.80 versus $55.90.

Workers under 30 received $33.40 per hour, while those between 30 and 40 years old received $54.30, and those over 40 averaged $63.10 per hour. More surprisingly, full time workers received *lower* wages ($39.00 per hour) than independent contractors ($55.34 per hour) or entrepreneurs ($81.37 per hour). .

To explore the issue of wage determination in more detail, we conducted a series of multivariate analyses in which we assessed which factors had the greatest influence on hourly wage rates. We included basic demographic and human capital variables (formal education, gender, age, tenure, race, marital and family status); skills and tenure in new media; employment status (whether full time, independent contractor, or entrepreneur); the number of benefits workers received; and the training and career strategies they employed (number of hours in paid and unpaid training, membership in associations).

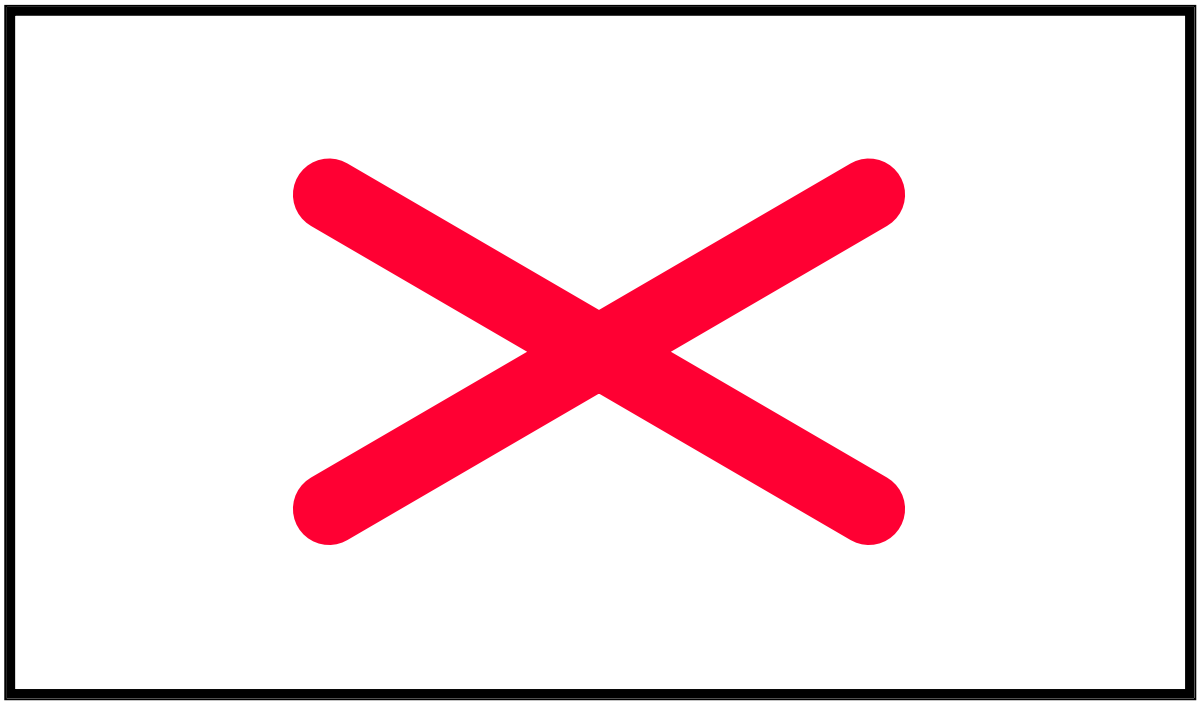
We found that the most significant factors related to higher wages were employment status, the hours spent in paid and unpaid training, membership in professional associations, age, and marital status.

By far the most important factor for hourly wage rates was employment status. On average, independent contractors earned 37 percent more, and entrepreneurs 57 percent more, than did full time employees. When the costs of benefits (35-40 percent of wages) are taken into consideration, independent contractors and full time employees are about equally paid. Entrepreneurs, however, make at least 20 percent more than full time employees even if the costs of benefits are taken into account.

Training and career strategies of new media workers also influence wage levels. Those who spend more time in learning (whether it is paid or unpaid), and those who join professional associations are more likely to have higher paying jobs. Older and married workers also had higher incomes.

Benefits Protection

Benefits protection for new media professionals is uneven, and depends importantly on the employment status of the worker. On average, only 61 percent of those surveyed received sick leave pay from their primary employer, 57 percent received basic (catastrophic) health



insurance and just over half received comprehensive health insurance. The percentages who receive employer contributions to their retirement savings is lower, with only 46 percent having a retirement plan and 42 percent having access to deferred income such as profit-sharing and stock options. Tuition assistance is available to 26 percent of survey respondents and family benefits such as paid parental leave and child care benefits is available to less than 15 percent.

When we examined benefits coverage for full-time employees, we found that even among this group the levels do not approach those received by other professionals in similar income brackets.

For example, only 77 percent of full time new media employees receive basic health insurance, and only 72 percent receive comprehensive health care. A full 28 percent of full time professionals in the industry do not have comprehensive health care coverage provided by their

primary employer. In addition, only 63 percent have some type of retirement plan and 55 percent have a deferred income plan. For independent contractors and entrepreneurs, less than one quarter receive any of these benefits from their primary employer or client, and only 11 percent receive comprehensive health coverage. Full time employees are also at least three times more likely to receive tuition assistance, paid parental leave, or support for dependent care. The one area where independent workers do better is with their control over the timing and location of their work; compared to full time employees, independent workers have more access to flextime (47% versus 33%) and telecommuting (39% versus 29%). Overall, full time employees receive an average of 5.8 different types of benefits while independent workers receive only 2.1.

Table 7: Benefits

	All	Full-time	Indpt./ Entrep.	Male	Female	Age <=30	Age 31-40	Age =>41	White	Minority
Percent of respondents who receive benefits from primary employer/client:										
Paid vacation	71.0	98.1	20.2	71.2	73.2	82.6	70.6	54.7	71.4	76.3
Sick leave	60.7	84.6	17.2	61.5	62.3	69.6	63.0	45.3	60.6	67.8
Basic health**	57.4	77.9	23.2	62.5	56.8	61.6	60.5	48.4	57.1	66.1
Comprehensive health***	51.4	72.1	11.1	47.1	55.0	60.1	52.1	37.5	53.7	45.8
Retirement plan	45.6	63.0	14.1	37.5	50.9	45.7	51.3	42.2	46.7	45.8
Deferred income*	42.0	54.8	21.2	49.0	40.0	44.9	43.7	35.9	42.9	42.4
Flextime	36.0	32.7	46.5	39.4	35.5	28.3	47.1	37.5	39.0	30.5
Telecommuting	30.8	28.8	39.4	32.7	30.9	26.8	36.1	34.4	32.8	28.8
Tuition assistance	26.3	36.1	9.1	27.9	26.4	30.4	25.2	23.4	27.0	28.8
Paid parental leave	12.7	17.8	5.1	5.8	16.4	13.0	16.0	7.8	13.5	10.2
Child care or elder care****	10.9	13.9	4.0	7.7	12.7	10.1	13.4	9.4	11.2	11.9
Average no. of benefits	4.4	5.8	2.1	4.4	4.6	4.7	4.8	3.8	4.6	4.5

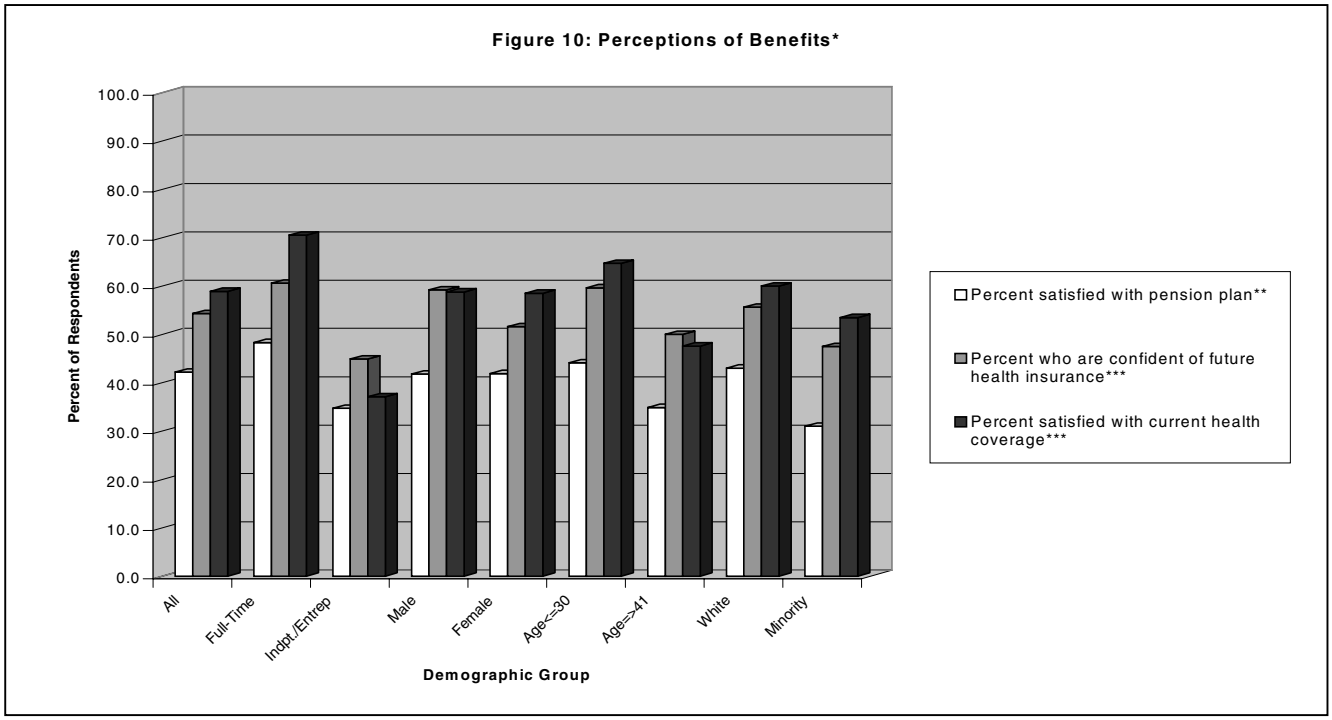
* Includes residuals, profit-sharing, or stock
** Includes major medical, surgical, hospital only
*** Includes vision, dental, psychotherapy
**** Includes resources, referral services, etc.

Arguably, this pattern of high relative wages and low benefits is preferred by new media workers, many of whom are young and appear to be less interested in traditional benefits. Some of those we interviewed said they needed the cash to invest in new equipment, software, and training. One human resource director in a New York city firm noted:

> "They have a very different view of benefits. The new media group asked to get rid of the pension system. They said, blow it up and give us the money. But they wanted to retain the profit-sharing system."

However, even among workers in our survey who are over 40, benefits coverage is relatively low. In fact, the percentage of respondents who receive benefits declines with age, but because older workers are more likely to be independent contractors and entrepreneurs, it is largely their employment status rather than their age that accounts for this pattern.

Moreover, despite that image of new media workers as young and uninterested in long term security, survey responses showed considerable dissatisfaction with benefits protection. For example, less than 40 percent are satisfied with their pension or long term savings plan, just over half are confident that they will have health care coverage in the future, and less than 60 percent are satisfied with their current health care coverage.



*Percent of respondents who answered positively (4 or 5 on a 5-point scale).

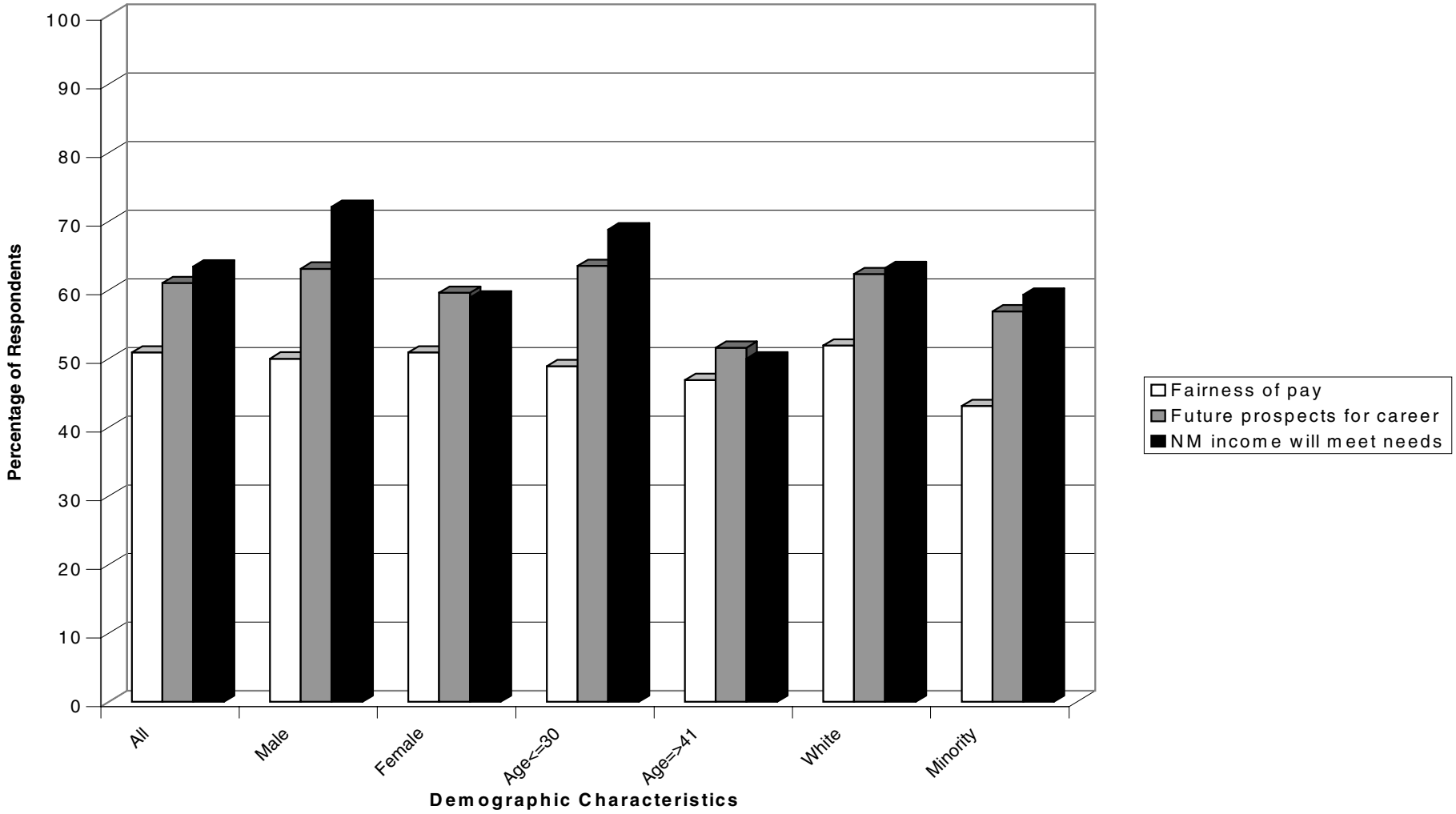
**Includes residuals, profit-sharing, or stock ; ***Includes major medical, surgical, hospital only

Again, those who are most pessimistic about all of these issues are women, those with dependents, older workers, independent workers, minorities, and non-supervisory workers.

Perceptions of Pay and Career Prospects

We also asked how much respondents agreed or disagreed (on a five-point scale) with a series of statements about their commitment to new media as a career. We found generally high levels of commitment. In general, 75% of this group plans to have a long career in new media, while about 20% would like to change occupations if given the opportunity. Less then 2% expressed disappointment with their career to date, and about half reported that new media is their ideal career.

Figure 11: Perceptions of Pay and Career Prospects



*Percent of respondents who answered positively (4 or 5 on a 5-point scale).
*Includes residuals, profit-sharing, or stock ; **Includes major medical, surgical, hospital only.

Nonetheless, only 16% were willing to say that they would stay in new media regardless of how much money they made, signaling that the intrinsic satisfaction with the work and career is not the full story.

Despite the fact that this group of professionals had relatively high wages and wage growth in the 1990s, their satisfaction with their pay and their confidence in future income security were not as robust. On average, only about half of the professionals we surveyed believed that their pay was fair. Slightly more than 60% were satisfied with their future career prospects or felt that their income would be sufficient to meet their future family needs.

*Percent of respondents who answered positively (4 or 5 on a 5-point scale).

Overall, when asked about their work and career, these workers are satisfied most with the content of their daily work -- 68% report that they are satisfied or very satisfied with their use of skills and creativity -- but from there the satisfaction ratings fall: 61% are satisfied with their career prospects, less than 60% with their health and employment security; 51% are satisfied with their pay, and only 42 % with their long term savings or retirement options.

... For Firms:

Reliance on short-term contracts and independent contractors benefits employers in this industry because of their need for flexibility in responding to rapidly changing market demand. There are downsides as well, as evidenced in our interviews with employers and surveys of professionals.

Taking Care of Business

One concern of employers, particularly in more conventional firms, is that new media professionals are focused on their own projects and creativity, but have little business sense. One human resource development officer stated the problem succinctly:

> "They don't care about the business, they only care about themselves. That takes several forms: They are interested in what's hot -- trends, skills, content -- not in the people they work with or the impact of the project ... They care so little about the business that they don't even see the need to justify 'neat' projects in terms of a business rationale, or to provide a reason for the costs expended."

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- a human resource development officer, New York City

With the labor market organized around short term projects and employment contracts, most new media professionals are interested primarily in building the kind of skill-based resume that gives them more bargaining power in the labor market. They are likely to lack interest in the goals of the firm or the actual products they are producing because they are pursuing a professional life oriented around continual acquisition of skills and control over the creative projects in which they are engaged.

Even if there is the will, there may not be the time, so employers cannot be certain that new media professionals understand the client's business strategies well enough to reflect them in the products and services they are creating.

Finally, employers also cannot be assured that intellectual property will not be carried off to another firm.

Tenuous Commitment

New media workers' lack of loyalty and commitment to employers is another common concern. Because career advancement and better wages depend on moving from job to job, new media workers do not evince a strong commitment to any particular employer. As one to human resource director told us:

> "They are hired in for dirt, pick up credentials, shop their skills around and advance the compensation they can demand. You see 20, 40, 60% increases in salary in a year by moving from one job to another."

This mobility also creates a lack of trust between employers and workers. One Internet entrepreneur told us:

> "I ask them to take apart their resumes and make them chronological. I want to know if they have been fired. I want to know if there is any direction in their job search or if they are likely to jump ship for more money"

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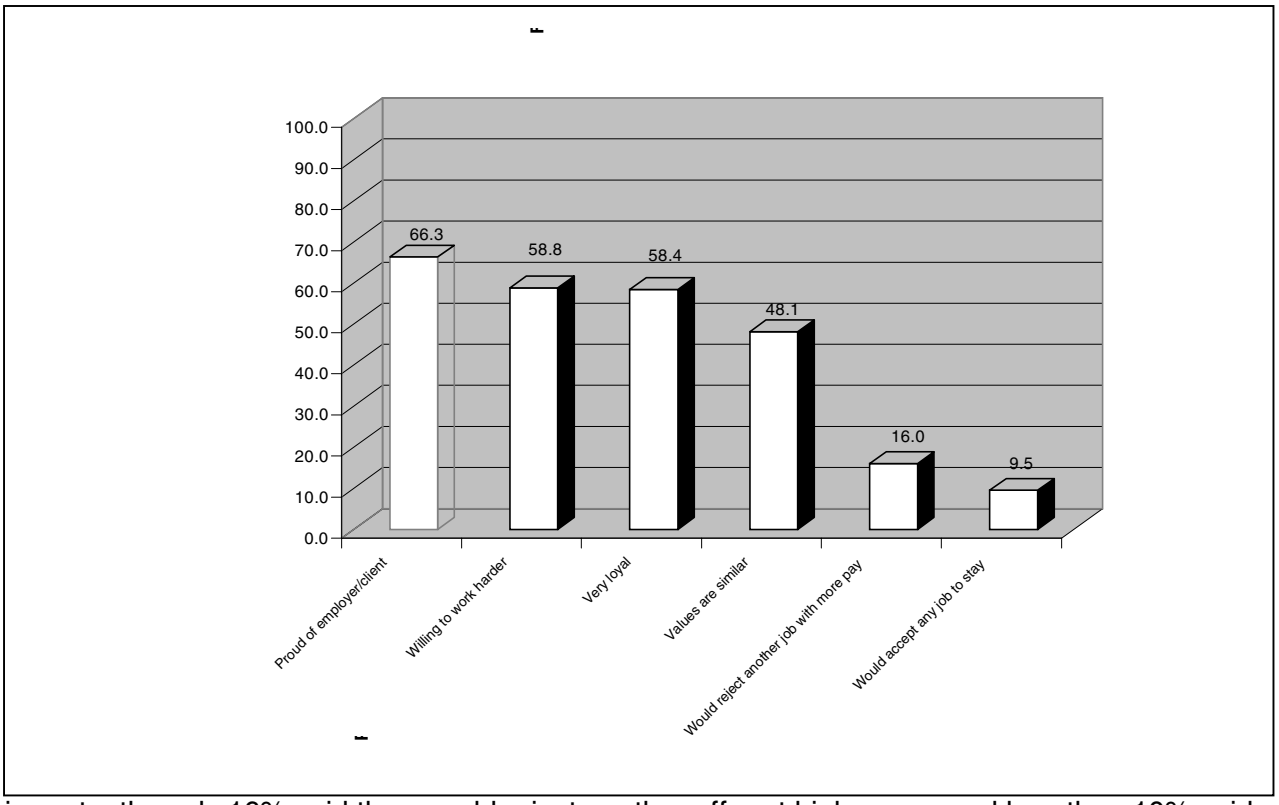
- an Internet marketing entrepreneur, New York City

These anecdotes from employers are consistent with the survey responses of new media workers. For example, less than 60% said they felt loyal to the employer or were willing to work harder to

help the employer succeed; less than half felt that their values were similar. More



importantly, only 16% said they would reject another offer at higher pay; and less than 10% said they would accept any job to stay with the current employer.

In sum, although this sample of respondents is more stable and successful than many others in new media, their commitment to their employers is quite low. They are much more committed to new media work itself and to making good wages than to the employer they work for.

In order to disentangle the sources of commitment to employers, we conducted a series of multivariate analyses in which we assessed which factors were most significant determinants of commitment. We included basic demographic and human capital variables (formal education, gender, age, tenure, race, marital and family status); skills and tenure in new media; employment status (whether full time, part time, temporary, independent contractor, or

entrepreneur); the wage and benefits that workers received; and the training and career strategies they employed (number of hours in paid and unpaid training, membership in associations). We found that the most significant factors related to higher commitment were employment status and benefits. Compared to full time employees, independent contractors and entrepreneurs are significantly more likely to say they are committed to their primary employer or client. This finding, though surprising on its face, is consistent with other recent studies of high tech contractors.

A recent study of independent programmers in Silicon Valley, for example, found that many left their full time jobs for independent status because they were frustrated with the dysfunctionality of the enterprises where they worked. As independents, they could distance themselves from the negative experiences of organizational politics and focus more clearly on the work that they enjoyed (Kunda, Barley, and Evans 1999). In a similar way, independent workers in New York's new media industry may be able to focus on the positive aspects of the work they do while distancing themselves from the business problems they perceive as negative. Ironically, the fact of being independent may allow them to feel a greater commitment, at least in the short run.

This distancing, however, may pose problems for employers who need professionals who both understand their business goals and are willing to help them solve problems related to those goals.

In their commitment to an occupation rather than an employer, and their skepticism, new media workers appear to reflect something that has been found to be characteristic of the contemporary workforce as a whole. Their attitudes demonstrate that labor flexibility is a two way street: the ability of employers to use workers on short term contracts is offset by the workers' absence of loyalty to their employers. Professional identity and the work itself come to take the place of any deep connection with an employer.

As we will see, reserving their loyalty for their occupational network may also be a strategic choice for new media workers.

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IV. The Role of Organizations in the New Media Community

The new media workforce eschews the concept of a new media "industry" in favor of a notion of membership in a "community" of new media artists and professionals. As one corporate officer of a new media property development company stated:

> "They may not see it as an industry but they do see it as a community. A community environment, which sounded like mashed potatoes to me, has proved to be the most important of all."

It is the development of that community, as well as their own professional development, that commands their loyalty and commitment more than any particular firm. This is a notion that eases collaboration between team members on any particular project, with members including full time and part time employees, or subcontractors and freelancers. It is this network of relationships that supports the job search, training, and career development strategies of the participants, and it supplies firms with information on their skill level and quality that the new form of resume so lacks. As the director of one professional association commented, "Here we do business differently -- more proximity, more meetings and more interpersonal contact."

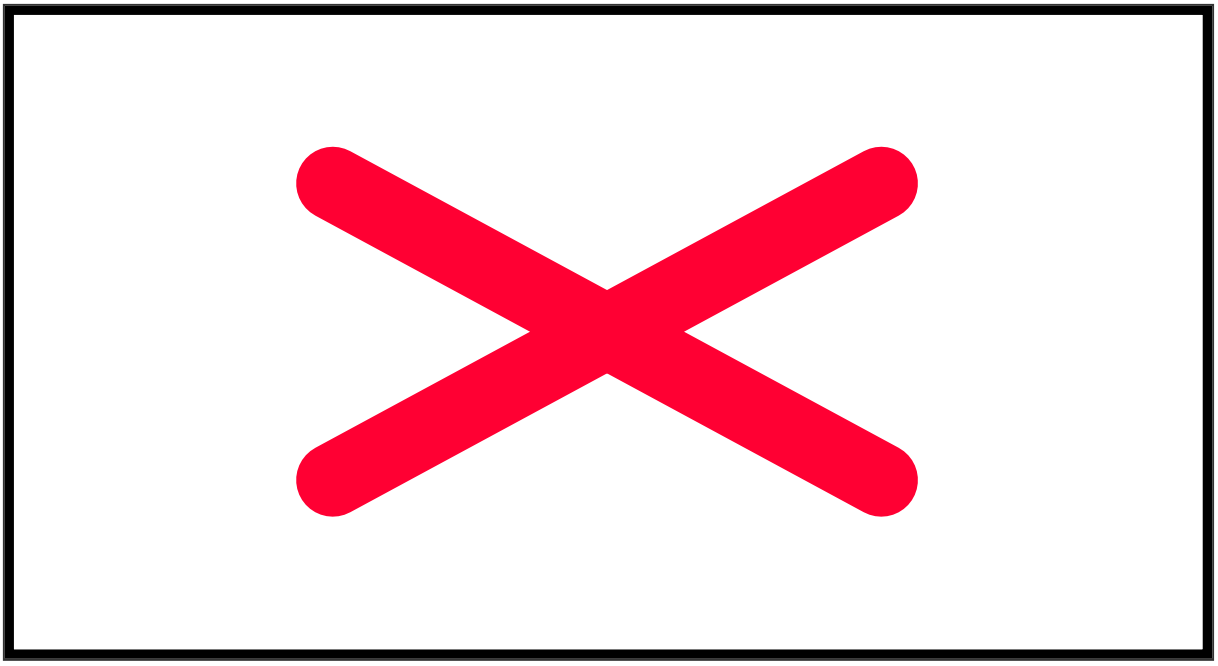
With this concept of community at the core, new media professionals are developing strategies to decrease, or at least better manage, the costs associated with sustaining a career in a project-based work environment. Much of the workforce relies on personal networks and professional associations to obtain information about jobs, acquire skills, and learn about how the market for their services is changing. In New York City, these organizations -- Webgrrls, the World Wide Web Artists Consortium, the New York New Media Association, the East Coast

Digital Consortium and others -- offer services to their members and a voice for the industry. New media workers are also represented by “old media” unions and professional guilds such as the Writer’s Guild. New media organizations differ from unions and some of the traditional guilds in that they have lower barriers to admission; do not sharply differentiate employers from workers in their activities; focus primarily on helping members with marketing, skill acquisition, networking, and job search; and do not (yet) negotiate or administer collective bargaining agreements.

In our survey, we asked new media professionals to rate the importance of various functions of new media associations. Their most important function is helping workers keep up on the market for new media products, services, equipment, and software. Over 70 of respondents said this role was very important or extremely important (on a 5-point scale). In second place, over 60 percent of professionals rated as important the role of associations in providing a community. In third place, 57 percent of respondents said that associations were important in helping them learn about the latest technical advances in the field.

The role of professional associations in public policy is also important. Over a third of the respondents rated associations as very important or extremely important for affecting public policy. This assessment reflects the fact that our survey respondents are a highly politically active: among our survey respondents, 63 percent voted in the 1998 elections and over 75 percent voted in the 1996 presidential election.

The top three policy concerns of new media professionals are training, assistance in job search, and health care coverage. Over 50 percent of respondents rated the lack of training as one of their top three policy concerns. Almost 40 percent of respondents rated assistance with job search and adequate health care coverage as one of their top three concerns.



There were minor differences by demographic group, for example, with independent contractors rating health care coverage as important as training and older workers rating job search assistance as important as training. These policy concerns are quite consistent with other responses to this survey. Even though this group of new media professionals is more established and successful than the workforce as a whole, they are very concerned about the lack of institutions that provide adequate training, job search assistance, and health care security.

V. More than Clicks and Mortar:

Toward a New Media Development Strategy

In this study, we examined the new media industry from the perspective of it's professional workforce. In an industry characterized by rapid change -- in its technology, markets, and products -- the quality, skills and adaptability of the workforce are crucial to

success. Helping new media professionals meet the challenges they face is critical to the industry's overall potential for expansion and success. This workforce relies heavily on local networks of peers and employers to meet their skill acquisition, career development, and security needs.

To see why this is, we first need to look more carefully at why firms and workers in this supposedly placeless industry tend to cluster in "Valleys" and "Alleys", that is, in particular geographic locations.

The Local Labor Market in the Global Information Economy

In our study, we have emphasized how production in new media depends on flexible workers who come together in teams to produce media products and services. We have also described how this workforce depends on personal networks to obtain jobs, develop skills and build careers. Our New York new media professionals (as well as those in Los Angeles and San Francisco) tend to live in neighborhoods close to where they work (and sometimes in the same room), and to work extremely long hours. These patterns of behavior begin to tell us something about the central importance of the local neighborhood, district, or city in the new information economy. The importance of places -- such as New York's Silicon Alley or San Francisco's Multimedia Gulch -- in an industry known for its ability to transcend space and time, is one of its interesting ironies. To see why new media work and workers are highly concentrated in urban centers, despite the fact that the technology makes it possible to work from anywhere, we have to remember how new media products are made, not only in cyberspace but in real space.

In key U.S. new media cities including New York, Los Angeles, and San Francisco, production is carried out by a network of firms, which provide products and services to each other and to larger firms that are also distributors. This network of firms is highly flexible and can respond rapidly to changing market conditions. Because of the strong interrelationships among firms, they tend to cluster in a district in order to maximize the information and contracts they can share with one another and minimize the costs of collaboration. Because the individual firms are project oriented, they share a common labor force that moves among them as the projects change (Brail, 1998; Scott, 1998).

The new media industry in New York is clearly such a flexibly specialized network, with smaller web development or digital design firms supplying bigger publishing houses or ad agencies, for example. The PricewaterhouseCoopers studies found that companies with over $5 million in yearly revenues account for only 9 percent of the total number of businesses but 82% of total revenues. They also reported that over 90 percent of the businesses are small with low yearly revenues (indeed, 53 percent had profits of less than $1 million and another 40 percent no profits at all) and confirmed that firm specialization is increasing.

Where a product market is rapidly changing as it is here (that is, where what customers want, and what it is possible to produce both technically and creatively, shift again and again), a firm needs different inputs (here especially, worker skills) for each project or product. Externally, in relation to other firms, they organize as a flexibly specialized network. Internally, in relation to their workforce, they organize a core of conventional long term employees supplemented with project-by-project employees and contractors. Both firms and workers in such an environment acutely need information on each other and a steady stream of opportunities, and both information and opportunity are intensified by concentrating in regional districts. Professional networks and associations allow better access to information on new

projects, markets, and technical tools. Personal networks make possible the rapid recruiting and job movement required by a project-oriented industry.

Meeting New Media's Labor Market Challenges

For these reasons, regionally-based workforce development strategies matter in new media. Any development strategy must build on these existing local networks and associations. Successful development of new media will require strategies that are:

- Workforce oriented -- focusing on the people who are the industry, on the workforce as well as firms and their clients;
- Sectoral -- building on the common interests of employers and new media professionals to create a sustainable industry;
- Regional -- utilizing the personal networks and local connections that sustain a project-based industry, and based on joint participation by the public sector, workforce organizations and employers.

The predominantly local nature of the job search and networking strategies of industry employers and professionals means that local or regional strategies and institutions are key to solving the labor market challenges we have described.

1. The Skills Challenge: Creating a Continuous Skill-Building Environment

The growth of new media activities will depend on maintaining a highly innovative, cutting-edge role in technology and applications. As the new media industry matures, technological advances and software development will allow some activities that now require skilled workers to become more routine. Maintaining a competitive edge, however, will depend on creating an environment in which skill acquisition and continuous upgrading are a fact of daily worklife.

This approach applies not only to producers, but also to users and potential users of new media in a range of industries. More widespread and knowledgeable users of new media products -- in publishing, advertising, fashion, apparel-, financial services, and education, among others -- will expand the customer base for current products, and the opportunity to diversify the products that new media employers and professionals can develop and sell internationally.

Given the pace and hands-on nature of skill acquisition in new media, this is one of many areas where a multi-party collaboration is likely to be very effective. The expertise of educational institutions could address the complex, interactive nature of learning new media tools, but on-the-job is a more likely setting than a classroom. A more efficient, reliable and standards-based system for skill certification is needed. While the exact design should arise from industry participants, we would suggest the following roles: schools provide some formal training, but also aid in the design of additional learning that takes place on-the-job in consort with employers; employers verify skills; professional associations certify levels of accomplishment.

Access to new skills is obviously a top priority of the labor force in new media, but we might also consider policies to expand that workforce to include more people who are computer

literate but without formal educational credentials. This kind of effort may have more potential in new media than in many other industries because of the low institutional barriers to entry, the independent learning style adopted by most industry workers, and the emphasis by employers on "what you can do" rather than formal education.

One model to address skill acquisition by workers without advanced degrees has been developed by the San Francisco Bay Area Video Coalition, a media arts center with its own new media training program (see http://www.medialinksf.org and http://www.bavc.org). "MediaLink" is a Worldwide Web development training and employment program offered at no cost to low-income San Francisco residents. Working in 10-person teams, participants spend at least 30 hours per week over a sixteen-week period, engaged in all aspects of website development from concept through production and site launch, plus an additional one hundred hours as a WWWeb intern with a local company before receiving their MediaLink certificate. Partner companies receive benefits such as priority access to top graduates and customized training that matches their staffing needs. These partner companies also provide MediaLink with valuable information that keeps the training program on the leading edge of industry trends.

In New York, new media training programs not tied to schools are still at an exploratory stage, but are being fostered by non-profit organizations including NYNMA, Heavens Angels, and Covenant House. Cornell Cooperative Extension has launched discussions with these organizations and the New York City Department of Information Technology and Telecommunications (DOITT) to foster training and internship opportunities. Models for similar efforts are developing in other cities.

2. The Sustainability Challenge: Sectoral Strategies to Reduce Transaction Costs

Economic development policy to foster the new media industry has focused almost exclusively on needs defined by individual employers and employer groups as well as other industry stakeholders, especially the venture capital and real estate industries. This study has highlighted the potential of an approach that would bring the interests of the workforce and its professional associations together with new media firms and entrepreneurs into a sectoral development agenda.

There are some interesting models in other industries that could be used as the basis for building such a sectoral development agenda in the new media industry. One example is New York City's Garment Industry Development Corporation (GIDC). GIDC was founded on the concept that only an inter-firm and labor/employer partnership can create a sectoral voice for the fashion and garment industries. Another is the Wisconsin Regional Training Partnership, which has yoked together a broader community economic development and workforce development strategy with similar inter-firm and labor/employer partnerships, first in manufacturing, and now in up to a dozen other sectors.

Because employers and workers together create the development agenda for the industry, political leaders, policy makers and investors have more confidence that the agenda can be implemented and is likely to have a positive impact on the industry as a whole. What is needed in new media is a commitment on the part of the public, the associations, and private actors to make a collaborative model -- one that will meet both workforce and employer needs -- the center of efforts to build the industry.

The role of government policy in fostering a sectoral strategy to build the new media industry should not be underestimated. Strategies that foster training programs, infrastructure, and services available to many firms within a sector produce far greater benefits than the

conventional approach of tax abatements to individual firms. There are many models for this approach. The key is the development of a common agenda by workforce and employer organizations offering one voice to which politicians must respond.

3. The Security Challenge: Models from Old Media

With the increasing proportion of freelance and temporary employment in the contemporary economy, policy makers have been trying to come up with solutions to the dilemmas posed by the failure of old ways of doing things. They focus most often on the connection between long term employment with a single employer and access to employee benefits such as health insurance, long term savings or pensions, and unemployment insurance. The flexible workforce, including a substantial portion of new media professionals, does not have access to these protections, except indirectly through a spouse or parent, or unless secured individually at exorbitant cost. In this respect, new media workers reflect the situation of a growing percentage of U.S. workers.

In addition to lacking these protections, however, there are other problems associated with free agency: insoluble grievances with employers, loss of intellectual property rights to the work they produce, and lack of appropriate compensation for work that may have many lives in many different markets. The U.S. institutions that govern employment relations are not set up to deal with problems such as these and may, in fact, hinder their solution because they were developed to protect workers with long term employment contracts.

Those who are upbeat about the “e-lance” or “free agent” economy are given to the romantic assumption that flexible or “wired” workers are akin to traditional craftsmen, a colorful but misleading comparison. Unlike craftsmen, new media workers are tied to machines, to

team based work, to the demands of the capital markets, and to the challenges of competitive markets where the first movers hold a great advantage. As a critic of the new media hype notes:

> "The work environment of New Media is entirely machine-based, and labor intensive in ways that are now the legends of cyberspace. "Voluntary" overtime -- with 12 hours workdays virtually mandatory -- is a way of life for those in the business of digital design, programming and manipulation. The fact is, New Media technologies have already transformed our work patterns much more radically than they are likely to affect our leisure hours, just as information technologies have already played a massive role in helping to restructure labor and income in the new global economy -- effectively reorganizing time, space, and work for mostly everyone in the developed world." (Schultz, 1997) .

There is a model nearer at hand than traditional craft guilds if we are looking for solutions to the problems faced by a workforce that is less and less likely to be employed in full time long-term jobs. Old media (particularly the motion picture industry) faced similar problems, and devised a set of solutions that meet their needs for flexibility while still protecting the workforce, by allowing -- even encouraging -- workers to bargain collectively as well as individually.

Almost fifty years ago, in the early 1950's, workers in the motion picture industry began to develop strategies to contend with the changes in production methods -- the break-up of the studio system and the reorganization of production outside the big studios. Like new media, the contemporary motion picture industry is organized around projects, and most of the people making motion pictures and videos are flexible workers who move from job to job and employer to employer, sometimes within a single day.

Both employers and workers realized there was a problem. For workers, the problem was obvious: they didn't have the stable jobs that had existed under the studio system. What they sought, in addition to protections such as health insurance, were ways to protect their incomes when they couldn't protect their jobs. Employers cooperated because flexible production also presented them with new challenges: how to determine a worker's credentials to do a job, and how to keep skilled people in an industry that offered only intermittent employment. What evolved from these mutual interests was a set of very innovative institutions to meet the needs of a flexible workforce:

The Motion Picture Health and Welfare Fund secures health and pension benefits for industry workers. Employers contribute to the fund each time a person works for a project no matter how brief the period of employment. Workers are covered once they reach a threshold of hours in the previous quarter.

Minimum pay rates provide a wage floor for all industry workers by occupation, and vary according to whether they are employed on a daily, weekly, or project basis. The rates are set low enough to allow new people to enter the industry, but also anticipate that higher rates will be negotiated by more experienced workers.

Personal service contracts and residual agreements allow more experienced and valuable workers to negotiate additional compensation above the minimums. These agreements often include rights in the property being produced (film, video, commercial) which take the form of deferred compensation, tied to exhibition revenues, reissue in another medium, product tie-ins, or distribution in international markets.

VI. Conclusion

Our research tells us that many of the labor market challenges faced by new media workers are, in fact, not new or unusual. People employed in media industries, advertising, and marketing have always worked on a project basis and put a career together by relying on a network of clients who employ them for short periods or on a project basis. What is new is how the rapidity of technological change increases the pace at which new media skills become obsolescent. New media professionals must work much harder just to keep up.

When we look at the work patterns of new media professionals, they look very different from a conventional career. We expect that as a person acquires more experience, he or she takes longer term, more stable jobs and advances up the job ladder within a firm. For the people we surveyed, who appear to be quite committed to their occupations and to new media work, the pattern is distinctly different. As they gain more experience, the number of their jobs per year increases and the proportion of income from the primary job decreases. The average independent contractor or entrepreneur is older and more experienced than the average full time employee. It appears that the goal of the new media professional is not stable employment, but stable employability combined with independence. The cost of obtaining this status is high: new media workers must invest a significant portion of their lives in their careers, as our evidence on working hours and time allocation indicates. A close integration of work with social and personal life -- including employment strategies and skill acquisition -- is a hallmark of new media work.

Given its inherent instability and time demands, one might think that new media workers would be dissatisfied with their career choice. Not so. They have skills that are in demand and

they can command high wages. They exercise some control over who will employ them and under what conditions. When asked in more detail about the current and future implications of their career choice, however, they indicate significant levels of concern. New media professionals derive some sense of security from their employability in the face of an overall labor market in which nearly one third of U.S. workers are in contingent or unstable jobs, but as the recent lay-offs in dot.coms indicate, new media professionals are not immune to market volatility. If new media workers are to sustain themselves and their families in this work as their lives progress, and firms are to sustain this way of working as the industry progresses, both must build -- together -- an institutional infrastructure of new design to support such a sector.

New media workers have taken steps to meet some of the challenges facing them in acquiring skills, maintaining a steady income, and providing for their long term security. Foremost among these strategies is the cultivation of personal networks and the development of organizations that help them solve collectively what they cannot solve individually. These organizations resemble guilds, professional associations or unions, but they respond to the distinct interests and sensibilities of the new media workforce. The enthusiasm with which highly individualistic new media professionals associate as a community and gather in organizations suggests yet another way in which new media workers may be in the forefrontof future patterns in the new economy. Community development is a precursor for effective economic development strategies in other settings, and it is likely to be effective here. If these organizations can preserve the spirit of collaboration that pervades the industry, they also may preserve the benefits of flexibility to both firms and workforce while reducing the its insecurity. They can represent and balance the interests of all parties to the industry, and they can build or secure the new instruments and institutions it will need to survive and flourish.

Appendices

APPENDIX A: RESEARCH METHODOLOGY

To learn about the workforce and its networks, the following linked research activities were carried out:

- We reviewed the wide-ranging literature on the Internet industry, and the digital design and new media workforce, including recent studies on developments in San Francisco, Los Angeles, Toronto, London, and Stockholm, among others. This work is reflected most directly in the "Context" section, and helped us interpret and compare the New York situation with the broader world of work for new media professionals.

- We conducted a set of twenty "set-up" interviews with key informants in the New York City industry. These interviews included leaders of network and professional organizations, union leaders, public officials concerned with economic development in New York City, private sector employers and developers, and educational leaders. The purpose of these interviews was to find out how industry insiders see trends in the New York City industry and to identify key workforce networks.

- Profiles of network organizations were developed via 8 interviews with their leadership and website reviews. These profiles were used to develop a typology of network organizations. Together, the profiles, interviews and literature review were used to develop a list of issues and questions which were then used to compose a survey of new media

industry professionals. The survey instrument was designed to allow comparability with similar surveys in other industries and new media centers worldwide.

- We conducted a website survey of a sample of members in 5 network organizations. Although a stratified random sample of the workforce as a whole was not possible, we worked with these network organizations to randomly sample their membership. Our survey included organizations which, based on our interviews, represent different segments of the workforce (Webgrrls and the East Coast Digital Consortium, for example). The survey asked questions about job characteristics, job search strategies, career planning strategies, attitudes towards work and employers, retirement strategies, work and family issues, and questions concerning how intermediary organizations might best address the needs and concerns of this workforce.

Our survey was drawn from the membership of the following intermediary organizations which serve workers in the industry:

The Alliance for Downtown New York (ADNY) -- an economic development organization focused on "Silicon Alley".

The East Coast Digital Consortium (ECDC) -- an organization of small firms primarily engaged in digital design for advertising and entertainment.

The New York New Media Association -- an association of employers and workers interested in promoting the industry in New York City. This is New York's largest new media membership organization.

Webgrrls -- a networking group for women in new media, providing a forum to exchange information, provide job and business opportunity leads, learn about new technology, mentor and learn from each other.

The World Wide Web Artists Consortium (WWWAC) -- originally an online community, now an association of new media professionals.

We chose to survey members of associations because associations are one of the few available vehicles for gaining access to individuals who are not full time employees – the contingent workforce that comprises a substantial portion of new media professionals (according to the PricewaterhouseCoopers studies). We chose to use a web-based survey because it became clear to us in our interviews with industry practitioners that this workforce was unlikely respond to a survey by mail or fax but -- as facile Internet users -- might respond favorably to a web-based survey. Despite the fact that web-based surveys are known to have low response rates (of approximately five percent), in this case it was the only feasible method for gathering the information. Members of the associations were invited to participate in a web-based survey in March, 1999 and 335 responded, for a response rate of five percent.

The method of sampling members of associations, coupled with the low response rate, means that we cannot generalize the survey findings to the larger workforce in New York's new media industry. In general, we know from the research on surveys that those who respond to surveys are likely to be more interested or involved in the topic, more committed, and more positive in their attitudes. Given the five percent response rate, therefore, we view the respondents as representative of a highly-committed and successful sub-group of the workforce in the industry. They represent a "better case scenario" of what can be expected of a career in New York's new media. The character and size of our sample limits what we can say definitively about the new media workforce as a whole. But, in conjunction with our interview data, the responses provide insight into a wide range of issues. This first level analysis lays the basis for identifying more specific questions for future study.

Profile of the Respondents

To analyze the data, we calculated the average responses for all respondents, and then further analyzed the data by major demographic categories of gender, age, and race. Age was divided into three categories: those thirty years old and younger, those between 31 and 40, and those 41 and older. As shown in Appendix B, Table 1, 68% of this sample were women and 81% are white. For purposes of reporting, race was broken down into white and all other minorities. The 19% of the sample who were minorities include African Americans (3.5%), Hispanic Americans (6%), and Asian Americans (8%). The average age of the sample was 33 years old, with 26% of the total 30 years or younger, and 46% 41 or older. 30% of the sample were married and 21% had dependents. This was also a highly educated group: 54% of the sample had a four-year college degree and one-third had at least a masters' degree. Consistent with the pattern of highly educated professionals, 63% voted in the 1998 elections and over 75% voted in the previous presidential election.

We also analyzed the similarities and differences in survey responses by employment status: whether individuals were full-time permanent employees or independent contractors / entrepreneurs, and whether they worked primarily in a non- or supervisory role. Independent contractors differed from those who reported they are "entrepreneurs" in that the latter were more likely to have their own product or business and to hire others to work for them. For example, whereas 41% of contractors reported that they often supervise others, 88% of entrepreneurs did. Two-thirds of the sample were permanent full time employees while one third were independent contractors or entrepreneurs. (It should be kept in mind that even full time employees may be on very short term contracts. Our respondents averaged over three jobs per year.) Only a handful of temporary or agency temps responded to the survey. They

were not included in the analysis among those in the independent contractor / entrepreneur category because their employment status is quite different. Temps and agency temps tend to have lower skills and experience and to be lower paid than those in the other categories.

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