CAREERS IN THE KNOWLEDGE ECONOMY AND WEB-BASED CAREER SUPPORT

NEW CHALLENGES AND OPPORTUNITIES

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Cover design: Dave Cutler
Printed by PrintPartners Ipskamp B.V., Enschede, The Netherlands

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ISBN: 90-365-2393-1

CAREERS IN THE KNOWLEDGE ECONOMY AND WEB-BASED CAREER SUPPORT

NEW CHALLENGES AND OPPORTUNITIES

DISSERTATION

to obtain
the doctor's degree at the University of Twente,
on the authority of the rector magnificus,
prof.dr. W.H.M. Zijm,
on account of the decision of the graduation committee,
to be publicly defended
on Wednesday, 5th July 2006 at 13.15

by

Svetlana Nikola'yevna Khapova
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SUMMARY

Increasing emergence of the knowledge economy invites consideration of its implications for career theory and research. The economy's increasing focus on professional and intellectual capabilities, as well as the continuous emergence of new technologies that assist people in their life and work suggest many new opportunities not only for individuals, but also for researchers. However, these implications also raise challenges. This PhD thesis addresses some of these opportunities and challenges aiming at a better understanding of individual careers and new technological possibilities for career support in the knowledge economy.

Given the breadth of the research topic, this thesis focuses on the examination of six pressing issues: (i) an increasing ascription of more importance to the subjective career, and what it means for contemporary career research; (ii) the divergence between contemporary career theory and career success research, and what rapprochement between the two can be attained; (iii) the key cognitions predicting boundaryless career intentions of contemporary professionals; (iv) the provision of computer-based career support; (v) individuals' usage of one particular kind of such support - integrated web-based career support; and (vi) individuals' beliefs that may predict people's usage of a web-based career support system. Each issue serves as the leading theme in each of the six essays included in this thesis.

In order to address this wide spectrum of topics, various approaches were used. One essay is a conceptual paper. Two essays are based on an extensive literature review. The other three essays are empirical papers reporting on tests of different hypotheses on a sample of aspiring IT professionals: users of a web-based career support system, Change2IT. Below we briefly summarize results and key contributions per essay.

Essay 1 addresses implications of increasing ascription of higher importance to the subjective career for career research. The essay shows that to focus on the subjective career means to accommodate four basic properties of the subjective career in future research: to use interdisciplinary approaches in that research and to focus on careers not only within or between organizations, but also

in a larger economic context. This context reflects not only the knowledge economy but also the influences of both the Internet and globalization in shaping that economy, and reaffirms the importance of interdisciplinary approaches.

Essay 2 compares contemporary career theory with the theory applied in recent career success research. Analysis of 68 articles published between 1992 and 2002 showed that research makes inconsistent use of career theory, and in particular neglects the interdependence of the objective and subjective careers, and 'boundaryless career' issues of inter-organizational mobility and extra-organizational support. The essay offers new guidelines for bringing about a rapprochement between career theory and career success research. These guidelines cover: adequacy of research designs, further dimensions of career success, broader peer group comparisons, deeper investigation of the subjectively driven person, and seeing new connections between boundaryless career theory and career success research.

Essay 3 offers an examination of IT professionals' career intentions and beliefs underlying these intentions. A new construct - boundaryless career intention – is identified as the relevant career intention. The essay further offers an examination of the relation between professional identity and boundaryless career intention, which lead to the novel empirical finding of professional identity's statistically significant relation to boundaryless career intention. This finding contributes to both future theorizing and new research on boundaryless careers.

Essay 4 defines computer-based career support, and presents challenges related to research on the actual usage of such systems. It also presents a summary of current challenges related to doing research on computer- and web-based career support provision.

Essay 5 addresses challenges related to one kind of computer-based career support systems, that is integrated web-based career support systems. Although such systems are increasingly emerging on the market of career support services, their actual usage is unclear. The essay presents the results of an examination of an integrated, web-based career support system – Change2IT. This first of its kind system, developed in Europe by a (European-Commission) consortium of European IT firms, research institutions and universities, was examined on a sample of 2089 aspiring IT professionals from four countries: Austria, Greece, Italy and The Netherlands. The study provides a unique analysis of usage patterns, motives and satisfaction with this career support system.

Finally, Essay 6 addresses beliefs that lead people to use web-based career support systems. Given an increasing integration of the Internet in people's lives,

its usage for attaining career support seems logical. We wondered to what extent individuals' career beliefs predict their usage of an integrated web-based career support system. The results of the empirical study show a significant relationship between boundaryless career intention and WBCS usage. This finding suggests that people's intention to use a web-based career support system is motivated by their interest in new career opportunities. This finding also invites information systems designers to reconsider their ideas on what predicts usage of Internet-based systems.

In sum, this thesis provides theorizing and a set of new empirical findings aiming to contribute to new research on careers in the knowledge economy, including study of the - increasingly needed- technology-enabled career support.

ACKNOWLEDGEMENTS

Many people have contributed with their supervision, mentoring, friendship and love to my PhD thesis. I thank everyone endlessly! However, there are a few dear to me people to whom I owe special appreciation.

First of all, I am indebted to Prof. dr. Celeste Wilderom, my promotor, for being an inspiring supervisor, a great teacher and a career mentor! She not only taught me what it means to be a top-class researcher, she also opened doors for me to the academic community. I also thank her for encouraging me to stay in academia. On my new position at the Vrije Universiteit in Amsterdam, I am discovering that an academic career is really for me. Moreover, I thank Celeste for being a friend to me. I deeply enjoyed every moment of work and travel that we did together.

I am equally indebted to Prof. dr. Michael Arthur who has guided me through career studies during the past four years. I thank him for being a dedicated mentor, source of inspiration and also a friend. Thanks to him I made a start of my 'intelligent career' developing knowing-why, knowing-how and knowing-whom in the fascinating field of careers. I would like to thank him for the time he invested in working with me. The learning I received from the lengthy conversations with him is priceless!

Next, I would like to thank Dr. Jörgen Svensson, who has been not only a great colleague to me, but also an informal supervisor of my research and an SPSS mentor. Together with Ronald and Bärbel, Jörgen selected me for a PhD position at the University of Twente. I thank you all for your belief in me.

My colleagues and friends at the University of Twente (Jos, Fons, Marian, Chintan, Alea, Jeroen, Mehmet, Boriana, Jeff, Hanneke, Joost, Tanya, Anna, Gert-Jan, Monique, Katia, Ron, Marc, Liudvika, Tanya, Reynoud, Dusko and many more) deserve a special thank you, as well. Together with Marija and Michel, who have not only agreed to be my paranimphen, but who also have been devoted friends through these years, they have contributed to a pleasant and intellectually challenging environment at the University of Twente. I also would like to thank Prof. dr. Wouter van Rossum, Jacqueline Weppelman and Linda de Kleijn for their positive attitude toward my research. Without their assistance in finding resources

I would not be able to finalize my research, nor to present findings at the Academy of Management conferences.

I am also grateful to my current colleagues at the Vrije Universiteit in Amsterdam (Paul, Claartje, Josje, Annet, Donna, Lidewey, Bart, Lisette, etc.) for making it possible for me to finish my PhD thesis while occupying a new position at their department (of Management and Organization).

Finally, I would like to thank my family – my parents, my sister and my husband Igor, as well as Frits and Gonnie (my Dutch family) – for their love, understanding, patience and support, all of which made it possible for me to bring this thesis to an end.

Svetlana Khapova
Amsterdam, 15 June 2006

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INTRODUCTION AND OVERVIEW

INTRODUCTION

An underlying assumption of this PhD thesis is that an *increasing emergence of the knowledge economy raises new challenges for career theory and research*. The knowledge economy is defined as "production and services based on knowledge-intensive activities that contribute to an accelerated pace of technological and scientific advance as well as equally rapid obsolescence" (Powell and Snellman, 2004, p. 201). This definition suggests at least two important opportunities for careers. One opportunity is that the knowledge economy relies heavily on professional and intellectual capabilities of individuals, thus giving individuals' careers a more central role in economic processes. The other opportunity is a growing number of technologies that offer more possibilities for individuals' careers, such as to find new jobs, and to get support through emerging, novel Information and Communication Technology (ICT) applications.

However, these opportunities mean fresh challenges for career theory and research. The purpose of this thesis is to address some of the challenges prompted by the emergence of the knowledge economy. In particular, we focus on challenges related to the two sides of the knowledge economy definition, namely (a) the economy's greater reliance on professional and intellectual capabilities, and (b) the emergence of technology-enabled career support. This dual focus of the thesis helps to better understand the increasing interdependence of careers and emerging technologies.

The cornerstones of this thesis are recent elaborations of Arthur (see Arthur and Rousseau, 1996; Arthur, Claman and DeFillippi, 1995; and Arthur, Inkson and Pringle, 1999), Weick (see Weick, 1996; Weick and Berlinger, 1989) and Cappelli (1999). The authors recognized the earlier signals of the knowledge economy emergence, and responded by offering new conceptualizations of the contemporary world of work and careers. For example, Arthur and Rousseau (1996) introduced the "boundaryless career" conception (that is a career

independent of any employer) as the most relevant career conception in the knowledge economy. Weick (1996) invited us to view careers as the main source of organizing in contemporary organizations. Cappelli (1999), in turn, showed that the contemporary world of work is more dynamic than ever, and thus requires significant adaptation from both individuals and their employers.

The emergence of these literatures has significantly affected career studies in the past decade. Today, almost every career researcher addresses one or another side of the changing work relationships and practices, and their effects on employees and their employing organizations. Many studies increasingly offer confirmations of the predicted changes. However, very few of them address how the predicted changes affect career theory. Moreover, very few career researchers look at the possibilities and challenges deriving from people's increasing use of information and communication technologies. For example, hardly anyone addresses the influences of the increasing use of these technologies on individual careers and on their work practices and relationships. Not much is noted, typically, about their effects on career theory.

This thesis capitalizes on the limitations of current studies, making a number of important contributions. It addresses implications of the knowledge economy and increasing technological developments for individual careers and career theory. It also addresses the rapprochement between career theory and research. Most importantly, this thesis integrates themes of careers and emerging information and communication technologies into related challenges of the knowledge economy.

In particular, this thesis may be said to make 6 important contributions to contemporary career theory and research. It contributes (i) to the conceptualization of the subjective career, (ii) to the conceptualization and research of career success, (iii) to understanding important factors influencing people's boundaryless career intentions, (iv) to a better understanding of computer-based career support, (v) to a better understanding of the usage of one particular kind of such support, that is web-based career support, and (vi) to understanding people's beliefs that may predict people's usage of a web-based career support system. All these contributions serve as the leading themes of the 6 essays included in this thesis. Below we specify research questions and methodology that guided our work within each of the 6 essays. We also offer a brief overview of the key academic output made per essay.

FOCUS AND KEY RESEARCH QUESTIONS

This thesis focuses on a number of new challenges for career theory and research prompted by the emergence of the knowledge economy. In particular, it addresses challenges related to

(i) the economy's greater reliance on professional and intellectual capabilities, and

(ii) the emergence of technology-enabled career support.

These two challenges concern a wide and complex domain of career theory and research. It, therefore, is necessary to focus on more specific issues within these areas. This thesis focuses on six pressing issues.

The first issue concerns the subjective career. Various literatures suggest that in the knowledge economy, the subjective career has an elevated role. For example, Friedman (2005) notes that individuals are more empowered in the present economy. Weick (1996) views subjective careers as the key source of organizing and design in contemporary organizations. The knowledge-economy definition by itself stresses importance of people's subjective careers. In Essay 1 we argue that to better understand careers in the knowledge economy career researchers need to ascribe more importance to the subjective career. Essay 1 therefore addresses: *What does increasing ascription of more importance to the subjective career mean for contemporary career theory and research?*

Essay 2 addresses the growing divergence between contemporary career theory and empirical career success research. On the one hand, we observe that career theories speak more and more of boundaryless careers, where career opportunities transcend any single employer, and of the personal meaning of career success. On the other hand, a number of researchers continue to focus on career success in terms of a person's organizational position, or of attained promotions between positions. This contrast is sharpened by a fragmented use of underlying career theory. Essay 2 focuses on answering the following 2 questions: *What is the divergence between contemporary career theory and empirical career success research?* And *What rapprochement between theory and research can be attained, and with what advantages?*

Essay 3 deals with cognitions predicting boundaryless career intention and behavior. As recent literatures suggest, our times require from individuals to adopt more responsibility for their careers, and to be open to changes in both life and work. However, not many individuals experience such boundaryless career orientation positively. Hence we need to know what it is that might influence or

predict individuals' boundaryless career intentions. The research question addressed in this essay is: *What are the key cognitions that predict boundaryless career intentions of contemporary professionals?*

In order to assist individuals in their career management, various computer-based applications are being developed. In general, such applications are referred to as computer-based career support systems. Given the novelty of such systems, Essay 4 defines the concept of computer-based career support systems, and presents challenges related to research and the actual usage of such systems. The key research question of this essay is: *How to re-conceptualize the integrated provision of Computer-Based Career Support in order to get accepted and used effectively?*

Essay 5 addresses challenges related to one kind of computer-based career support systems, that is integrated web-based career support systems. Although such systems are increasingly emerging on the market of career support services, their actual usage is not known. The question addressed in Essay 5 is: *To what extent do individuals make use of integrated web-based career support when offered to them?*

Finally, Essay 6 addresses beliefs that lead people to use web-based career support systems. Given an increasing integration of the Internet in people's lives, its usage for attaining career support seems logical. The degree to which individuals' career beliefs predict their usage of an integrated web-based career support system is intriguing. The specific research question addressed in this essay is: *To what extent does boundaryless career intention predict the usage of a web-based career support system?*

The challenges addressed in this thesis and their associated research questions are depicted in Table 1.

Table 1. Challenges Addressed in this Thesis and Associated Research Questions

Challenges	Research Questions	Essays
1. To better understand careers in the knowledge economy we need to ascribe more importance to the subjective career.	1. What does increasing ascription of more importance to the subjective career mean for contemporary career theory and research?	Essay 1
2. Contemporary research on career success makes inconsistent use of career theory. Urgent rapprochement between theory and career success research is needed.	2a. What is the divergence between contemporary career theory and career success research? 2b. What rapprochement between theory and research can be attained, and with what advantages?	Essay 2
3. An increasing number of individuals is adopting boundaryless career behavior. Not everyone experience it positively. To assist individuals in this process more research that explains cognitions behind boundaryless career intentions is needed.	3. What are the key cognitions that predict boundaryless career intentions of contemporary professionals?	Essay 3
4. The available studies on computer-based career support point to their underutilization.	4. How to re-conceptualize the integrated provision of computer-based career support in order to get accepted and used effectively?	Essay 4

5. The use of the Internet for delivering career support services is growing. However, little is known about the actual usage and patterns of usage of such integrated web-based systems.	5. To what extent do individuals make use of integrated web-based career support when offered to them?	Essay 5
6. Increasing integration of the Internet in people's lives suggests that there may be a positive relationship between people's boundaryless career intentions and their usage of a web-based career support system.	6. To what extent does boundaryless career intention predict the usage of a web-based career support system?	Essay 6

METHODOLOGY

A wide spectrum of career topics addressed in this thesis requires the use of a mix of approaches. As a result, the thesis consists of different types of essays: published, forthcoming or submitted to different international academic (peer-reviewed) journals and edited books. The following short overview of the essays describes the various kinds of academic approaches taken.

Essay 1: Conceptual Paper. This essay examines how six fundamental social science theories of career behavior accommodate the four basic properties of the subjective career. The theories originate from a) Super and Hall in psychology, b) Krumboltz and Bailyn in social psychology and c) Hughes and Giddens in sociology. Next, it examines the concept of the self-designing organization in order to understand new requirements imposed on the subjective career by the knowledge economy. Three recent theories, such as Bandura's (2001) Social Cognitive Theory; Arthur, Claman and DeFillippi's (1995) Intelligent Career Theory; and Boyatzis and Kolb's (2000) Theory of Growth and Adaptation, are also examined on how they accommodate four career properties as well as the requirements of the knowledge economy. Finally, a spectrum of recent literature on globalization and the Internet is examined to understand the challenges and opportunities these new contexts offer for future research on the subjective career.

Essay 2: Literature Review. This essay examines the divergence between contemporary career theory and career success research by, first, reviewing key attributes of career theory that are relevant to career success. Next it examines the extent to which these attributes have been included in a sample of studies covering eleven years of published career success research. A set of 68 research articles representative of published work within a group of major, empirically-oriented social science journals was included. The journals covered are Academy of Management Journal, Administrative Science Quarterly, Career Development Quarterly, Human Relations, Journal of Applied Psychology, Journal of Career Development, Journal of Management, Journal of Management Studies, Journal of Occupational and Organizational Psychology, Journal of Organizational Behavior, Journal of Social Psychology, Journal of Vocational Behavior, Organization Science, Organization Studies and Personnel Psychology. Finally, the essay builds on the contrast between extant career theory and the outcomes of the analysis of the 68 articles offering guidelines for a rapprochement between career theory and career success research.

Essay 3: Empirical Research. This essay examines four cognitions hypothesized to predict boundaryless career intentions of IT professionals. Following Ajzen's (1991) theory of planned behavior, three career beliefs – career self-efficacy, perceived social pressure and "intelligent" career attitude – were hypothesized to predict boundaryless career intentions of IT professionals. Additionally, professional identity, suggested in Essay 1 as a highly relevant concept for boundaryless career theory, was hypothesized to moderate the three relationships between the three beliefs and boundaryless career intentions. Cognitions were examined on a sample of 225 aspiring IT professionals from four European countries: Austria, Greece, Italy and the Netherlands.

Essay 4: Literature Review. This essay offers a conceptual overview of a new phenomenon: computer-based career support. Socio-technical and social perspectives were used to conceptualize important issues regarding the effective provision of such support.

Essay 5: Empirical Research. This essay examines both the actual usage and patterns of usage of one integrated web-based career support system Change2IT. 2089 IT professionals from different countries in Europe became part of the study. Their actual usage of the system was monitored electronically during a period of 6 months. At the end of this period, the users were assessed on their satisfaction with the system via an electronic questionnaire. The essay discusses the findings and offers an original explanation of people's selective usage of the system's functionalities.

Essay 6: Empirical Research. This essay examines the relationship between people's boundaryless career intentions and their usage of a web-based career support. The study uses a sample of 225 aspiring IT professionals from 4 countries. The relationship between IT professionals' boundaryless career intentions and their usage of Change2IT involves correlation analyses between the variables, regression and ANOVA analyses. Results are discussed in light of implications for future research and development of web-based career support systems.

ACADEMIC OUTPUT PER ESSAY

Each of the essays included in this thesis were peer-reviewed, and presented to different research audiences over the period of the past 4 years. Below, we provide a brief overview of the exposure our work received per essay.

Essay 1 will appear as part of the *Handbook of Career Studies* edited by H. Gunz and M. Peiperl later this year. The future reference will be:

Khapova, S. N., Arthur, M. B. & Wilderom, C. P. M. (2006). The subjective career in the knowledge economy, in H. Gunz and M. Peiperl (Eds.), *Handbook of Career Studies,* Thousand Oaks, CA: Sage Publications.

The same paper is also accepted for a presentation at the 22st European Group of Organizational Studies (EGOS) Colloquium, sub-theme 18 "Careers as Forms of Organizing," 6 July-8 July 2006, Bergen, Norway.

Essay 2, in its earlier version, was presented as part the Academy of Management symposium "Unpacking and Reconceptualizing Career Success," 9-14 August 2002, Denver, Colorado, USA. The relevant reference is Arthur, M. B., Khapova, S. N. & Wilderom, C. P. M. "Who are the Gatekeepers of "Career Success?"

A revised version of this paper appeared as Arthur, M. B., Khapova, S. N. & Wilderom, C. P. M. (2005). Career success in a boundaryless career world. *Journal of Organizational Behaviour*, 26 (2): 177-202.

Essay 3, in its earlier version, was presented at the 21st European Group of Organizational Studies (EGOS) Colloquium, sub-theme 9 "Different Forms of Careers: Keys for Switching the Organizational Lock?" 30 June-2 July 2005, Berlin, Germany. The relevant reference is Khapova, S. N., Arthur, M. B., Wilderom, C. P. M. & Svensson, J. S. "Boundaryless career intentions of IT professionals."

Today, a revised version of this paper entitled "Professional identity as the key to IT professionals' boundaryless career intentions" is part of this thesis, and is ready to be submitted to an international journal.

Essay 4 was written for the *Encyclopedia of Career Development* co-edited by J. H. Greenhaus & G. A. Callanan. The relevant reference is Khapova, S. N. & Wilderom, C. P. M. (2006). Computer-based career support. In J. H. Greenhaus & G. A. Callanan (Eds.), *Encyclopedia of Career Development.* Thousand Oaks, CA: Sage Publications.

The research reported in *Essay 5* received the most exposure among different academic and European Commission communities. First, the results of the research appeared in research reports (deliverables) submitted to the European Commission. The relevant references are:

Khapova S. N., Svensson, J. & Wilderom, C. P. M. (2004). "Evaluation Results: User Experiences and Perceived Effectiveness," MULTITRAIN Deliverable 7.2.

Khapova S. N., Svensson, J. & Wilderom, C. P. M. (2003). "Report on iCIS Validation Results," iCIS Deliverable 5.2.

Next, an earlier version of this paper was presented as part of the symposium "Research Innovations in Technology-Enhanced Employment Processes" at the Society for Industrial and Organizational Psychology Conference, 10-12 April 2003, Orlando, Florida, USA. The relevant reference is Khapova, S. N. & Wilderom, C. P. M. "Web-Based Career Support: Two Longitudinal Field-Experiments."

The research also became an inspiration for organizing an Academy of Management symposium "Effective Human E-Service Delivery?" organized and chaired by Khapova, S. N., Svensson, J. S. & Wilderom, C. P. M., 6-11 August 2004, New Orleans, Louisiana, USA.

It also became a contribution to this symposium. The relevant reference is Khapova, S. N., Svensson, J. S., Wilderom, C. P. M. & Arthur, M. B. (2004), "What undermines usage of e-career support?"

Finally, in its present version, the essay is published as: Khapova, S.N., Svensson, J. S. Wilderom, C.P.M. & Arthur, M. B. (2006). Usage of web-based career support. In M. Anandarajan, T. Teo & C. Simmers (Eds.), *Transformation of the Workplace: The Web and Work in the 21st Century.* Armonk, NY: M. E. Sharpe Inc.

Essay 6, in its earlier form, was presented as part of the Academy of Management Showcase symposium "IT Professionals, Careers and Organizational Learning," 1-6 August 2003, Seattle, Washington, USA. The relevant reference is Khapova, S. N. & Wilderom, C. P. M., "Web-Based Career Support for IT Professionals."

STRUCTURE OF THIS THESIS

This thesis involves two parts. The first part accommodates three essays concerned with careers in the knowledge economy. It includes essays on (1) The subjective career in the knowledge economy, (2) Career success in a boundaryless career world, and (3) Professional identity as the key to IT professionals' boundaryless career intentions. The second part is more practical and is concerned with technology-enabled career support. It includes essays on (4) Computer-based career support, (5) Usage of web-based career support, and (6) Boundaryless career intention as a predictor of web-based career support usage. The thesis is concluded

with the chapter "Key Findings and Discussion," which provides a discussion of the key findings, their contributions, limitations and implications for future theory and research.

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PART I

CAREERS
IN THE KNOWLEDGE ECONOMY

ESSAY 1

THE SUBJECTIVE CAREER IN THE KNOWLEDGE ECONOMY[1]

INTRODUCTION

A re-examination of subjective careers is timely, given the economy's emergent reliance on knowledge-intensive professional and intellectual capabilities (Powell and Snellman, 2004). In this chapter, we argue that to better understand careers in the knowledge economy we need to ascribe more importance to the subjective career. This is because in the knowledge economy, in which many of the walls that limited the movement and reach of people are dissolving, people have more power to influence both markets and nation-states than at any time in history (Giddens, 2003; Friedman, 2005). In these circumstances, people's choosing to follow internal, self-generated guidelines for their careers can lead to larger social transformation (Feldman, 2000).

In this chapter we strive for better understanding of the traditional conception of the subjective career and also of the conception we currently need. For this purpose, we bring together ideas on (a) how fundamental theories have traditionally conceived the subjective career; (b) what the knowledge economy means for the conception of the subjective career; (c) what kind of approaches can help us better understand career dynamics in the knowledge economy; and (d) what issues the knowledge economy raises for future careers research.

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[1] Forthcoming as:
Khapova, S. N., Arthur, M. B. & Wilderom, C. P. M. (2006). The subjective career in the knowledge economy. In H. Gunz and M. Peiperl (Eds.), *Handbook of Career Studies.* Thousand Oaks, CA: Sage Publications.

As our chapter shows, to focus on the subjective career means to accommodate four basic properties of the subjective career in future research, to use interdisciplinary approaches in that research and to focus on careers not only within or between organizations, but also in a larger economic context. This context reflects not only the knowledge economy but also the influences of both the Internet and globalization in shaping that economy, and reaffirms the importance of interdisciplinary approaches.

THE SUBJECTIVE CAREER IN BEHAVIORAL SCIENCE THEORIES

Let us first examine traditional approaches to the subjective career. This involves reviewing definitions and properties relevant to the subjective career. It also involves examination of how alternative behavioral science approaches have accommodated these properties.

DEFINITIONS AND UNDERLYING PROPERTIES OF THE SUBJECTIVE CAREER

We define *career*, after Arthur, Hall and Lawrence (1989), as the unfolding sequence of a person's work experiences over time. Careers involve both subjective and objective perspectives. We define the subjective career as the individual's own interpretation of his or her career situation at any given time. We define the objective career as the parallel interpretation of any career provided by society and its institutions (Barley, 1989).

Drawing on our earlier review of contemporary career research (Arthur, Khapova and Wilderom, 2005), we submit that the subjective career entails four important properties. The first property is concerned with the inherent *duality* between the subjective and objective careers. This means that there are always two sides to a career: a publicly observable (or objective) side and an intrinsic (or subjective) side. Although both sides of the career exist together, they do not necessarily correspond to each other. For example, managers who are successful according to the objective criteria of pay and promotions may report less subjective career satisfaction than objectively less successful colleagues (Judge, Cable, Boudreau and Bretz, 1995).

The second property concerns *interdependence.* Interdependence means that the two sides of the career not only co-exist, but also influence one another. That is, the objective career provides the work experiences that a theory may hypothesize to influence the person's subjective view of his or her career situation. Conversely, the attitudes and motivation of the subjective career may be hypothesized to influence a person's objective career as it is seen by others.

The third property of the subjective career concerns a perspective on *time*. Time complicates the nature of the interdependence between the subjective and objective careers, and takes us beyond any simple notion of subjective-objective career multicollinearity. Time is intrinsic to, for example, employment stability, skills and experience gained, relationships developed, and opportunities encountered (e.g., Washington and Zajac, 2005).

The fourth property of the subjective career is that we can anticipate that the subjective career involves *multiple dimensions*. These dimensions will reflect different aspects of people's subjective careers, for example about pursuing a professional calling, accumulating new learning, and finding time for families (e.g., Hall, 2002).

Our earlier review showed that contemporary career research often disregarded one or more of these theoretically significant subjective career properties (Arthur et al., 2005). We propose here that examination of the four properties provides a basis for identifying both what is common ground and what is unique to alternative theories. We now turn to examining how six selected behavioral science theories address these four properties.

BEHAVIORAL SCIENCE PERSPECTIVES

Our examination of four subjective career properties intersects three behavioral science disciplines, namely psychology, social psychology and sociology. Specifically, we look at six theories that have been influential in contributing to the development of career theory, originating from a) Super and Hall in psychology, b) Krumboltz and Bailyn in social psychology and c) Hughes and Giddens in sociology.

The choice of these theories may be explained as follows. All of them have been influential within their separate behavioral science disciplines in contributing to the development of career theory. Each of the theories provides insight into the way the subjective career is viewed within its host discipline. Two lines of inquiry

per discipline allow us to learn about that discipline's distinct perspective on the subjective career.

Among psychological perspectives, Super's (1980) *theory of career development* extends earlier vocational guidance theories in looking at the interaction of the subjective and the objective careers across the life span. His work focuses on how subjective and objective careers interact in a person's mind as he or she lives through predictable life stages. A second psychological theory is that of Hall (1976, 2002), whose *protean career theory* suggests that people may no longer see their careers as unfolding in any one organization, or in any predictable way. It proposes the notion of a protean career, characterized by adaptation to a shifting environment and by frequent change, self-invention, autonomy and self-direction (Hall, 2002).

Turning to social psychology, Krumboltz's (1979) *social learning theory* suggests that "the individual personalities and behavioral repertoires that persons possess arise primarily from their unique learning experiences, rather than from innate developmental or psychic processes" (Mitchell and Krumboltz, 1990). Put simply, the theory focuses on how learning from past experiences in the social world influences future career choices. In contrast, Bailyn's (1984) *theory of work and family* addresses the interplay of work and family systems. The work system represents the arena for a person's contractual relation to the external environment; the family system represents a more internal, self-regulated, and private arena, centered on a primary tie to another person or persons (Bailyn, 1984).

Finally, among sociological perspectives, Hughes's (1937) *theory of social roles* addresses how individuals experience their work roles within society. The theory represents a larger set of work by the Chicago School of Sociology on the nature and "working constitution" of a society. Of more recent origin is Giddens's (1984) *theory of structuration.* The theory looks at how people's everyday actions reinforce and reproduce social structures "via the very means whereby they express themselves as actors" (p. 2). The arena for action prominently involves people's careers.

Each of these theories provides insight into the way the subjective career is viewed within its host discipline, and illustrates the different focuses that each of the three disciplines provides. The choice of six theories does not, of course, provide a complete review of theories that conceptualize the subjective career. However, it does allow us to see some overall patterns.

PSYCHOLOGICAL PERSPECTIVES

In Super's psychological theory of careers, duality refers to "concepts of self and of roles in society" (Super, 1990, p. 203). Interdependence between the subjective and objective careers is seen to take place in the mind of the person, "the decision maker in whom all of the personal and social forces are brought together" (Super, 1990, p. 203). People are described as mentally filtering objective work experiences into subjective career interpretations and, in turn, projecting these interpretations back onto the world of work. Time is accommodated in the conception of a sequence of career stages, namely growth, exploration, establishment, maintenance, and decline (Super, 1990). Multiple dimensions come from enacting one or more of the six distinct identities in everyday life - of the child, the student, the leisure seeker, the citizen, the worker and the homemaker.

In Hall's psychological approach, the subjective career reflects changes in values, attitudes, and motivation that occur as a person ages, and the objective career reflects observable choices made and the activities in which the person engages (Hall, 2002, p. 11). Hall's approach to interdependence is signaled in his underlying definition of the career as "the individually perceived … attitudes and behaviors associated with work-related experiences and activities" (2002, p. 12). The key term "perceived" once more indicates that interdependence is located inside the person's mind. Time organizes the subjective-objective career interaction in a series of learning mini-stages "of exploration-trail-mastery-exit" through which people adjust to the world and develop their identities (Hall, 2002, p. 118). Multiple dimensions involve the development of a series of career "sub-identities," that are "aspects of one's self (skills, interests, etc.)" which answer not only to "who I am," but also to "what I do" (Hall, 2002, p. 73).

SOCIAL-PSYCHOLOGICAL PERSPECTIVES

Turning to social-psychological theories, Krumboltz (1979) addresses duality by noting that both internal (subjective) and external (objective) influencers shape the nature and number of career options and the way in which individuals respond. The objective influencers include past learning experiences defined by environmental conditions and events. The subjective influencers incorporate genetic factors and the cognitive and emotional responses (in a form of decisions) to learning experiences. Interdependence is about the interaction between people's learning experiences and people's cognitive responses. That is, people respond to

the contingencies that surround them, and seek to control their environments to suit their own purposes and needs (Mitchell and Krumboltz, 1990, p. 147). Time organizes this interaction in a sequence of new learning experiences and career behaviors. Multiple dimensions involve variation in the social roles that people experience, as well as different responses to those roles.

In Bailyn's social-psychological theory, duality constitutes the coexistence of the objective career - representing "the arena for a person's contractual relation to the external environment, a place where activities are externally regulated and monitored, and where one is held publicly accountable for one's performance" - and the subjective career - that "represents a more internal, more self-regulated, and more private arena, centered on a primary tie to another person or persons." Interdependence between the subjective and objective careers is described in terms of the influence the family or private arena has on the work arena, and of the reverse influence that the work arena has on the family or private arena. Time is accommodated in Bailyn's views on how people's career investments vary as time unfolds, as work and family demands change. Multiple dimensions of the person's subjective career involve the experiencing of multiple roles, of for example being a worker and a parent (Bailyn, 1993), and of being a representative of the male or female gender (Rapoport, Bailyn, Fletcher and Pruitt, 2002).

SOCIOLOGICAL PERSPECTIVES

Turning to sociological theory, Hughes (1937) *theory of social roles* views the duality of the subjective and objective careers, that is the career's "two-sidedness," as a critical property (Barley, 1989, p. 49). The career is seen as a "Janus-like concept," pointing on the one hand to the meanings individuals make of their career situations, and on the other hand to institutional forms of career participation (Barley, 1989). Interdependence is underscored in the notion of a series of "status passages," which on the one hand connote a shift from one social role to another, and on the other hand involve a change in the person's conception of self. Within each shift "role look(s) outward toward a pattern of situated activity, whereas identity look(s) inward toward the actor's subjective experience of that situated being" (Barley, 1989, p. 50). Time underlies the unfolding of successive status passages. Multiple dimensions are reflected in the multiple roles through which people exercise influence, take responsibility and receive recognition in their careers (Hughes, 1937).

In Giddens' sociological theory, duality stems from the subjective career giving rise to "knowledgeable activities" (activities based on what people know), while the objective career is reflected in the way social roles are performed (Giddens, 1984, p. 2). Interdependence is reflected in the way institutional forms influence how people respond to available social roles in the short term, and how people reproduce or modify those social roles in the long term (Giddens, 1984, p. 26). Time is fundamental to Giddens' view of the production, reproduction and evolution of social life. Time frames both the relatively reversible interactions between the person and society in everyday life, as well as the irreversible character of human life over the life course (Giddens, 1984, p. 35). Multiple dimensions of an individual's career reflect social roles through which individuals produce and reproduce society, which Giddens calls roles of signification, domination and legitimation (Giddens, 1984, p. 29).

In sum, all six selected behavioral science theories accommodate the four basic properties in their conceptualizations of the subjective career. However, as summarized in Table 2, they all offer very distinct perspectives on those properties. The six theories are closest to one another in acknowledging the duality of the subjective and the objective career. However, psychologists view subjective-objective career interdependence as occurring in the mind. Social psychologists see this interdependence occurring between the person and his or her everyday work experience. Sociologists see interdependence occurring over the long term as people's career behavior eventually reinforces or modifies the overall social structure. Similar distinctions are evident in the theories' separate approaches to the role of time (as it affects the mind, or everyday workplace interaction, or the evolution of society) and to the multiple dimensions of the subjective career (as they also affect the mind, everyday workplace interaction, or the evolution of society).

Table 2. Four Properties of the Subjective Career as Reflected in Six Behavioral Science Theories

Behavioral Science Theories	Duality with Objective Career	Interdependence with Objective Career	Perspective on Time	Multiple Dimensions
Psychology				
Super (1974, 1990)	The subjective career involves concepts of self, the objective career concepts of roles in society.	Mentally filtered objective work experiences interact with subjective career interpretations.	Sequential individual career stages - growth, exploration, establishment, maintenance and decline.	Distinct identities in daily life - child, student, leisure seeker, citizen, worker and the homemaker.
Hall (1976, 2002)	The subjective career involves values, attitudes, etc., the objective career observable career choices.	Individual perception links between attitudes and behaviors and work-related experiences.	A series of learning mini-stages through which people adjust to the world and develop their identities.	Outcomes of the development of career sub-identities about both "who I am" and "what I do."
Social Psychology				
Krumboltz (1979)	The objective career reflects past experiences, the subjective career genetic and cognitive factors.	The interaction of everyday learning experiences with people's cognitive responses to those experiences.	Sequences of successive learning experiences that shape subsequent career behavior.	A variety of social roles through which individual's experiences meet social expectations.
Bailyn (1984)	The objective career reflects employment experience, the subjective career reflects personal and family values.	Private life and working life co-exist, and underlie people's choices in acting out those lives.	Variation in people's career investments as time unfolds, and as work and family demands change.	Life and work roles as separately experienced by the individual and by society.
Sociology				
Hughes (1937, 1997)	The objective career reflects institutional roles, the subjective career people's adjustment to those roles.	The interplay between a person's social roles and conceptions of the self, as work experience unfolds.	A series of status passages or temporally-staged shifts from one social role to another, throughout life.	Social roles, through which people exercise influence, take responsibility and receive recognition.
Giddens (1984)	The subjective career drives how people perform social roles, the objective career reflects those roles.	People enact social roles, and thereby contribute to reproduction and evolution of society.	Underlies both reversible short-term behavior as well as the irreversible character of human life.	Social roles through which individuals shape society by signification, domination and legitimation.

The separation of career theory into largely disconnected behavioral science disciplines may work well in a relatively stable world. However, in a more dynamic, knowledge-driven world, we can raise fresh questions about the connections between the disciplines. It is that world to which we now turn.

CAREERS IN THE KNOWLEDGE ECONOMY

Over the past several decades, we have witnessed what has been often referred to as a shift from an industrial-based to a knowledge-based economy (Bell, 1973; Hirschorn, 1984, Block, 1990). The knowledge economy may be defined as "production and services based on knowledge-intensive activities that contribute to an accelerated pace of technological and scientific advance as well as equally rapid obsolescence" (Powell and Snellman, 2004, p. 201). The definition points out two important shifts. First, the economy relies heavily on intellectual capabilities rather than on physical inputs or natural resources. Second, a high pace of technological and scientific advancement requires organizations to continually adjust to this advancement. In this section, we briefly outline (a) how the model of more adaptable "self-designing" organizations, previously seen as an exceptional model, became a mainstream model in the knowledge economy; (b) the new role of careers in this circumstances, and (c) theoretical approaches to career research that respond to these changes.

CAREERS IN SELF-DESIGNING ORGANIZATIONS

Beginning in the 1960s, scholars began to observe the impact of changing environments on the organizations hosting people's careers. The more dynamic and complex the environment, the more "organic" (rather than "mechanistic") and the more "differentiated" the firm needed to be to succeed. Moreover the more organic and differentiated the organization, the greater the problems of integration of people's work contributions (Burns and Stalker, 1961; Lawrence and Lorsch, 1967)." These observations -which may be seen as early signals of the impending knowledge economy - were picked up by Karl Weick and his colleagues, who were interested in the consequences for the underlying design of organizations. They developed a conception of the "self-designing organization" which, they argued, was better suited for a changing world. The self-designing organization would

maintain itself in a state of frequent, nearly continuous change in its structures, processes and goals in order to optimize the organization's capacity to adapt (Nystrom et al., 1976; Hedberg et al., 1976; Weick, 1977).

At the most elementary level, "self-design involves generating alternatives and testing them against the requirements and constraints perceived by people in the organization" (Weick, 1977, p. 37). That is, the system may be referred to as self-designing "if it contains the norms, resources, willingness, and mandate to monitor and evaluate its ongoing design, generate alternative designs, and implement the alternatives that are expected to generate a different set of reasonable consequences" (p. 38). Hedberg et al. (1976) argued that operating in this mode is helpful, perhaps necessary, for survival in fast changing and unpredictable environments. They reasoned that the probable consequences of an ongoing state of experimentation are that organizations learn about a variety of design features, and thereby remain flexible (Malhotra, 1996).

According to Weick and Berlinger (1989) the process of self-design is largely dependent on an organization's participants and their ability to continually redesign internal processes. The self-designing organization relies on individuals' willingness to learn and explore, their ability to review their experiences regularly – and even to review their ways of reviewing. The design assumption is that people are better in creating new approaches if they perform within relatively underspecified conditions. The self-designing organization therefore discourages any long-term commitment to its current structure, tasks and products, and prefers local decision-making and flat structures in the interest of more rapid adaptation. In self-designing organizations the "typical markers of the external career such as titles, advancement up a hierarchy, and stable career paths are rare" (Weick and Berlinger, 1989, p. 321). In the absence of these, people need to focus on their subjective careers as a framework for career growth (Weick and Berlinger, 1989, p. 321). That is, people need to "pursue processes rather than outcomes, competencies rather than titles, fulfillment rather than advancement, and roles rather than positions" (Weick and Berlinger, 1989, p. 320).

More specifically, Weick and Berlinger (1989) recommend that individuals (a) cultivate "spiral" career concepts that involve changing visions of oneself and of different work and non-work experiences, (b) decouple identities from jobs, and instead emphasize professional identities that transcend any particular job, (c) preserve discretion that enables the recognition of new choices for one's career, (d) identify distinctive competences - abilities and expertise that have the potential to contribute to the self-designing organization's primary goal (namely its own

continuing redesign); and e) synthesize complex information, since only people able to integrate such information and articulate larger visions can help the self-designing organization to succeed. All of these recommendations implicate the subjective career, which therefore "assumes special importance" in the self-designing organization (Weick and Berlinger, 1989, p. 321).

THE SHIFT TO A KNOWLEDGE ECONOMY

By the 1990s, the changes envisaged in the 1960s and 1970s had become commonplace. Open markets and technology had led to a widespread focus on intellectual capabilities rather than on physical inputs or natural resources. The idea of the "boundaryless organization" (Ashkenas, Ulrich, Jick and Kerr, 1995) emerged in which:

"[P]eople do multiple jobs, constantly learn new skills, and frequently shift to new assignments and different locations. Instead of subdividing tasks, such organizations have learned how to pull together diverse activities and people on an as-needed basis, and to focus more on the streamlined process than on the specialized pieces. They champion the new and different, and set up processes and environments that encourage and reward creativity and innovation" (Ashkenas, 1999, p. 6).

The boundaryless organization, as well as other similar contemporary views (Hedberg, Baumard and Yakhlef, 2002; Feldman, 2000; Haeckel, 1999) reads much like the self-designing organization pioneered by Weick and his colleagues. In these views, individual input assumes higher importance, emphasizing individual influence upon the larger institutions of work and society (Peiperl, Arthur and Anand, 2002). The process of organizations and careers shaping each other is viewed as happening both more broadly and more continuously than in the industrial economy.

Weick's (1996) response to the widespread emergence of the knowledge economy was to ascribe a more generalized importance to the subjective career, to "place more control over the design of the organization in the hands of the people who are building subjective careers" (p. 41). He argued that as organizations become "weaker" – that is, more ambiguous, more unstructured, and with fewer salient guides for action, they dissolve "external guides for sequences of work experience, such as advancement in a hierarchy" (p. 40). The new situation obliges

people to begin to rely more "on internal, self-generated guides, such as growth, learning, and integration" (Weick, 1996, p. 40).

The circumstances described above emphasize a psychological view of the subjective career. However, the enactment of careers leads individuals to contribute to the shaping of social systems. People act as "agents of their own development [and] organize cooperatively in order to learn" (Weick, 1996, p. 45). Weick therefore begins with a psychological view - about internally-driven career behavior - then transforms it into a social psychological view – about cooperative organizing – as events unfold.

Weick (1996) further argues that as individuals organize, they organize weak situations into stronger ones. As individuals work, they learn, and make sense of uncertainty. They then "enact this sense back into the world to make that world more orderly" (Weick, Sutcliffe and Obstfeld, 2005, p. 410). Learning processes become turned into scripts that impose structures around previously ambiguous situations. Cooperative behavior over time re-shapes a weak situation according to people's career preferences (Weick, 1996, p. 43-44). This argument transforms a social psychological argument into a sociological one, as we come to face the emergent structure of the organizations that self-designing careers have built.

In sum, Weick calls successively on the three behavioral science disciplines of psychology, social psychology and sociology in explaining contemporary careers. In doing so, he implicitly challenges the utility to career theory of any one discipline on its own. Rather, he suggests a greater utility for *interdisciplinary* theory in the knowledge economy, where psychological, social psychological and sociological perspectives constructively inform one another.

APPROACHES TO CAREER RESEARCH IN THE KNOWLEDGE ECONOMY

A number of contemporary career theories have already responded to the emergence of the knowledge economy. Among them are new ideas about not only protean careers (Hall, 2002), but also of "zigzag" (Bateson, 1994), "boundaryless" (Arthur and Rousseau, 1996), "post-corporate" (Peiperl and Baruch, 1997), "new" (Arthur, Inkson and Pringle, 1999), and "kaleidoscope" careers (Mainiero and Sullivan, 2005). However, the preceding discussion raises a new question for these

theories. Do they respond to Weick's implicit call for an interdisciplinary approach?

In this section we will pursue the above question by exploring three contemporary theories more deeply. They are the revised social cognitive theory of Bandura (2001), the "intelligent career" conception of Arthur, Claman and DeFillippi (1995), and the theory of growth and adaptation of Boyatzis and Kolb (2000). Our purpose in doing so is to demonstrate how interdisciplinary approaches can respond to the knowledge economy. For each theory, we describe (a) how it accommodates the basic properties of the subjective career, and (b) how it draws on different behavioral science perspectives. We then demonstrate briefly how current career research has utilized each theory, and comment on the opportunities for further research.

SOCIAL COGNITIVE THEORY

Bandura's (2001) revised *social cognitive theory* builds on his vision of the individual as an emergent interactive agent. In line with Weick's (1996) ideas, individuals are seen as "agentic operators" or proactive agents that are capable of intentionally organizing their own lives, as well as shaping the character of the social systems around them. Bandura (2001) explains that "through agentic action, people devise ways of adapting flexibly to remarkably diverse geographic, climatic and social environments; they figure out ways to circumvent physical and environmental constraints, redesign and construct environments to their liking, create styles of behavior that enable them to realize desired outcomes, and pass on the effective ones to others by social modeling and other experiential modes of influence" (p. 22).

The theory takes account of the four basic properties of the subjective career. Duality is reflected in the notions of personal agency and social structure. Interdependence involves their interaction, in which "social structures are created by human activity, and sociostructural practices, in turn, impose constrains and provide enabling resources and opportunity structures for personal development and functioning" (Bandura, 2001, p. 15). Time is accommodated in the theory's core features of human agency (Bandura, 2001, p. 6). These include the individual's capability to orient on the future, present and past through (a) forethought and intentionality (creating courses of action likely to produce desired outcomes), (b) self-reactiveness (giving shape to appropriate courses of action and their execution) and (c) self-reflectiveness (self-examining one's motivation, values and

life pursuits), correspondingly. Multiple dimensions involve outcomes from the enactment of agency's core features, and occur in the forms of self-development, adaptation, and self-renewal.

Bandura draws on psychology in his conceptualization of individuals' core features of forethought, intentionality, self-reactiveness and self-reflectiveness, which enable people to play a part in their self-development, adaptation, and self-renewal. He draws on social psychology in his notion of self-efficacy - whereby people believe in their capabilities to perform in ways that give them some control over events that affect their lives and the lives of others. He relates to sociology in his conceptualization of the ways in which people bring their influence to bear on the social structure and the environment. These ways include the personal mode (that involves direct influence), the proxy mode (that is carried out through others), and – especially relevant to a sociological perspective - the collective mode (that is exercised through socially coordinated and interdependent efforts) (Bandura, 2001).

Bandura's revised social cognitive theory has been already claimed to be one of the three most important approaches to work motivation in the last 30 years (Latham and Pinder, 2005). However, most current career studies draw on a more focused social-psychological adaptation of Bandura's earlier theory by Lent, Brown and Hackett (1994; see for example Fouad and Guillen, 2006; Gainor, 2006, and Lent and Brown, 2006). Among the few exceptions are studies concerned with the examination of self-efficacy and collective-efficacy beliefs as main determinants of teachers' job satisfaction (Caprara, Barbaranelli, Borgogni and Steca, 2003), and with effects of perceived self-efficacy and personal goals on motivation and performance attainments (Bandura and Locke, 2003). A contemporary perspective on the subjective career calls for fresh application of Bandura's (2001) latest rendition of social cognitive theory.

"INTELLIGENT CAREER" THEORY

The "intelligent career" concept (Arthur, Claman and DeFillippi, 1995; DeFillippi and Arthur, 1996) was developed with the emerging knowledge economy in mind. The intelligent career was first proposed as a response to Quinn's (1992) concept of the "intelligent enterprise," that is of the knowledge-driven organization. Just as Quinn and subsequent authors saw the knowledge-driven organization developing through its culture, know-how and networks, so does intelligent career theory see individuals developing through three corresponding "ways of

knowing." These are *knowing-why* (reflecting an individual's motivation and identity), *knowing-how* (reflecting an individual's skills and expertise), and *knowing-whom* (reflecting an individual's relationships and networks) respectively. The approach responds to Weick's emphasis on the subjective career in the knowledge economy by placing the subjective career, rather than any one organizational or societal view of the objective career, in charge of the direction and purpose of career development.

Intelligent career theory accommodates the previously described properties of the subjective career. Duality links the objective requirements of the job (the knowing-how skills needed) and the person's subjective response to the job (the knowing-why motivation to perform the job). Interdependence occurs through the interaction among these ways of knowing as, for example, knowing-why motivation influences a person's choice of work, the knowing-how experiences that come with the work, and the knowing-whom relationships that grow through the work. It is also fundamental to the intelligent career approach that interdependence among the three ways of knowing occurs over time. In addition, knowing-why involves various dimensions of a person's inner self - such as the person's temperament and values - just as knowing-how and knowing-whom involve various dimensions of the skills and social relationships people develop through their work (Parker et al., 2004).

Through the three ways of knowing and the interaction between them, the intelligent career approach responds to all three behavioral science perspectives previously addressed. From a psychological viewpoint, knowing-why investments reflect the underlying self-concepts, aptitudes, values, etc. that people bring to their work and careers. From a social psychological viewpoint, individual knowing-why investments interact with both knowing-how and knowing-whom investments, which cover the social role (the job) and social connections a person takes on. From a sociological viewpoint, knowing-whom investments reflect the influence of society on both the person (knowing-why) and his or her work behavior (knowing-how), as well as contributing to the further evolution of that society over time.

Since its introduction, the intelligent career model has been successfully used, for example, to examine patterns of career adaptation within a changing national context (Arthur, Inkson and Pringle, 1999; Cadin, Bender, and Saint-Giniez, 2000) to explore gender- and family-related differences in career adaptation (Valcour and Tolbert, 2003), to explore ways people can develop more effective mentor networks, and to determine predictors of managerial success (Eddleston,

Baldridge and Veiga, 2004). One study has demonstrated a strong connection between people's investments in all three ways of knowing and subjective career success (Eby, Butts and Lockwood, 2004). This work points to a range of new research possibilities that link the subjective career to the emerging knowledge economy.

THE THEORY OF GROWTH AND ADAPTATION

Boyatzis and Kolb's (2000) theory of growth and adaptation is another example that responds to the above ideas about the subjective career. It is concerned with understanding the dynamics of lifelong career development in the contemporary world through three unique modes of individual growth and adaptation. The modes describe growth and adaptation in terms of quests: a) a quest for mastery in the performance mode (how we perform in the work role); b) a quest for novelty in the learning mode (what we learn from the work role); and c) a quest for meaning in the development mode (how we develop as people through the accumulation of work experiences). These modes integrate the authors' earlier conceptualizations of experiential learning as it is applied to lifelong adaptation (Kolb, 1984) and to competency acquisition and development (Boyatzis, 1982).

Like the social cognitive and intelligent career theories, the theory of growth and adaptation takes into account the four basic properties of the subjective career. Duality involves people's subjective adaptation to the objective environment that provides them with work. Interdependence involves interaction between a person's subjective quest (for mastery, novelty or meaning) with the objective circumstances of his or her employment. For example, a quest for mastery will interact with the time and opportunity that circumstances make available for the quest to be pursued. The notion of time is incorporated in the life span in which the three modes of performance, learning and development are played out. Multiple dimensions are reflected in, for example, the self-validation that is sought under the performance mode, the self-improvement sought under the learning mode, and the self-fulfillment sought under the development mode.

Each of the theory's three modes may be associated with a particular behavioral science emphasis. The development mode emphasizes a psychological perspective focusing on a person's fulfillment and personal quest for meaning. The learning mode emphasizes a social-psychological perspective in focusing on a person's learning and the social setting in which learning occurs. Finally, the performance mode brings a sociological perspective by focusing on the social roles

that people undertake, and on how those roles can influence the larger social environment, such as for example when an influential manager leads his or her company along a path of rapid innovation (Boyatzis and Kolb, 2000).

Empirical examination of the theory of growth and adaptation is yet to come. At this time of writing, we have been able to track only one journal publication by Mainemelis, Boyatzis and Kolb (2002) that reports on the empirical examination of one integral element of their theory – experiential learning theory (Kolb, 1984). However, as Boyatzis and Kolb (2000, p.90) make clear, there are other elements and implications to consider (see Boyatzis and Kolb, 2000, p. 90 for details). Among them are ideas for helping individuals grow and adapt throughout their careers and life, and for addressing the potential conflicts between an individual in each of the modes and the environment through which he or she is pursuing a career.

For all three of the above examples, the interdisciplinary range of the underlying theory appears encouraging, but the empirical evidence behind any theory is still very limited. One problem may be that interdisciplinary research is more difficult to design and conduct. However, it seems important that theory drives research designs, rather than the other way around.

A further problem with interdisciplinary approaches may be a question of how to more fully engage with the key challenges of our times. These include two particular challenges associated with the knowledge economy, stemming from the Internet and continuing globalization. We turn to these in the next section.

NEW RESEARCH CHALLENGES

The knowledge economy's utilization of information technology (IT) is transforming both economic systems and social processes. In particular, the phenomena of a) the Internet and b) globalization offer fresh possibilities for individuals as well as invite more attention of career researchers. We briefly discuss these possibilities according to the overlapping psychological, social-psychological and sociological perspectives previously discussed.

From a *psychological* standpoint, the Internet offers a new medium for creating and experiencing human identity. Users of the Internet have been described as "dwellers on the threshold between the real and the virtual, unsure of our footing, inventing ourselves as we go along" (Turkle, 1995, p. 10). Moreover, once people have invented their online personae they can use them to become more aware of how they project themselves, that is they can "use the virtual to reflect constructively on the real" (Turkle, 2004, p. 22). For example, scientists have been already observed to use the Internet to enhance their identities by defining new research areas, and finding opportunities to make unique contributions (Lamb and Davidson, 2005). There are also individuals, who use the Internet to "masquerade" in to professionals (Harshman, Gilsinan, Fisher and Yeager, 2005).

The Internet also offers a wider marketplace for expertise. For example, scientists can now develop and collaborate around more specialized areas of knowledge (Lamb and Davidson, 2005, p. 1). Hackers can trade expertise by collaborating over open source software (Castells, 2001). The generalized opportunity is one of "becoming your own self-directed and self-empowered researcher, editor, and selector of entertainment" (Friedman, 2005, p. 153) – that is, of exercising your own subjective career. These changes in collaboration, interaction and data collection challenge in turn traditional definitions of expertise and professional identity (Lamb and Davidson, 2005).

From a *social-psychological* perspective, the Internet's ability to connect offers new possibilities for (a) information exchange and b) further collaboration among participants. For example, one person's online search for help from other programmers led to the rapid growth of an online community to support and develop the Linux operating system (Castells, 2001; DeFillippi and Arthur, 2002). Such virtual communities, organized around common interests and values, take advantage of new forms of virtual communication such as messaging, mailing lists, chat rooms, etc. (Boczkowski, 1999), and increasingly of voice and video communications.

The Internet also provides opportunities for giving and receiving more traditional forms of career support. It fosters the proliferation of weak ties: persons and groups with whom one does not have strong relationships around any of work, kinship, or sociability, but which are useful for information exchange (Wellman and Hampton, 1999). It provides for stronger ties among spatially

distant actors too (Wellman and Hampton, 1999), and for the provision of social support in online communities organized around shared values and interests (Castells, 2001). Support is also increasingly available through IT-based career services, such as online counseling and career guidance (Harris-Bowlsbey and Sampson, 2005).

From a *sociological* perspective the Internet offers new possibilities for institutional initiatives. One such initiative is that of Professions Australia, an umbrella web-based association of professional associations that seeks to promote new communities of practice both within and across its separate member associations (DeFillippi, Arthur and Lindsay, in press). In a similar vein, the U.S. National Cancer Institute's "consortia and networks" program seeks to accelerate both performance improvements and learning outcomes in alternative cancer treatments by means of virtual collaboration among specialists from different locations (DeFillippi, Arthur and Lindsay, in press).

Another sociological phenomenon is emergence of new frameworks for the integration of work. One such new framework is the open-source approach, associated with the Linux operating system described above, which has been suggested to represent a "new, post-capitalist model of production" (Friedman, 2005, p. 103). Another new framework involves institutionalization and empowerment of social movements. The Internet is now seen as the "main way" in which social movements "can reach out to those who would adhere to their values, and from there to affect the consciousness of society as a whole" (Castells, 2001, p. 140).

In sum, the emergence of the Internet, and its associated proliferation of information and communication technologies, offers fresh opportunities for the subjective career. Moreover, these opportunities span all three behavioral science perspectives reviewed earlier. The emergence of the Internet also points to the greater significance of virtual space, and therefore of globalization, to which we now turn.

CAREERS AND GLOBALIZATION

From a *psychological* perspective globalization is diminishing the significance of national identity, while adding to the significance of professional identity (Arnett, 2002). The traditional skill-centered basis of professional identity does not follow the old rules of immigration laws, wages, and working conditions (Castells, 2000), and global workers are less frequently citizens of the U.S.A. and Western Europe

(Harris, Brewster & Sparrow, 2003). Instead, "anyone with the capacity to generate exceptional value added in any market enjoys the chance to shop around the globe – and to be shopped around, as well" (Castells, 2000, p. 130). New identities are "based less on prescribed social roles and more on individual choices, on decisions that each person makes about what values to embrace and what paths to pursue in love and work" (Arnett, 2002, p. 781).

Globalization also stresses the development of new – global – competencies to be able to collaborate and compete globally. They include (a) developing of a "global mindset" in order to meet the challenges of globalization (Rhinesmith, 1996); and (b) changing from a local to a global identity, or to a successful combination of two (Kohonen, 2005). "Cosmopolitanism," reflecting a global rather than a local consciousness, is also an increasingly relevant concept (Hannerz, 1996, p. 103). It involves both "a state of readiness" to make one's way in other cultures, and "a built-up skill" to behave more or less expertly within a particular system of meaning (Kohonen, 2005).

From a *social-psychological* perspective, globalization stresses new possibilities for global collaboration. Friedman (2005, p. 81) observes "people around the world coming together online to collaborate in writing everything from their own software to their own operating systems to their own dictionary to their own recipe for cola." One prominent group is the scientists mentioned earlier, developing new ideas, reviewing one another's work, and introducing their colleagues to new research partners (Lamb and Davidson, 2005; Sargent and Waters, 2004). The previously mentioned groups of Linux programmers and social activists also communicate across geographically separate locations to develop better software, or more powerful collective voices (Castells, 2003).

Businesses benefit from opportunities to bring on board people from anywhere in the world at any time, and thereby to access the most knowledgeable and competent workers. They also benefit from an opportunity to work on the same product, service or project up to twenty-four hours a day using workers from different time zones. Where the economy was once largely limited to local collaboration in physical space, it is now open to, and largely driven by global collaborations in virtual space (Qureshi, Liu and Vogel, 2006).

From a *sociological* standpoint, globalization reflects the emergence of fresh institutional arrangements, involving outsourcing (of particular parts or services), offshoring (of complete manufacturing or service delivery systems), or inter-organizational alliances in research and development (Friedman, 2005). Although there are fresh opportunities for large corporations, globalization also creates

possibilities for small companies to offer their products and services in a much larger global marketplace (Friedman, 2005). Scientists, IT professionals and social activists not only collaborate around the globe, they build new infrastructures to help them to do so (DeFillipi, Arthur and Lindsay, 2006).

In sum, globalization is both a further consequence of the Internet and a catalyst of new opportunities for the subjective career. Also, globalization involves all three of the disciplinary perspectives covered earlier. However, while both the Internet and globalization appear to be major influences over the unfolding of people's subjective careers, they have so far been lightly studied.

EXPANDING THE SUBJECTIVE CAREER AGENDA

Our story so far is that we need to make greater use of interdisciplinary theories in future work on the subjective career, and that such work needs to take into account the emergence of both the Internet and globalization. What are the prospects for this kind of work? One place to begin is with the earlier examples of interdisciplinary theory. How do these stand up to the new research challenges described?

Bandura (2002) suggests that his social cognitive theory may be usefully employed to study the subjective careers of global social activists. Specifically, he suggests that his psychological concepts of forethought, intentionality, self-reactiveness and self-reflectiveness can help to explain the meanings and values that drive these activists. His social-psychological notion of self-efficacy can help to explain individuals' beliefs in their ability to influence the world and to reach others who share the same values. It can also help to explain how individual self-efficacy contributes to the collective efficacy of a social movement (Bandura, 2002). Finally, the theory suggests how modes of influence (personal, proxy and collective) may help to explain ways that social change across the globe can be achieved.

Arthur, Claman and DeFillippi's (1995) intelligent career theory can be used to explore people's psychological (knowing-why) motivations to join web-based communities. Preliminary work has already examined how interactions among knowing-why, knowing-how and knowing-whom investments contribute to the social-psychological exchanges that take place inside these communities (DeFillippi, Arthur and Parker, 2003). The effects of virtual knowing-whom investments in particular, have been suggested to underlie the development of new sociological forms of global cooperation and its related institutions

(DeFillippi, Arthur and Lindsay, 2006). However, much more research needs to be done on the further implications of these kinds of subjective career investments in the contemporary economy.

Boyatzis and Kolb's (2000) theory of growth and adaptation may be usefully employed to study the subjective career dynamics of participants in global virtual communities. The theory's developmental mode may help to explain cognitions behind workers' motivation for new international projects. The learning mode may help explain the learning dynamics within such cross-cultural collaborations. In turn, the performance mode may help to explain the assumption of social roles within the virtual communities (which may be different from roles of physically close cooperation), as well as to explain how these roles affect virtual cooperation and its consequent outcome. However, major research on these kind of relationships has yet to be undertaken.

In summary, the above three approaches, and prospectively other interdisciplinary approaches to the subjective career, have further potential. They can help us to more fully examine the subjective career as it engages with both the Internet and globalization. That examination is urgent if our understanding of the subjective career is to keep pace with the pace of change in the knowledge economy. Much work still lies ahead.

CONCLUSION

The emergence of the knowledge economy suggests a range of new challenges for career theory and research. A key challenge is to address the subjective career's increased importance, and the related appropriateness of existing theoretical approaches to subjective career research. Our analysis of six major behavioral science theories, across the disciplines of psychology, social psychology and sociology, has shown that all of these remain relevant. However, their separate uni-disciplinary orientation is of greater concern in a dynamic, knowledge-driven world. Moreover, our review of the work of Weick and his colleagues confirms the importance of an interdisciplinary perspective.

The second part of this chapter turned to examine alternative theoretical approaches. Three illustrative approaches - revised social cognitive theory, intelligent career theory, and the theory of growth and adaptation – all demonstrate a capacity for interdisciplinary application. However, new ideas

about the subjective career also need to respond to new challenges brought about by both the Internet and globalization. The three approaches examined have only begun to be applied to these critical aspects of the knowledge economy. Further research into the contemporary circumstances of the subjective career is vital for our greater understanding, as well as for better supporting the people involved.

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ESSAY 2

CAREER SUCCESS IN A BOUNDARYLESS CAREER WORLD[2]

INTRODUCTION

In this paper we argue for rapprochement between career theory and career success research. On the one hand, career theorists speak increasingly of boundaryless careers, where career opportunities transcend any single employer (Arthur and Rousseau, 1996), and of the personal meaning of career success (Hall, 2002). On the other hand, a number of researchers continue to focus on career success in terms of a person's organizational position, or of attained promotions between positions. This contrast is sharpened by further reports that traditional vehicles for organizational career success, namely hierarchies, have been flattening (Littler et al., 2003), and that external labor markets have gained increasing influence over today's employment landscape (Cappelli, 1999).

There are several reasons why rapprochement is important. First, there are grounds beware fragmentation of underlying theory. As this paper will show, one body of research relies on an argument that objective career success affects subjective career success (e.g., Poole et al., 1993). Another group of papers elevates the role of subjective career success over objective career success (e.g., Aryee et al., 1994). A third group of papers insists that the subjective and objective sides of

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[2] Appeared as:
Arthur, M. B., Khapova, S. N. & Wilderom, C. P. M. (2005). Career success in a boundaryless career world. *Journal of Organizational Behavior*, 26 (2): 177-202.

career success are interdependent (e.g., Seibert et al., 2001b). In each body of research authors have often used cross-sectional designs and relied on what is statistically measurable. This selective emphasis on different phenomena makes it difficult to reconcile the results obtained, and leaves questions about how to develop established career theory.

A second reason for rapprochement concerns the interpretation of career success. Most studies of career success rely on key variables such as number of promotions, salary increases, or scales of career satisfaction (e.g. Seibert et al., 2001b; Turban and Dougherty, 1994). However, career theory suggests a broader range of interpretations, based not only on success within any organization but also on success within other, for example occupational or cultural, contexts. Career success may also be assessed by peer groups either within or outside the individual's present organization, or may be idiosyncratic to the person, not only in terms of personal preferences but also in terms of accommodating work and family or other issues of life-work balance (Clark, 2001; Thompson et al., 1999).

A third reason for rapprochement is that the employment context in which careers evolve is rapidly changing. Contemporary employment contexts call for careers to be more "boundaryless" (Arthur and Rousseau, 1996), to reflect a "new deal" that has the career actor more concerned with independent rather than organizational goals (Cappelli, 1999), and to involve the kind of "metacompetencies" that allow for easier mobility between successive employers (Hall, 2002). There is evidence that people who exhibit boundaryless career behavior report considerably higher levels of career success (e.g., Eby et al., 2003). However, much career success research, including some recent research, neglects boundaryless career theory. This calls into question the further utility of the results obtained.

In this paper we examine the degree of divergence between contemporary career theory and career success research. The argument is divided into three parts. The first part reviews key attributes of career theory that are relevant to career success. The second part looks at the extent to which these attributes have been included in a sample of studies covering eleven years of published career success research. The third part builds on the contrast between the first two parts, and offers guidelines for rapprochement between career theory and career success research. The guidelines cover a range of issues from the underlying theoretical adequacy of research designs to the incorporation of new challenges associated with a boundaryless career world.

THEORY UNDERLYING CAREER SUCCESS

Career success research draws on career theory, and therefore on the ideas – underlying definitions, concepts, relationships and assumptions – included in career theory. We note below six definitions and five attributes that are especially relevant to career success research. The definitions cover the key terms career, subjective career, objective career and related definitions of career success. The first three attributes concern the duality of the subjective and objective sides of the career, the interdependence between these two sides, and the theoretical adequacy of the research model adopted. From a boundaryless career theory perspective we propose two further attributes related to career success concerned with a) inter-organizational mobility, and b) extra-organizational career support.

DEFINITIONS

An established definition of *career* is the unfolding sequence of a person's work experiences over time (Arthur, Hall and Lawrence, 1989). This definition insists on the relevance of time, rather than adopting any static view of work arrangements. It also avoids any constraining assumptions about where people work or what represents career success. It accommodates a view of career success based on an individual's upward mobility within a single organization, but only as a special case of broader possibilities. These can include upward, horizontal or in some cases downward mobility within recognized organizational, occupational, industrial or national contexts, or mobility between any of these contexts.

Careers can also be described in two fundamentally different ways. On the one hand there are *subjective careers*, reflecting the individual's own sense of his or her career and what it is becoming (Stebbins, 1970). On the other hand there are *objective careers*, reflecting the more or less publicly observable positions, situations and status "that serve as landmarks for gauging a person's movement through the social milieu" (Barley, 1989, p. 49).

Career success is an outcome of a person's career experiences. *Career success* may be defined as the accomplishment of desirable work-related outcomes at any point in a person's work experiences over time. This accommodates the definition of career provided above. It also accommodates two meanings of success suggested by the Oxford English Dictionary (1989) namely "the attainment of an

object according to one's desire," and "the prosperous achievement of something attempted." The first meaning suggests a form of success that is personally (i.e. subjectively) desirable, while the second suggests a form of success - prosperity - that is likely to rely on (largely objective) social comparisons. These alternative meanings suggest that, as with careers, there are two distinct ways of viewing career success.

Subjective career success may be defined as the individual's internal apprehension and evaluation of his or her career, across any dimensions that are important to that individual (Van Maanen, 1977, p. 9). People have different career aspirations, and place different values on such factors as income, employment security, the location of work, status, progression through different jobs, access to learning, the importance of work versus personal and family time and so on. The subjective careers of people in similar social and employment circumstances - such as women, minorities, white males, doctors, secretaries, construction workers - may overlap, but "it would be a mistake… to assume that all members in a particular social category" would share the same subjective career orientations (Bailyn, 1989, p. 482).

In contrast, *objective career success* may be defined as an external perspective that delineates more or less tangible indicators of an individual's career situation. These may involve occupation, family situation, mobility, task attributes, income and job level (Van Maanen, 1977, p. 9). The objective career is publicly accessible, and concerned with social role and official position. Writers who see career success from this perspective view it in structural terms (Wilensky, 1961) and emphasize people's propensity to organize around status differences (Nicholson, 1998). Objective career success reflects shared social understanding rather than distinctive individual understanding.

The above definitions reflect mainstream ideas within contemporary career theory. They provide a point of departure for the various attributes of career theory that we discuss next.

SUBJECTIVE-OBJECTIVE CAREER DUALITY

Career theory not only suggests that there are subjective and objective views of careers, but also proposes an inherent "two-sidedness" of the career concept (Goffman, 1961). This two-sidedness stems from the observation that "there is little reason to assume the [subjective and objective careers] coincide on any dimension," and that the degree of coincidence is a crucial issue for careers

research (Van Maanen, 1977, p. 9). For example, artists who perform "art for art's sake" (Caves, 2000, p. 4) are likely to define success more in terms of the subjective gratification they receive from their work than in terms of objective rewards from the sale of their work. In contrast, salespeople may be likely to define success more in terms of the money they earn rather than in terms of the intrinsic rewards of the work itself. More generally, career success may be expected to involve both subjective and objective aspects (Melamed, 1995).

Subjective-objective career duality has been a traditional concern of those who have studied the tradeoffs between work and family or work and leisure activities. The depiction of "career success, personal failure" (Korman and Korman, 1980) suggests a kind of career actor who pursues objective career success at the cost of subjective ends, such as the gratification from time spent with friends or family. Various approaches to the balance between work and family or work and leisure activities grapple with a similar tradeoff between the objective career expectations of employing organizations and the subjective career preferences of the individual worker (Rapoport et al., 2002).

This is not to suggest that work only involves the objective career and non-work only the subjective career. It is to note that observing career success through either a purely objective lens or a purely subjective lens offers a limited picture. The depth of the career success construct can be better seen from looking through both lenses at the same time.

INTERDEPENDENCE BETWEEN THE SUBJECTIVE AND OBJECTIVE SIDES

Not only are there both subjective and objective sides to the career, but these two sides are seen to be persistently *interdependent*. This reflects an important tenet behind Everett Hughes' (1958) tutelage of Chicago School scholars that the concept of career could be broadly employed to explore the interdependence of individual roles and identities, on the one hand, and institutional positions and expectations, on the other hand. As Barley (1989) has emphasized, focusing on only one side of any career violates "the integrity of Hughes's original conception" that the two sides were inseparable. Only through conceiving both sides could the researcher grasp the social processes that lie behind careers, and behind career success. A classical example involves the adaptation of inner-city schoolteachers to relatively disadvantaged situations. Instead of seeing themselves as unsuccessful because of the low-status schools in which they were employed, the teachers found subjective

career success by seeing their work as socially useful, and in turn found objective career success through "positions of influence and prestige in the informal colleague structure" (Becker, 1952, p. 474).

An interdependent perspective sees individuals "are not mere puppets responding to the firm tug of social strings" (Van Maanen, 1977, p. 18). Rather, they are continually interpreting and re-interpreting the work experiences and career success they have had. Objective career experience as both a scientist and a manager may generate a feeling of career success in one role but not the other. This may lead the individual to seek further career success in the same role (for example, as a scientist) but to forgo any further pursuit of career success in the other role (to continue the example, as a manager). More generally, the career success a person has experienced will influence further "enactment" of that career in search of future success (Weick, 1966).

Finally, interdependence occurs over time. People experience objective reality, create understandings about what constitutes career success, and then individually act on those understandings, regardless of their predictive accuracy. For example Lawrence (1984, 1996) reports on how organizational "age norms" – shared understandings among peers about the usual ages at which people get promoted to different job levels – unfold. The process whereby a person a) joins an organization, b) socializes with peers, c) participates in developing a shared understanding about age norms, d) internalizes that shared understanding in the subjective career, and e) experiences the eventual objective career experience of either receiving a promotion or not is largely a sequential one. Steps in this sequence, or in the sequence of events through which Chicago schoolteachers come to settle for what they have, or in the way people incrementally enact their careers based on past experience, can only be observed over time.

THEORETICAL ADEQUACY

The duality and interdependence of subjective and objective career success described above offer a substantial theoretical platform for further research. However, as Bacharach (1989) notes, underlying theory must be both logically and empirically adequate. Regarding logical adequacy, which concerns us here, the previous discussion calls for (a) inclusion of both the objective and subjective sides of career success and (b) specification of the nature of the relationship between these two sides of career success.

It is straightforward to observe whether any research endeavor includes both the objective and subjective sides of career success, but it is more complicated to assess the adequacy of the relationship between the two sides. A popular approach in the literature has been to rely on cross-sectional designs, and within them on the analysis of correlation (Bray and Howard, 1980; Judge and Bretz, 1994). However, this kind of analysis neglects the role of time, and the interdependence between the subjective and objective careers expected to occur over time. Correlation analysis can be useful for certain kinds of inquiry, but to derive conclusions from cross-sectional research about relationships that unfold over time is clearly risky. Even the most sophisticated statistical techniques "cannot rectify for lack of theory, for poor logic or for inadequate research designs" (Bozionelos, 2003).

Beyond the relationship between objective and subjective career success, career theory also raises questions about other outcome variables. For example, in one research project we witnessed "employment opportunities" were included as a third dependent variable, distinct from both objective and subjective career success. Yet, it is reasonable to expect that employment opportunities will influence career outcomes, as will other contextual variables such as government policy and a person's social situation. It is also reasonable to expect that these contextual variables will influence both the subjective career (if, for example, employment opportunities exist in the eye of the career actor) and the objective career (if, for example, actual employment opportunities exist in the outside world). It is therefore difficult to envision employment opportunities, or any other work-related variables, as independent of either subjective career success or objective career success.

INTER-ORGANIZATIONAL MOBILITY

We turn now to two attributes of boundaryless career theory that have a particular significance in the study of career success. The first one, inter-organizational mobility, concerns the fundamental shift in the psychological contract at work. This shift undermines any assumption that an organization will be able to provide lifetime employment, and brings on a new deal where "both parties know that the [employment] relationship is unlikely to last forever" (Cappelli, 1999, p. 3). Our focus here is on the *opportunity* for inter-organizational mobility rather than explicit changes of employer. This is consistent with views of boundaryless careers as involving "opportunities that go beyond any single employer (DeFillippi and

Arthur, 1996, p. 116) and reflecting greater "independence from, rather than dependence on, traditional organizational career arrangements" (Arthur and Rousseau, 1996, p. 6). A person may take advantage of an opportunity to move without physically moving, for example by leveraging highly marketable skills to re-negotiate his or her contract with the current employer.

A related phenomenon is the reshaping of organizations into flatter, less hierarchical structures better suited for adaptation to a changing world (e.g., Littler et al., 2003), which may also turn people's attention to other employment opportunities. Accordingly, boundaryless career theory suggests that indicators of objective career success may be emerging as less significant to career actors than indicators of subjective career success. The latter may involve such things as experienced increases in competence, affirmations from respected others and opportunities for new learning (Weick, 1996). In these situations, the overall significance of the subjective career is elevated (Arthur, Inkson and Pringle, 1999; Hall, 2002). So, in turn, is the importance of alternative employment opportunities that the subjective career is likely to consider.

The increasing unpredictability of employment and career futures is likely to bring about an even more dynamic relationship between subjective and objective career success. Greater fluctuation in objective career circumstances will call for more frequent responses from the subjective career. These responses will not necessarily result in inter-organizational mobility, but they are likely to lead to more frequent consideration of opportunities that may involve such mobility.

EXTRA-ORGANIZATIONAL SUPPORT

People develop their careers and seek career success by orienting themselves to certain relevant peer groups or work-related communities. These provide a natural vehicle for individuals to identify with, and find shared meaning through, overlapping work experiences (Van Maanen and Barley, 1984). Such groups support people in their work roles, and help them make sense of what kind of career success they have attained (Van Maanen, 1980). Moreover, this sense-making need not refer to any advancement through formal positions. Through the eyes of comparable or knowledgeable peers, individual careers may seen as "careers of achievement" in terms of the skills and behavior, rather than seen as "careers of advancement" in terms of a person's hierarchical progression (Zabusky and Barley, 1996).

In the past, career support that contributes to career success has often been assumed to stem primarily from co-workers, mentors and bosses within the same organization (e.g., Ibarra, 1993). From a boundaryless career perspective this is unsatisfactory, since it suggests people go unprepared for the career mobility they are likely to experience. Some encouragement for the boundaryless career perspective comes from the work on communities of practice - communities that develop around overlapping work interests or activities. For instance, Brown and Duguid (1991, p. 49) see those communities frequently "crossing the restrictive boundaries of the organization to incorporate people from outside." Also, Wenger (1998, p. 6) suggests that "at home, at work, at school, in our hobbies - we belong to several communities of practice at any given time." Community-centered career support can be variously found through shared occupational, industry, alumni, family, ideological or project-related attachments (Arthur and Parker, 2002). Recent work on mentoring relationships suggests those relationships can extend beyond the protégé's place of work, for example when the mentor is a member of the same ethnic or social group (Thomas and Higgins, 1996) or a respected professional in the protégé's adopted field (Higgins and Kram, 2001).

Greater inter-organizational mobility and greater extra-organizational support may both be seen as part of an overall "weakening" of employer organizations' influence over individual careers. It has been suggested that such weakening is likely to continue in contemporary employment practice as rigid, bureaucratic organizations give way to more flexible, adaptive forms (Weick, 1996). If so, we may expect a greater degree of interdependence of subjective and objective career success over time, as career patterns become more unpredictable.

The lessons from our review of career theory may now be summarized. Careers unfold over time, and career success has both subjective and objective career components. The duality and interdependence of subjective career success and objective career success make each relevant to the other, and likely to influence the other over time. From a boundaryless career perspective, the increased prospects for both inter-organizational mobility and extra-organizational career support need to be accommodated within career research designs, and both variables are likely to affect the relationship over time between objective and subjective career success. These lessons provide a template against which to consider the assumptions used within empirical career success research. We turn to that research in the next section of this paper.

EMPIRICAL RESEARCH ON CAREER SUCCESS

How does existing research into career success measure up against the definitions and theoretical attributes previously described? In order to pursue this question we searched a range of established journals for articles concerned with career success over the period 1992-2002. We also searched for additional terms related to career success to provide a fuller picture of the research undertaken. The additional terms were career outcomes (e.g., Campion et al., 1994), career advancement (e.g., Burlew, 1992), career satisfaction (e.g., Nicholson, 1993) and managerial advancement (e.g., Tharenou, 2001).

Our search led to a set of 80 research articles representative of published work within a group of major, empirically-oriented social science journals. The journals covered were Academy of Management Journal, Administrative Science Quarterly, Career Development Quarterly, Human Relations, Journal of Applied Psychology, Journal of Career Development, Journal of Management, Journal of Management Studies, Journal of Occupational and Organizational Psychology, Journal of Organizational Behavior, Journal of Social Psychology, Journal of Vocational Behavior, Organization Science, Organization Studies and Personnel Psychology. A subset of 68 articles was selected as having direct relevance to our task. The 12 articles left out of the original sample were either theoretical articles or research articles concerned with various sub-dimensions of career outcomes (e.g., organizational attachment or work-family conflict), but not with career success itself as an outcome. In the paragraphs below, we examine the theoretical assumptions made by these articles, and how they compare with the career theory we have already reviewed. Summary data from the articles are provided in Table 3.

Table 3. Empirical Research on Career Success and Related Terms in Management and Other Social Science Journals[1] (1992-2002)

N	Journal	Author(s) (year)	Criteria	Objective Career Factors	Subjective Career Factors	Duality Conceptualized	Duality Operationalized	Interdependence Conceptualized	Interdependence Operationalized	Theoretical Adequacy	Career Mobility	Extra-org. Support Concept./Operational.
1.	AMJ	Martins et al. (2002)	Career Outcomes; Career Satisfaction	Financial outcomes, career advancement, autonomy, power	Career satisfaction, advancement satisfaction	Yes	Yes	O->S	O->S	Yes	No	Yes/Yes
2.	AMJ	Tharenou (2001)	Managerial Advancement	Salary, position type, span of control, managerial promotions, years supervising others, less time without promotion	-	Yes	No	S<->O†[2]	S<->O	Yes	No	Yes/No
3.	AMJ	Seibert et al. (2001)	Career Success	Promotions, salary	Career satisfaction	Yes	Yes	S<->O	S<->O	Yes	Yes	Yes/Yes
4.	AMJ	Judiesch & Lyness (1999)	Career Success	Hierarchical level, salary, promotion, % salary increase, performance rating	-	No	No	No	No	Yes	No	No
5.	AMJ	Campion et al. (1994)	Career Outcomes	Career progression outcomes: promotion rate & salary growth	Career management outcomes, knowledge & skill outcomes (both perceptual)	Yes	Yes	O->S	O->S	Yes	No	No
6.	AMJ	Tharenou et al. (1994)	Managerial Advancement	Level in managerial hierarchy, salary,	-	No	No	No	No	Yes	No	Yes/Yes

				number of subordinates								
7.	AMJ	Turban & Dougherty (1994)	Career Success	Salary, promotions	Perceived career success	Yes	Yes	S<->O	S<->O	Yes	Yes	No
8.	AMJ	Schneer & Reitman (1993)	Career Path	Income, family structure	Career satisfaction	Yes	Yes	O->S	O->S	Yes	No	No
9.	ASQ	O'Reilly III & Chatman (1994)	Early Career Success	Selection success, number of job offers, current salary, salary increment, & number of promotions	-	Yes	No	S->O	S->O	Yes	Yes	No
10.	CDQ	Harris et al. (2001)	Career Outcomes	Congruence, tenure	Job satisfaction, social support	Yes	Yes	S<->O	S<->O	Yes	No	No
11.	CDQ	Burlew & Johnson (1992)	Career Advancement	-	Barriers in career, peers support, opportunities for personal growth	No	No	O->S†	O->S	Yes	No	No
12.	HR	Konrad & Cannings (1997)	Managerial Advancement	Hierarchical level, number of promotions	-	No	No	No	No	Yes	No	No
13.	HR	Friedman et al.(1998)	Career Optimism	-	Employees' perceptions of their career progress	No	No	No	No	Yes	No	No
14.	HR	Tremblay et al. (1995)	Career Plateau	Number of years in the current job	Perceived career plateau	Yes	Yes	O->S	O->S	Yes	No	No
15.	HR	Aryee et al. (1994)	Subjective Career Success	-	Career satisfaction, financial success, hierarchical success	Yes	No	O->S†	O->S	Yes	No	No
16.	HR	Nicholson (1993)	Career Satisfaction	Extrinsic career satisfaction	Intrinsic career satisfaction, future prospects satisfaction	Yes	Yes	O->S	O->S	Yes	No	No
17.	JAP	Cable & DeRue (2002)	Career Outcomes	Pay raise	Career satisfaction, job satisfaction, occupational	No	Yes	S<->O	S<->O	Yes	No	No

					commitment							
18.	JAP	Jansen & Stoop (2001)	Career Success	Average salary growth	-	No	No	O->S†	O->S	Yes	No	No
19.	JAP	Van Scotter et al. (2000)	Career Outcomes	Rank, medals, promotability ratings, rewards	-	No	No	O->S†	O->S	Yes	No	No
20.	JAP	Lyness & Thompson (2000)	Career Success	Level, base salary, bonus, stock options	-	No	No	O->S†	O->S	Yes	No	No
21.	JAP	Ragins & Cotton (1999)	Career Outcomes	Promotion rate, compensation	-	No	No	S<->O†	S<->O	Yes	No	No
22.	JAP	Seibert et al. (1999)	Career Success	Promotions, salary	Career Satisfaction	Yes	Yes	S->O	S->O	Yes	Yes	No
23.	JAP	Judge et al. (1999)	Career Outcomes	Salary, job level, plateauing, job performance	Organizational commitment, job satisfaction	Yes	Yes	S<->O	S<->O	Yes	No	No
24.	JAP	Lyness & Thompson (1997)	Work outcomes	Organizational stature, compensation, developmental opportunities	Satisfaction with career opportunities, satisfaction with compensation	No	Yes	O->S	O->S	Yes	Yes	No
25.	JAP	Dreher & Cox (1996)	Career Outcomes	Total annual compensation	-	No	No	S<->O†	S<->O	Yes	Yes	No
26.	JAP	Chao et al. (1994)	Career Effectiveness	Personal income	Career involvement, identity resolution, adaptability, job satisfaction	No	Yes	O->S	O->S	Yes	No	No
27.	JAP	Stroh et al. (1992)	Career Advancement	Salary progression, promotion, geographic mobility	-	No	No	O->S†	O->S	Yes	Yes	No
28.	JCD	Murphy & Ensher (2001)	Perceived Career Success	-	Perceived career success, job satisfaction	No	No	No	No	Yes	Yes	No
29.	JCD	Blake-Beard (1999)	Career Success	Compensation, promotion rate	Compensation satisfaction,	Yes	Yes	S<->O	S<->O	Yes	Yes	No

					satisfaction with career progress							
30.	JCD	Lee & Nolan (1998)	Career Advancement	Status, resources	Emotion, self-concept	Yes	Yes	S<->O	S<->O	Yes	No	No
31.	JM	Kirchmeyer (1998)	Career Success	Income, level	Perceived career success	Yes	Yes	S<->O	S<->O	Yes	No	Yes/Yes
32.	JM	Judge & Bretz (1994)	Career Success	Salary, job level, number of promotions	Job satisfaction, life satisfaction	Yes	Yes	S<->O	S->O	Yes	No	No
33.	JMS	Aryee et al. (1996)	Career Success	Salary, number of promotions	Career satisfaction	Yes	Yes	S<->O	S<->O	Yes	Yes	Yes/No
34.	JOOP	Melamed (1996)	Career Success	Managerial grade; Gross annual salary & managerial level	-	Yes	No	O->S†	O->S	Yes	Yes	No
35.	JOOP	Poole et al. (1993)	Perceived Career Success	Senior school attainment, college/university attainment, current professional status, income	Curiosity, school subjects interest, intrinsic occupational interests, work satisfaction, perceived contributors to career success	Yes	Yes	S<->O	S<->O	No	No	No
36.	JOB	Higgins & Thomas (2001)	Career Outcomes	Organizational retention, promotion to partner	Work satisfaction, intentions to remain	Yes	Yes	S<->O	S<->O	Yes	Yes	Yes/Yes
37.	JOB	Spell & Blum (2000)	Career Advancement	-	Perceptual upward mobility, perceptual movement to management	No	No	O->S†	O->S	Yes	Yes	No
38.	JOB	Tharenou (1999)	Managerial Career Advancement	Managerial level, salary, total managerial	-	No	No	No	No	Yes	Yes	No

				promotions								
39.	JOB	Wayne et al. (1999)	Career Success	Salary progression	Career satisfaction, supervisor's subjective assessment of the employee's promotability	Yes	Yes	O->S	O->S	Yes	No	No
40.	JOB	Schneer & Reitman (1994)	Career Path	Current income, employment status, employment gaps	Career satisfaction, perceived discrimination and perceived boss appreciation	Yes	Yes	O->S	O->S	Yes	No	No
41.	JOB	Aryee & Debrah (1993)	Career Planning	-	Career satisfaction, self-esteem at work, career commitment	No	No	No	No	Yes	Yes	No
42.	JSP	Peluchette & Jeanquart (2000)	Career Success	Research productivity	Work role, interpersonal, financial, hierarchical, life success	Yes	Yes	S<->O	S<->O	Yes	No	Yes/Yes
43.	JSP	Orpen (1998)	Career Success	Salary growth, promotions	-	No	No	S->O†	S->O	Yes	No	No
44.	JSP	Orpen (1995)	Career Success	Promotions, salary growth	-	No	No	S<->O†	S<->O	Yes	No	No
45.	JSP	Chi-Ching (1992)	Career Success	Mobility in relation to age, salary	Satisfaction with career development	Yes	Yes	O->S	O->S	Yes	No	No
46.	JVB	Johnson & Stokes (2002)	Career Outcomes	Stability of occupational classification	Job involvement, career commitment	No	No	S->O†	S->O	No	Yes	No
47.	JVB	Wiese et al. (2002)	Subjective Career Success	-	Subjective success in the work domain, job-satisfaction.	Yes	No	O->S†	O->S	Yes	Yes	No
48.	JVB	De Fruyt (2002)	Intrinsic Career	-	Job satisfaction, skill	No	No	O->S†	O->S	Yes	No	No

			Outcomes		development, work involvement, perceived stress							
49.	JVB	Wallace (2001)	Career and Emotional Outcomes	Earnings	Perceived promotional opportunities, procedural justice, sense of social integration with fellow coworkers, career satisfaction, intent to stay in the profession, met expectations, work-nonwork conflict	Yes	Yes	S<->O	S<->O	Yes	No	No
50.	JVB	Seibert & Kraimer (2001)	Career Success	Promotions and salary	Career satisfaction	Yes	Yes	S->O	S->O	Yes	Yes	No
51.	JVB	Boudreau et al. (2001)	Career Success	Remuneration, ascendancy, CEO proximity, employability	Job satisfaction, life satisfaction, career satisfaction	Yes	Yes	S->O	S->O	Yes	Yes	No
52.	JVB	Brown et al. (2000)	Career Decision-making Self-efficacy	Objective measure of ego-identity status, athletic identity measurement	Career locus of control	Yes	Yes	S->O	S->O	Yes	No	No
53.	JVB	Dreher & Chargois (1998)	Career Outcome	Total annual compensation	-	Yes	No	S->O†	S->O	Yes	No	No
54.	JVB	Hurley & Sonnenfeld (1998)	Managerial Career Attainment	Manager's career level	-	No	No	No	No	Yes	No	No
55.	JVB	Schneer & Reitman (1997)	Career Success	Income, management level	Career satisfaction	Yes	Yes	O->S	O->S	Yes	No	No
56.	JVB	Chao (1997)	Career	Income	Career planning &	Yes	Yes	S<->O	S<->O	Yes	No	No

			Outcomes		career involvement, organizational socialization							
57.	JVB	Murrell et al. (1996)	Career Outcomes	Salary, promotions	Job satisfaction, organizational commitment	Yes	Yes	O->S	O->S	Yes	Yes	No
58.	JVB	Aryee & Luk (1996)	Career Satisfaction	Family circumstances, employment circumstances	Career satisfaction	Yes	Yes	O->S	O->S	Yes	No	No
59.	JVB	Melamed (1995)	Career Success	Relative salary, managerial level	-	Yes	No	S->O†	O->S	Yes	Yes	Yes/No
60.	JVB	Schneer & Reitman (1995)	Career Path	Income, work hours, management level	Career satisfaction	Yes	Yes	S<->O	S<->O	No	No	No
61.	JVB	Gianakos (1995)	Perceived Importance of Job Outcomes	-	Perceived importance of job outcomes	No	No	S->O†	S->O	Yes	No	No
62.	JVB	Peluchette (1993)	Subjective Career Success	-	Work role, interpersonal, financial, hierarchical and life success	Yes	No	O->S†	O->S	Yes	No	Yes/Yes
63.	OSc	Taylor et al. (1996)	Past Career Success	Number of organizational levels between manager and CEO	-	Yes	No	S<->O†	S<->O	Yes	No	No
64.	OSt	Whitely & Coetsier (1993)	Early Career Outcomes	Number of promotions, current total compensation	Career satisfaction, general work satisfaction	Yes	Yes	S<->O	S<->O	Yes	Yes	No
65.	PP	Boudreau et al. (2001)	Career Outcomes	Compensation	Job satisfaction	Yes	Yes	S->O	S->O	Yes	No	No
66.	PP	Seibert et al. (2001)	Career Success	Career progression	Career satisfaction	Yes	Yes	S->O	S->O	Yes	Yes	No

				(self-reported)								
67.	PP	Judge et al. (1999)	Career Success	Annual pretax income (self-reported), occupational status (self-reported).	Job satisfaction	Yes	Yes	S->O	S->O	Yes	No	No
68.	PP	Judge et al. (1995)	Career Success	Compensation, number of promotions	Job satisfaction, career satisfaction	Yes	Yes	O->S	O->S	Yes	Yes	No

DEFINITIONS

Most articles sampled use a definition of career success consistent with that suggested in Section 1.1, that is of "desirable work-related outcomes" at a given point in a person's unfolding career. Fifty three articles (or 78%) refer to the subjective career, for example as a construct that "exists only in people's minds" (Aryee et al., 1994, pg. 488), and of these 49 articles (72%) operationalize the subjective career in their research. In contrast, 61 articles (90%) refer to the objective career, reflecting success through what Barley (1989, pg. 48) has called "advancement along a hierarchy of power or prestige," and of these 58 articles (85%) operationalize the objective career in their research.

Ten articles (15%) focus only on subjective career success, while 19 articles (28%) focus only on objective career success. A few articles suggest overlapping meanings of subjective career success and objective career success, for example when people were asked to offer a subjective career assessment of whether they were "on schedule" in their objective career progression (e.g., Kirchmeyer, 1998).

SUBJECTIVE-OBJECTIVE CAREER DUALITY

Consistent with the above, 39 of the 68 articles (57 %) include either an explicit or implicit reference to the duality of the subjective and objective careers underlying career success. For example, one definition of career success cited by several authors is that of Judge, Cable, Boudreau and Bretz (1995) which refers to "psychological and work-related outcomes", and where the further elaboration of these psychological and work-related outcomes closely parallels subjective versus objective career distinctions.

The remaining 29 articles (43%) are principally concerned with one career success criterion, such as managerial career attainment (Hurley and Sonnenfeld, 1998), advancement (Tharenou, 1994, 1999), perceived career success (Murphy and Ensher, 2001) or subjective career success (Aryee et al., 1994). In doing so 13% acknowledged the existence of the other side of career success. For instance, the measurement of subjective career success by Aryee et al. (1994) includes measures of subjectively reported financial and hierarchical (that is, of objective) career success. Nevertheless, more than 35% of sampled articles did not address, and more than 44% did not operationalize, both subjective and objective career success.

Turning to the interdependence between the two sides of the career, 25 articles (37%) consider a one-way influence of objective career success onto subjective career success. This is exemplified by articles suggesting career success is affected by income and job level (e.g., Schneer and Reitman, 1997) or by experienced autonomy and power (e.g., Martins et al., 2002). The assumption here is that individuals interpret their success on the basis of their objective accomplishments (Judge, Cable, Boudreau and Bretz, 1995). In contrast, 13 articles (or 19%) consider the influence of subjective variables onto objective career success. These articles are mainly psychologically-grounded studies, where the authors hypothesize relationships between personality (e.g., Boudreau et al., 2001), behaviors (e.g., Johnson and Stokes, 2002) or attitudes (e.g., Orpen, 1998) and objective career success.

Twenty-two articles (32%) acknowledge the two-way interdependence between subjective and objective career success, and nearly all of them engage with this interdependence in their empirical work. However, 16 of the 22 articles are on the relationship between mentoring or social support and objective career success, which may be interpreted as a special case of interdependence between subjective and objective career success. The argument goes that the mentor or supporter offers the protégé a new insight into the objective career, for example about the importance of making oneself visible to key decision-makers. In turn, the mentor's or supporter's insight is absorbed by the protégé into his or her subjective career (e.g., Higgins and Thomas, 2001).

Only six of the above 22 articles (9% overall) explore two-way interdependence in a theoretically more explicit way, such as in exploring employee turnover as a subjective career response to the objective career reality of the length of time employed on the same job (Taylor et al., 1996). The remaining eight articles (12%) neither conceptualize nor operationalize any interdependence between the two sides of career success. These articles conceive of career success solely in terms of objective managerial advancement (e.g., Hurley and Sonnenfeld, 1998) or in terms of subjective career perception (e.g., Friedman et al., 1998). Thus, they overlook both the presence of another side to career success and the interdependence between the two sides, despite the contrary assertions of career theory.

As noted above, 57% of all research articles we analyzed address both subjective and objective career success. However, more than half these articles focus only on a one-way relationship (56%) rather than a two-way relationship (44%). In turn, 12 of the 22 articles that examine a two-way relationship involve cross-sectional designs. The preponderance of cross-sectional designs suggests a risk of relying too heavily on the concept of correlation, and in the process losing sight of more subtle, longitudinal effects. To recall an earlier example, these effects may involve a) accepting a job offer in an inner-city Chicago school, b) finding subjective career satisfaction in helping city children, c) becoming more involved with the school systems that serve those children, d) gaining objective career recognition by those systems, and e) having that recognition further influence a feeling of subjective career success. To observe these kind of interdependencies seems vital to a fuller understanding of career success.

Only 10 of 22 articles make any attempt to examine how subjective career success can influence objective career success, or vice-versa, over time. Six examine effects of mentoring relationships on career outcomes (e.g., Ragins and Cotton, 1999), three examine the impact of personal criteria on career success (e.g., Cable and DeRue, 2002), and one examines the effect of lengthening job tenure on managers' organizational commitment and turnover (Taylor et al., 1996). The larger picture of subjective and objective career interdependence over time needs to be built from diverse studies, where any one study can only be expected to focus on one particular aspect of this interdependence. However, there are evident gaps in the research coverage, for example about the influence of direct work experience or personal networks on subsequent career success.

We found only two other articles (3%) not covered by the above discussion where theoretical adequacy was an issue. An article by Johnson and Stokes (2002) operationalizes both subjective and objective career outcomes, but offers no hypothesized relationship between the two. An article by Poole et al. (1993) explores "subjective criteria" for career success through variables such as curiosity and interests in particular school subjects (that is, the authors explore personal characteristics that may predict success, rather than examining any subjective career outcome).

INTER-ORGANIZATIONAL MOBILITY

As discussed in the section 1.5, inter-organizational mobility concerns not only actual career movement between employers, but also the opportunities for such movement. Out of 68 articles reviewed, only 18 examine in any way the links between inter-organizational mobility and career success. Six articles explicitly operationalize inter-organizational mobility (e.g., Stroh et al., 1992), four articles operationalize the idea of self-responsible career management (e.g., Murphy and Ensher, 2001), and eight articles operationalize promotions in a way that accommodates past inter-organizational mobility (e.g., Seibert et al., 2001). Six further articles make reference to changing employment practices but do not examine any effects of those practices (e.g., Johnson and Stokes, 2002).

We made the further point in Section 1.5 that the greater significance of inter-organizational mobility elevated the importance of subjective career success and predicted a more dynamic relationship between subjective career success and objective career success. However, the evidence presented in Sections 2.3 and 2.4 indicates that this relationship has been lightly studied. The overall evidence is that a basic attribute of boundaryless career theory, that is to envision inter-organizational mobility in some way, has frequently been neglected in career success research.

EXTRA-ORGANIZATIONAL SUPPORT

Fifty-eight (85%) of the total of 68 articles reviewed make no reference to the relevance of career support that stems from outside the employing organization. Among these, 11 (16% of all articles) examine career success within a single organization. Of the remaining articles, 21 (31%) focus on a general sample of managers or workers, and 26 (38%) examine the career success of MBAs. There is a long history of MBA alumni, in particular, networking with and finding support from others having the same alma mater. It therefore seems likely that some of these subjects would have found a degree of career support through their fellow alumni. Yet the research did not examine the existence of any such support.

The remaining 10 articles (15%) make some reference to extra-organizational support. However, only seven of them (10 %) explicitly study this increasingly relevant phenomenon. Among these seven articles, two focus on implications and influences of extra-organizational sources of mentorship on career success (Peluchette and Jeanquart, 2000; Peluchette, 1993). One article

studies community ties as a moderator of the relationship between work-family conflict and career success (Martins et al., 2002). Another three articles examine the effects of both intra- and extra-organizational developmental relationships and/or social support on career success (e.g., Seibert et al., 2001). The remaining article (Tharenou et al., 1994) studies career encouragement, from colleagues and senior staff members both within and outside the subjects' organizations, as an influence on objective career success. Like inter-organizational mobility, extra-organizational career support has not yet been widely studied.

Let us summarize the evidence from this eleven-year review of career success research. Fifty-seven percent of the articles summarized in Table 1 acknowledge the duality of objective and subjective career success. However, only one-third of the set of articles indicate any two-way interdependence between subjective and objective career success. Most of these articles do not study interdependence over time in any direct way. Turning to more recent boundaryless career theory, few articles conceptualize, and even fewer operationalize, the likely influence of either inter-organizational mobility or extra-organizational support on career success, although the more recent articles in our sample are more likely to do so. Examination of both of these attributes appears crucial if we are to better understand how career success unfolds in a dynamic and uncertain world.

GUIDELINES FOR FUTURE RESEARCH

The preceding evidence attests that career theory and career success research are considerably out of step with one another. How can they be reunited? What rapprochement between theory and research can be attained, and with what advantages? In this section we offer a series of guidelines intended to satisfy both theoretical and empirical positions, thereby encouraging more progress across future studies. Our guidelines cover the adequacy of future research designs, missing dimensions of career success, the broadening of assumptions about relevant peer groups, examining career-relevant ability, recognizing the developing, subjectively-driven person, and expanding the career success agenda.

ADEQUACY OF RESEARCH DESIGNS

A straightforward response to the above evidence is to assure the theoretical or "logical" adequacy (Bacharach, 1989) of future research designs into career success. That is, researchers can take care that their new designs incorporate relevant definitions of both objective and subjective career success, and better acknowledge the two-way, time-dependent interaction between the two sides of career success. Researchers can also arrange that boundaryless career theory's concerns about inter-organizational mobility and extra-organizational support are accommodated in the work that gets done. Paying attention to these contributions from career theory can, we submit, sharpen the career success research models, questions and methodologies that are applied in future empirical studies.

There are two further forms of adequacy that complement logical adequacy (Bacharach, 1989): empirical and predictive accuracy. Empirical adequacy is concerned with whether a theory is subject to falsification, predictive adequacy is concerned with whether a theory can be used to anticipate future outcomes. There is no space here to dig deeper into these additional forms of adequacy. However, one interpretation of the evidence from the career success literature sampled is that concern about empirical and predictive adequacy may frequently have led to compromises in underlying theoretical adequacy. Greater consideration of the links among these forms of adequacy at the outset, and in particular greater consideration of underlying theory, can be helpful in future research.

MISSING DIMENSIONS?

Various social-psychological approaches suggest the possibility of multiple dimensions of the subjective career, and in turn of subjective career success. Career actors frequently describe managing different aspects of their careers, such as maintaining a satisfactory income, finding time for their families, and pursuing new learning in a way that suggests they are thinking in terms of multiple dimensions of career success (Arthur, Inkson and Pringle, 1999). Research into "career anchors" suggests that people often align themselves with one of eight primary career anchors – concerned, for example, with security, autonomy, or lifestyle – and also selectively fulfill "several of the needs that underlie different anchors" (Schein, 1996). Recent evidence suggests there are various co-existing but interdependent dimensions of the subjective career (Parker and Arthur, 2002; Eby

et al., 2003). However, the career satisfaction scales of Greenhaus et al. (1990) (which has been used in 14 career success studies in our sample) and DeVanna (1984) (used in the studies of Schneer and Reitman, 1994, 1995) are one-dimensional scales. This one-dimensional view is supported by reports of high "alpha" values for the correlations among the items included in each scale.

We wonder why this situation prevails? Did the developers of the scales drop further items that did not correlate with the ones they retained? Did they conform to an established orthodoxy for developing uni-dimensional scales? Were aspects of subjective career success only important to some subjects neglected in the search for aspects that were more broadly applicable? Do sharp, and some would say divisive, distinctions across the social and behavioral sciences affect our ability to envision a greater range of career success dimensions (e.g., Greller and Simpson, 1999)? Whatever the cause of this situation, it demands closer examination. Subjective careers and subjective career success seem too important to be prematurely constrained to any one-dimensional interpretation.

BROADENING PEER GROUP ASSUMPTIONS

With some of the research instruments used, there was a clear constraint in the peer groups relevant to career success that were considered. That is, respondents were invited to "Describe your satisfaction with your career development to date with the company" (Nicholson, 1993) or asked "Compared to your co-workers how successful is your career?" (Turban and Dougherty, 1994). These questions clearly guide the respondent to answer in terms only of organizational peers. However, other instruments were more open-ended. The Greenhaus et al. (1990) five item scale carries no such restrictive language, but on the other hand does not include any item about peer comparison. Kirchmeyer's (1998) modification of Turban and Dougherty's scale refers to "peers" rather than "co-workers," thereby providing an opportunity for respondents to compare themselves against peers in other employment settings if they wish.

Even if career success scales themselves are independent of the employment setting, there remains a question about the process of data collection. In some cases, this was done with the sponsorship of a particular organization. As a result, the researcher or a company spokesperson could have offered covering remarks encouraging respondents to think about their career circumstances inside, rather than outside, the organization where the study took place. Or, questions about careers could have been included immediately after questions about, for

example, organizational climate, again encouraging respondents to limit their responses to their immediate organizational setting.

Our earlier discussion on extra-organizational support suggests that relevant career success comparison groups may often lie outside the boundaries of the research participant's present employer. A challenge for future research is therefore to encourage that these groups are included in, rather than excluded from, the respondent's frame of reference.

EXAMINING ABILITY

A number of articles in our sample refer to career success only in terms of advancement. One set examines advancement in purely objective career terms, concerned with the attainment of rank (e.g., Tharenou, 2001) or of salary (e.g., Dreher and Chargois, 1998). Another set of articles refers to the person's subjective career success through the interpretation of his or her objective progression, for example in Kirchmeyer's (1998) and Turban and Dougherty's (1994) examination of whether individuals reported they were "on schedule" in their career advancement. These studies relate to three underlying ideas in the careers literature. One is the contrast Rosenbaum (1984, 1989) draws between "attained status" and "ability status," where the former refers to the position a person has already gained, the latter to a person's potential for gaining future positions. Another idea is Lawrence's (1984, 1990) distinction between whether people felt they were "on time" or "off time" in their career progress compared to relevant others. A third idea is that of peer-group defined "careers of achievement" (Zabusky and Barley, 1996) discussed earlier, and concerned with peer-assessed occupational expertise rather than formal position.

If career success is to be measured relative to one's peer group, and if it is accepted that this peer group will commonly go beyond the employing organization, then the above three ideas converge. The challenge is to measure ability (Rosenbaum, 1984, 1989), or the similar notion of occupational achievement (Zabusky and Barley, 1996) by reference to the career actor's peer group, and without regard for employment status or boundaries. This may be done from both objective career and subjective career perspectives. The former involves gathering outside assessments about the individual's ability, for example as Boudreau et al. (2001) did in gathering such assessments from external search firms. The latter involves gathering an individual's own assessment, which may be related, for

example, to a group of graduates from the same academic program (e.g., Eby et al., 2003).

THE DEVELOPING, SUBJECTIVELY-DRIVEN PERSON

Earlier, we argued that in an unpredictable world responsibility for both career development and the interpretation of career success rests with the individual. This in turn heightens the significance of the subjective career. It is the individual who interprets and acts upon career stimuli. It is individuals' perceptions of how they [and their career progress] are viewed that "have the strongest impact on individuals' self-concepts" which in turn influence future career behavior (Tice and Wallace, 2003). This suggests that the criteria for subjective career success ought to be the person's own, and - to reconnect with the quotation used earlier - "it would be a mistake" to make any other assumption (Bailyn, 1989, p. 482). (It would also be a mistake to place false trust in subjective career data on its own. As one of our colleagues has pointed out, people with the least skills may be the most prone to exaggerate them!)

However, not one of the 68 articles we examined involved listening directly to the research subjects, or even allowing them to elaborate on their own criteria for career success. While the purpose and design of any one paper may be worthy, the overall body of empirical work on career success seems to be clearly lacking in such qualitative input. How can subjective careers be adequately researched when the subjective interpretations of the career actors themselves – apart from their non-verbal responses to a limited set of questionnaire items – are not allowed expression? The answer lies in more qualitative research into the subjective criteria that people bring to their own career situations.

EXPANDING THE BOUNDARYLESS CAREER AGENDA

We have argued that career success research can do more to accommodate boundaryless careers as well as organizational careers. Recent work, published after the period from which our sample of journal articles was drawn, offers some interesting progress. Of particular note is an article by Eby et al. (2003) focusing on predictors of career success in the era of the boundaryless career. The authors report powerful evidence that people's investments in "boundaryless" (that is, employer-independent) career competencies lead to greater self-reported career success across a large, diverse sample of university alumni. Related evidence

comes from Nabi's (2003) observations of the effects of "career enhancing strategies" on career success. An interesting contrast about objective versus subjective career success comes from a study of women with children, who are reported to experience more inter-organizational mobility and lower objective career success, but who still report high subjective career success (Valcour and Tolbert, 2003). A further contrast relates to social background, and the opportunities or constraints that background brings to boundaryless career experiences (Pang, 2003).

A new line of research addresses ethical dilemmas associated with career success. One issue concerns the "ethical lapses" of high-level managers engaging in legally-questionable practices, and of the aspirations for career success that lay behind those practices (Callanan, 2003). Another issue concerns people whose organizational careers have been adversely affected by senior management practices, and whose further career success may be seen as an ethical responsibility of the organization involved, or society at large, or both (Van Buren III, 2003). These issues point to a convergence between the broad arena of boundaryless career research and the more particular arena of career success research. For example, how much do a company's seniority privileges or pension vesting arrangements discourage volitional career mobility? Or, seen from the other side, how much do hiring company practices favor internal rather than external job candidates? Or, putting both sides together, how much does the rhetoric of a free society cloud a lack of support for the self-directed career actor? As we see career success through a wider boundaryless career lens, these and further questions invite our attention.

In summary, we suggest new guidelines for career success research covering the adequacy of research designs, the exploration of further dimensions of career success, the broadening of peer-group comparisons, focusing on individual ability rather than position, paying attention to the developing subjectively-driven person, and seeing new connections between boundaryless career theory and career success research.

CONCLUSION

This paper began by describing a series of underlying ideas in contemporary career theory, and proceeded to examine the extent to which that theory was applied in a

broad sample of empirical career success research. Career success research makes inconsistent use of contemporary career theory, particularly regarding the interdependence of subjective and objective career success and how this interdependence unfolds over time. Boundaryless career attributes of inter-organizational career mobility and extra-organizational career support have often been neglected.

The last part of this paper proposes guidelines for rapprochement between career theory and career success research. This rapprochement can enhance our understanding of contemporary careers, and in turn enhance future employment practice. From a subjective career perspective, this seems worth doing. From an objective career perspective, it seems too important to neglect. Career success is an important topic for researchers, working people and host societies alike. Greater understanding of the topic can stem from greater understanding between the theorists and researchers concerned with it.

ACKNOWLEDGEMENTS

We are deeply indebted to Denise Rousseau, Barbara Lawrence, Martin Evans, Hugh Gunz, Peter Heslin and two anonymous reviewers for their helpful feedback on earlier versions of this article.

NOTES

[1] Key to journals

AMJ	Academy of Management Journal
ASQ	Administrative Science Quarterly
CDQ	Career Development Quarterly
HR	Human Relations
JAP	Journal of Applied Psychology
JCD	Journal of Career Development
JM	Journal of Management
JMS	Journal of Management Studies
JOOP	Journal of Occupational and Organizational

	Psychology
JOB	Journal of Organizational Behavior
JSP	Journal of Social Psychology
JVB	Journal of Vocational Behavior
OSc	Organization Science
OSt	Organization Studies
PP	Personnel Psychology

[2] Items marked † are those cited in sections 2.3 and 3.5 of the paper, where the underlying research approach can be interpreted as implying a relationship between the subjective and objective careers.

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ESSAY 3

PROFESSIONAL IDENTITY AS THE KEY TO IT PROFESSIONALS' BOUNDARYLESS CAREER INTENTIONS [3]

INTRODUCTION

The edited book *The Boundaryless Career* (Arthur and Rousseau, 1996) introduced a range of new approaches to the conception and study of career behavior in the knowledge economy. Several contributors argued that increasing globalization, competition, and rapidly changing technologies require individuals to adopt new career behaviors. Individuals were called, for example, to think independently of their employers (e.g., Miles and Snow, 1996); take the responsibility for their own careers (Weick, 1996); develop transferable skills (DeFillippi and Arthur, 1996); and build their own social structures to support their increasingly flexible careers (Thomas and Higgins, 1996). In sum, individuals were called to perceive their careers as boundaryless (that is independent from any single employer), and to be open to changes in both life and work.

However, recent career studies have noted that people are still looking for secure and stable employment (e.g., Handel, 2005). Even IT professionals, who in Arthur and Rousseau's (1996) book were variously cited as well-suited to a boundaryless career (e.g., Saxenian, 1996), have been reported to seek more secure job positions (Hsu, Jiang, Klein and Tang, 2003). InformationWeek's eighth annual

[3] Corresponding reference:
Khapova, S. N., Arthur, M. B., Wilderom, C. P. M. & Svensson, J. S. Professional identity as the key to IT professionals' boundaryless career intentions. Journal article under review.

U.S. IT salary survey showed that job stability was becoming an important, to many the most important, aspect of employment (Smith, 2005). The perception that there were fewer jobs available in IT (Smith, 2004) made IT professionals stay on the job longer than they did years ago. In 2000, IT managers in the US had, on average, spent three years at their companies. By 2005, that average had doubled to six years. Over the same five year period, US IT staffers tenure grew from an average of three years to an average of five years (see Smith, 2005 for more details). A recent study of IT professionals' perceptions of employer's obligations also suggested that IT professionals expected long-term job-security (King and Bu, 2005).

Unfortunately, the contemporary economy can offer little employment stability. The popularity of temporary employment (e.g., Engellandt and Riphahn, 2005), project-based arrangements (Marsden, 2004), and persistence of organizational restructuring (Balogun and Johnson, 2004), emphasize the temporality of peoples' employment in organizations. Recent research shows that not everyone is experiencing frequent employment changes and temporary employment adequately. For example, less privileged workers, women and manual male workers experience temporary employment negatively (Artazcoz, Benach, Borrell and Cortes, 2005; Virtanen, Kivimaki, Joensuu, Virtanen, Elovainio and Vahtera, 2005). To help individuals and career practitioners/counselors to deal with the current economic requirements, more research that focuses on understanding cognitions behind the boundaryless career behavior is needed.

In this study we examine some of the cognitions behind career intentions of contemporary professionals. We use Ajzen's (1991) theory of planned behavior to hypothesize cognitions around boundaryless career intentions. We use a sample of 225 professionals from the IT sector to test our hypotheses. The IT sector provides a prominent example of changing employment circumstances over the recent years. Before the year 2000, IT had been the fastest growing economic sector. However, the demand for IT services fell after the successful conversion of systems for the year 2000 (Weber, 2004). An economic recession in March of 2001 and the events of September 11, 2001 have contributed to employment uncertainty in the field (Der Derian, 2003). The sector has also witnessed the transfer of IT jobs from Western European countries and the USA to Asian countries on an unprecedented scale (Engardio, Bernstein and Kripalani, 2003; Weber, 2004).

We hypothesize that three beliefs - career self-efficacy, perceived social pressure and career attitude – will predict IT professional's boundaryless career intention. We also hypothesize that IT professional's professional identity will

moderate the relationships between professionals' beliefs and their boundaryless career intention. Our findings help to understand the key cognitions behind career intentions of IT professionals as well as to extend conceptualization of the boundaryless career concept.

THEORETICAL FRAMEWORK

RESEARCH MODEL

According to Arthur and Rousseau (1996) boundaryless careers can be described as the sequences of job opportunities that go beyond the boundaries of single employment settings. The authors suggest that for individuals, to pursue a boundaryless career can involve any one or more of the following attributes:

1. moving across the boundaries of separate employers;
2. drawing validation and marketability from outside the present employer;
3. being sustained by external networks or information;
4. breaking traditional organizational assumptions about hierarchy and career advancement;
5. rejecting existing career opportunities for personal or family reasons; and
6. interpreting their own careers, and perceiving a boundaryless future regardless of structural constrains.

A common factor across the above is a willingness to interpret and act on one's own career situation, rather than rely on organizational or institutional assumptions about career progression. People pursuing boundaryless careers seek not to rely on any one job or sequence of jobs. They are open for new combinations of work experiences and jobs, even if they may not change their current jobs after all. Following Ajzen's (1991) suggestion that human actions can be predicted by behavioral intention, we focus on examining cognitions behind people's *boundaryless career intention*, that is their intention to pursue a boundaryless career as suggested by the above mentioned attributes.

The underlying motivation behind IT professional's boundaryless career intention may vary. Some may seek a change from a technical to a managerial position (Mael, Waldman and Mulqueen, 2001; Reich and Kaarst-Brown, 1999), others a change of specialization (Mignonac and Herrbach, 2003). There are also IT professionals who may be looking for new responsibilities or personal fulfillment (Smith, 2004), as well as for a higher salary, intellectual challenge, creativity, or a

sense of contribution and pride in their accomplishments (Pawlowski et al., 2005). Seeking out the constant learning needed to keep up with and master relevant new skills (Reich and Kaarst-Brown, 1999) is another driver of IT professionals' boundaryless career intentions. Those in less fortunate situations may have seen the transfer of their position offshore (Weber, 2004) or the liquidation of an employer that failed to succeed in a highly competitive IT environment (Saxenian, 1996; Reich and Kaarst-Brown, 1999). Others may be suffering from work overload and exhaustion (Moore, 2000).

Consistent with Ajzen's (1991) theory, we propose that boundaryless career intentions will be influenced by three career-specific phenomena: career self-efficacy, career attitude and perceived social pressure, as shown in Figure 1. We also propose that IT professionals' sense of professional identity will moderate relationships between the three beliefs and IT professionals' boundaryless career intentions. As explained further, in an ideal world all of these factors affirm the existence of career opportunities beyond the present employer and therefore raise boundaryless career intentions.

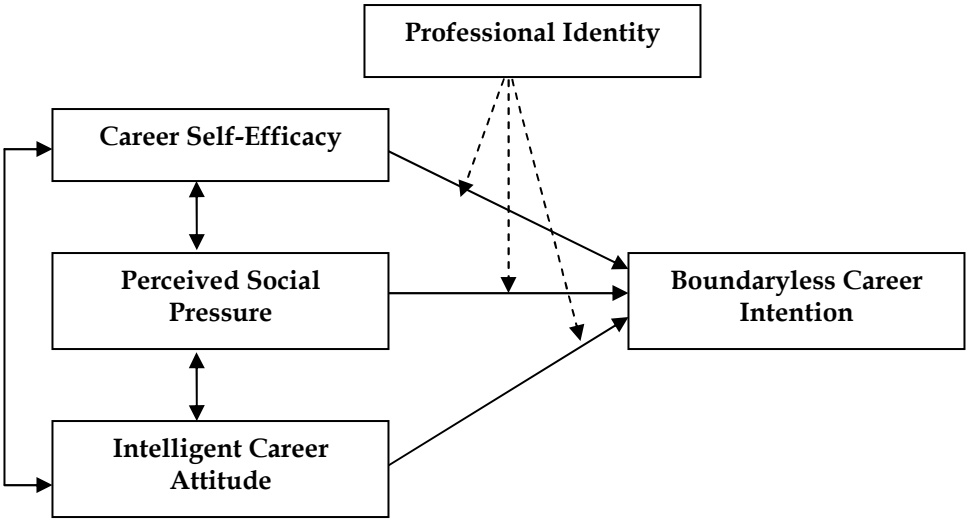

Figure 1. Moderated Relationships of Three Kinds of Beliefs and Boundaryless Career Intention

BOUNDARYLESS CAREER INTENTION

Boundaryless career intention is the dependent variable in our study. We conceptualize boundaryless career intention as an inclination or an interest of IT professionals to pursue a boundaryless career: a motivation to change, to seek better job and career opportunities involving new positions, organizations, industries and professions. According to Ajzen (2005), the intention is assumed to capture the motivational factors that influence a behavior; it is an indication of the actual interest to pursue a boundaryless career. The predictive validity of behavioral intentions has been already substantiated by various studies (Bandura, 1997). When appropriately measured, behavioral intentions account for an appreciable proportion of variance in actual behavior (correlation of .53 as reported in Ajzen (2005)). Given a sufficient degree of actual control over their behavior, individuals are expected to carry out their intentions when the opportunity arises (Ajzen, 2005), making boundaryless career intention a reliable variable in predicting the actual boundaryless career behavior.

PREDICTORS OF BOUNDARYLESS CAREER INTENTION

As indicated above, we hypothesize that boundaryless career intention will be predicted by three career specific constructs: career self-efficacy, career attitude and perceived social pressure. We now turn to explaining how each of these beliefs relates to boundaryless career intention.

Career Self-Efficacy

Career self-efficacy is an umbrella term for self-efficacy beliefs with respect to possible career-related domains of behavior that could be postulated (Betz and Hackett, 2006). It refers to "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391). A recent review of the progress on career related self-efficacy theory and research shows that researchers often confuse self-efficacy with a trait concept (Betz and Hackett, 2006). It is therefore emphasized that self-efficacy is a cognitive appraisal or judgment of future performance capabilities, and must be measured against some type of behavior (Bandura, 2005; Lent, 2005). Literature suggests that self-efficacy beliefs may stem from a number of sources (Lent and Brown, 2006). Among career relevant sources may be (a) personal performance

accomplishments, (b) vicarious learning, (c) social persuasion, and (d) physiological and affective states (Bandura, 1997). Ajzen's (1991) theory of planned behavior suggests that self-efficacy beliefs along with perceived social pressure and the attitude toward the behavior predicts behavioral intention. Self-efficacy is also suggested to predict behavior directly. For boundaryless career intentions of IT professionals this would mean, that those with strong beliefs in their capability to find a new job or career opportunity will be more likely to exhibit stronger interest in or intentions toward a boundaryless career.

Hypothesis 1. IT professionals' career self-efficacy will be positively related to their boundaryless career intention.

Perceived Social Pressure

Perceived behavioral expectations of important referent individuals or groups such as the person's family, friends, teachers, and co-workers will also contribute to one's interest or intention of boundaryless career behavior. According to Ajzen (1988) such expectations are accommodated in one's perception of the "social pressure to perform or not to perform the behavior under consideration" (p. 117). Combined with the person's motivation to comply with different referents, perceived social pressure determines the viewpoint regarding the behavior (Ajzen, 2002). Therefore, the more individuals are under social pressure to pursue boundaryless careers, the more likely they will be interested in or have stronger intentions toward such a career.

Hypothesis 2. IT professionals' perceived social pressure to pursue a boundaryless career will be positively related to their boundaryless career intention.

"Intelligent Career" Attitude

We further suggest that professionals' career attitudes will contribute to the prediction of IT professionals' boundaryless career intentions. The most relevant career attitude toward boundaryless career behavior is the one described in the recent literature as the "intelligent career" (Arthur, Claman and DeFillippi, 1995). The "intelligent career" attitude involves people's motivation to be in charge of their own development and career (Maurer et al., 2003), the accumulation of employment-flexible know-how (DeFillippi and Arthur, 1996), and the development of extra-organizational networks (Higgins and Kram, 2001). People with a career attitude reflecting these characteristics may be more likely to seek a

boundaryless career than those who prefer a single organization, with the organization's specific learning opportunities and intra-organizational contacts.

Hypothesis 3. IT professionals' "intelligent career" attitudes will be positively related to their boundaryless career intentions.

Moreover, we anticipate that the three beliefs will positively influence one another. In the context of boundaryless careers, an intelligent career attitude will influence the degree of perceived social pressure; social pressure will influence career self-efficacy; and career self-efficacy will influence intelligent career attitude. This is in line with Ajzen's (1991) suggestion that three beliefs - perceived behavioral control, perceived social pressure and an attitude toward the behavior - are independent, yet interdependent in predicting behavioral intention.

Hypothesis 4. (a) Career self-efficacy, (b) career attitude and (c) perceived social pressure will be positively related to each other.

MODERATING VARIABLE

We further propose that using Ajzen's theory of planned behavior, as it is, may be insufficient for studying contemporary (boundaryless) career intentions and behaviors. Although, the theory assumes that an individual is a decision-maker, it does not view him/her as an independent 'agent' (Bandura, 2001). The boundaryless career theory, in turn, assumes that individuals are independent agents of their own development (Weick, 1996). They cultivate their career competencies (i.e., knowing-why, knowing-how and knowing-whom) independently from any employer or employing firm (DeFillippi and Arthur, 1996). In their development, individuals focus on the inside and probe personal values to fashion their identity (Mirvis and Hall 1996). Identity developed "around a person's skills and competencies" as Mirvis and Hall (1996, p. 249) suggest is an important "metaskill" needed to experience psychological success over the course of a career" (p. 246). It is also a key to shaping an individual's boundaryless career (Arthur and Rousseau, 1996).

We therefore suggest that IT professionals' sense of professional identity will moderate the relationships between three beliefs and boundaryless career intention. We define professional identity after Ibarra (1999, p. 764-765) as "the relatively stable and enduring constellation of attributes, beliefs, values, motives,

and experiences in terms of which people define themselves in a professional role." We view professional identity as a cognition that determines the strength of the relationships between three believes - career self-efficacy, perceived social pressure, intelligent career attitude - and boundaryless career intention. This is in line with the notion of different authors (i.e., Keller, Briggs, and Gysbers, 1982; Lusting and Strauser, 2002; Sampson, Peterson, Lenz, Reardon, and Saunders, 1996) that career decision-making processes, as well as career behaviors are cognitively mediated. For example, having a strong sense of professional identity may positively influence the relationships between career self-efficacy, intelligent career attitude and boundaryless career intention. However, having a strong sense of professional identity may negatively influence the relationship between perceived social pressure and behavioral intention, if we take into account a recent finding of Dobrow and Higgins (2005) that density of developmental network and clarity of professional identity are negatively correlated. We therefore propose that the relationship between (a) career self-efficacy, and (b) intelligent career attitude and boundaryless career intention will be stronger for IT professionals with a clearer sense of professional identity, whereas the relationship between perceived social pressure and boundaryless career intention of the same professionals will be weaker.

Hypothesis 5a. Professional identity will moderate the relationship between (a) career self-efficacy, and (b) career attitude and boundaryless career intention, in such a way that the relationship will be stronger for IT professionals with a clearer sense of professional identity.

Hypothesis 5b. Professional identity will moderate the relationship between perceived social pressure and boundaryless career intention, in such a way that the relationship will be weaker for IT professionals with a clearer sense of professional identity.

METHODOLOGY

RESEARCH DESIGN

To test our hypotheses we used a sample of IT professionals from a number of European countries who subscribed to a European-wide web-based career support system. The purpose of the web-based career support system, to support IT

professionals in finding better-suited career opportunities, was particularly attractive to us. We expected that those who came to use the system would be especially engaged in searching for better career opportunities and ready for a change.

A questionnaire was included as the page to follow the professionals' initial registration with the web-based career support system. This ensured answering the questionnaire, as this was the only way to get to the career service itself. Note that we collected data from the users only at this introductory stage, so that no effects from the system services, such as personality and skills feedbacks, would affect respondents' answers. The questionnaires were offered in English to the Dutch and Italian system-users, in Greek to the Greek users, and in German to the Austrian users. In order to ensure that the translated questionnaires were identical, they were first back translated. The data was collected at the beginning of 2004.

SAMPLE

Almost two hundred and fifty IT professionals from various European countries answered our questionnaire. Most of the respondents were from Austria, Greece, Italy, and the Netherlands. The registration was voluntary and based on an individual's desire to register for the career support system. The hosting company of the web-based career support permitted us to post our questionnaire on the web-site for only three months. Therefore, the recruiting of the research participants was stopped after this period: after the receipt of 250 questionnaires.

Inspection of the data on a number of control items and removal of bad records created by disinterested participants left us with a sample of 225 participants. Of these, 41 were from Austria, 128 from Greece, 19 from Italy, 14 from the Netherlands, and 23 in total from various other European countries. Among 225 participants 129 were employed and 96 were unemployed. In total 189 participants had been employed in IT before and 36 were aspiring IT professionals. The degree of IT work experience varied between 0 and 38 years.

MEASUREMENTS

The dependent variable *boundaryless career intention* was measured with a seven-item five-point Likert-type scale (1 = "Disagree completely" to 5 = "Agree completely") that measured interest in a new career opportunity. An example item

is "I plan to make a career change and I am choosing where to go next." The Cronbach's alpha of this seven-item scale was .82.

Three variables were used to measure the beliefs hypothesized to predict boundaryless career intention: career self-efficacy, perceived social pressure and intelligent career attitude.

Career self-efficacy was measured with a nine-item five-point Likert-type scale (1 = "Disagree completely" to 5 = "Agree completely"). Items from the original career self-efficacy scale of Higgins (2002) were adapted to construct a scale that would measure self-efficacy beliefs with respect to independent or boundaryless career behavior. Example items are "I believe that I can do what I need to do in order to make my career successful" and "I am capable of developing my personal career network." The Cronbach's alpha for this nine-item scale was .92.

Perceived social pressure was measured as the product of two scales expressly developed for this study. The first scale, career-change approval, measures the extent to which a career change is supported by important others: family members, friends, co-workers, boss(es) and other persons important to the respondent. The question was: "To what extent do the following "important others" approve of your career change?" The second scale, compliance-to-approval, measures the extent to which the respondent is ready to comply with this approval. The question was: "To what extent are you ready to comply with this (dis-) approval of…" In both scales respondents were asked to grade each of the following: family members, friends, co-workers, boss(-es), one or more other persons important to you, along a five-point Likert-type scale. The Cronbach's alphas were .91 and .92 respectively.

"Intelligent" career attitude was measured with a 13-item newly developed scale. These items were developed in accordance with the conceptual framework of the "intelligent career" suggested by Arthur, Claman and DeFillippi (1995). The intelligent career concept assumes that individuals throughout their careers engage in the development of three sets of career competencies or ways of knowing: *knowing-why* (motivation and identity), *knowing-how* (skills and experience), and *knowing-whom* (network and relationships). The five employment principles that distinguish an "intelligent" career orientation from a traditional career, such as (i) discrete exchanges (instead of mutual loyalty contracts), (ii) occupational excellence (instead of a one-employer focus), (iii) organizational empowerment (instead of top-down control), (iv) regional advantage (instead of the fortress firm), and (v) project allegiance (instead of corporate allegiance) have been also

considered. Example items are "Gaining fresh job experiences through changing employers is more important to me than having stable employment" (knowing-why), "I seek skills to increase my chances for future employment rather than skills to help me perform my present job" (knowing-how), and "Building relationships to help my future career is more important to me than serving my current employer" (knowing-whom). All answers were registered on a five point Likert-type scale (answers range from "disagree completely" to "agree completely"). The Cronbach's alpha of the 13-item scale was .84.

The moderating variable *professional identity* was measured with four items from Higgins (2002) (see also Dobrow and Higgins, 2005). The items include, for example, "I know who I am, professionally and in my career." The answers were collected on a five-point Likert scale (1 = "Disagree completely" to 5 = "Agree completely"). The Cronbach's alpha for this scale was .86.

RESULTS

The data set was analyzed using SPSS. All variables were standardized before they were used in the analyses. At the first stage of the analysis we used the Pearson Correlation technique. Table 4 presents means, standard deviations, and Pearson correlation coefficients among all study variables. As the table indicates, each of the predicted variables, such as career self-efficacy, career attitude and perceived social pressure were positively correlated with boundaryless career intention, supporting hypotheses 1, 2 and 3. Additionally, the three independent variables were each significantly correlated with one-another, providing support for hypothesis 4.

Table 4. Means, Standard Deviations, and Pearson Correlation Coefficients among Study Variables (N=225)

Variable	Mean	SD	1	2	3	4	5
1. Career Self-Efficacy	.84	.16	1				
2. Social Pressure	.58	.31	.23*	1			
3. Intelligent Career Attitude	.51	.15	.16*	.29**	1		

4. Boundaryless Career Intention	.66	.22	.28**	.22*	.17*	1	
5. Professional Identity	.63	.26	.35**	.27**	.23**	.35**	1

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Next we used moderated regression to determine whether or not the sense of professional identity influences the relationships hypothesized between the three cognitions and boundaryless career intention. For this purpose we created 3 new product variables to represent the interaction between each of the beliefs and the moderator. In the regression analyses, we entered the moderating variable first, followed by the independent variables and then by the product variables. The results from this regression analysis are shown in Table 5.

Table 5. Moderated Regression of Professional Identity on Boundaryless Career Intention

Variable	B	SE B	β
Professional Identity	.19	.10	.23*
Career Self-Efficacy	.37	.17	.27*
Social Pressure	.00	.00	.11
Career Attitude	.14	.16	.10
Product of Self-Efficacy & Professional Identity	-.96	.75	-.15
Product of Career Attitude & Professional Identity	.20	.57	.04
Product of Social Pressure & Professional Identity	-.00	.00	-.03
$R^2 = .19$			

* $p < .05$

Professional identity together with career self-efficacy was found to be significantly related to boundaryless career intention. However, no moderating effects were found for any of the new product variables.

In order to explore further what this direct relationships suggest we ran hierarchical regression with our three original independent variables (i.e., career self-efficacy, social pressure, and career attitude) and professional identity. Results show that at the first three steps career self-efficacy appears as a significant predictor of boundaryless career intention. However, as soon as professional

identity comes into play in step 4 of the hierarchical regression, professional identity becomes the only significant predictor of boundaryless career intention. Tables 6 summarize the results of these analyses.

Table 6. Results of Hierarchical Regression Analyses for Boundaryless Career Intention

Variable	B	Std. Error	Beta
Step 1			
Constant	.37**	.09	
Career Self-Efficacy	.35**	.10	.28
R^2= .08			
Step 2			
Constant	.29**	.10	
Career Self-Efficacy	.38**	.13	.33
Social Pressure	.00	.00	.13
R^2= .15			
Step 3			
Constant	.26**	.11	
Career Self-Efficacy	.34**	.14	.30
Social Pressure	.00	.00	.12
Intelligent Career Attitude	.12	.16	.09
R^2= .16			
Step 4			
Constant	.19	.11	
Career Self-Efficacy	.24	.14	.21
Social Pressure	.00	.00	.07
Intelligent Career Attitude	.01	.16	.01
Professional Identity	.44*	.22	.26
R^2= .20			

** $p < .01$
* $p < .05$

To explore how much variance professional identity explains, we ran additional analyses, now with professional identity as the only predictor of boundaryless career intention. As Table 7 shows, we found that professional identity explains 12% of the total variance (R^2 = 12).

Table 7. Boundaryless Career Intention Regressed on Professional Identity

Variable	B	Std. Error	Beta
Constant	.30**	.08	
Professional Identity	.67**	.15	.35
R^2= .12			

** $p < .01$

In sum, we found that from our set of four career beliefs – career self-efficacy, social pressure, intelligent career attitude and professional identity (initially hypothesized as moderator) — only professional identity appears as a significant predictor of boundaryless career intentions.

DISCUSSION

This study addressed one side of the increasingly popular discussion that boundaryless careers involve not only physical mobility, but also psychological interpretations of mobility. Boundaryless career intentions of 225 IT professionals from Europe were explored. The data analysis showed that (a) career self-efficacy, social pressure and career attitude were each positively correlated with boundaryless career intention, (b) the three beliefs correlated positively among each other, and (c) although professional identity was hypothesized to moderate the relationship between the three beliefs and boundaryless career intention, it emerged as a significant predictor of boundaryless career intention.

The empirical evidence about the relationship between professional identity and boundaryless career intention makes a fresh contribution to boundaryless career theory and research. First, it contributes to the evolving dialog about the importance of *identity* in shaping a boundaryless career (Baker and Aldrich, 1996; Sargent et al., 2005; Svejenova, 2005). As things become more complicated in the knowledge economy, "work roles are disappearing, those that survive, change; and new work roles are developed – for which there may not be a clear script" (Hirsh, Kidd and Watts, 1998). In these conditions, professional identity serves as proxy for work place identity. To be employer-independent or boundaryless means to detach one's identity from the employing organization (Weick, 1996). It also means to describe oneself as belonging to one's profession,

rather than the organization to which one belongs (DeFillippi and Arthur, 1996). For example, it means to see oneself as a researcher, rather than as belonging to the research institution where one currently works.

Recent literature has already begun to offer more insights on the relationship between professional identity and boundaryless career. For example, Svejenova (2005) established a conceptual parallel between identity and authenticity in careers. She noted that professional identity could become an *anchor* of the boundaryless career concept (Svejenova, 2005). Similarly, Sargent et al. (2005) noted that incorporation of one of the Arthur's et al. (1995) career investments – knowing-why – may help to provide a more realistic depiction of the boundaryless career. In this depiction flexibility and movement would be anchored by one's values or knowledge of "why." Although these literatures stress a possible relationship between professional identity and boundaryless career behavior, more research is needed to understand and examine this relationship. The study reported here provides fresh evidence of a statistically significant relationship between professional identity and boundaryless career intention.

The finding that career self-efficacy and professional identity appeared as significant predictors of boundaryless career intention in the moderated regression invites further discussion for future career theory and research. First, it invites further clarification between these concepts. For example, Svejenova (2005) describes self-efficacy as a component of identity. Other work suggests that the relationship between self-efficacy and identity is interdependent (Sargent et al., 2005; Stryker, 1987). Ibarra (1999) describes professional identity as involving a "constellation of attributes, beliefs, values, motives, and experiences" related to the professional role (p. 764-765). It may be that self-efficacy is one of the beliefs in this constellation. Further conceptualizations of professional identity can address the different components of this concept.

Second, it brings back earlier discussion of whether to integrate all beliefs about a given behavior under a single summation (Miniard & Cohen, 1981). Although Ajzen (e.g., 1991) has objected to such integration, our research shows that professional identity can serve as the overall behavioral disposition for career research. Replication of our research in different contexts and on other samples may offer further insights into this finding.

Finally, it raises an issue of whether Ajzen's (1991) theory of planned behavior is appropriate for studying career behaviors of contemporary professionals. Such behavior is often associated with not so well-planned career moves. Although, the theory of planned behavior has been usefully utilized for

studying career search behavior (Van Hooft, Born, Taris and Van der Flier, 2005) and intra-organizational career change behavior (Eby, 1997). Its applicability for studying self-regulated boundaryless career behavior would still need to be confirmed by future research.

Our conceptualization of the IT professionals' boundaryless career intentions also concurs with recent work by Sullivan and Arthur (in press), emphasizing that not only physical mobility, but also psychological mobility can underlie boundaryless careers. Similarly, boundaryless career intention is close to the concept of readiness used in the career counseling literature (e.g., Sampson et al., 2000), that is "the capability of an individual to make appropriate career choices, taking into account the complexity of family, social, economic, and organizational factors that influence an individual's career development" (Sampson et al., 2000, p. 156). In contemporary economic circumstances, psychological mobility or readiness to move is becoming an increasingly relevant career management concept. It invites more attention not only from career counselors, but also from career researchers who can drive further development of these concepts.

Although, our sample of IT professionals from Europe who subscribed to a web-based career support system was useful for examining our hypotheses, it may also limit the generalizability of our results. Individuals who did not come to use the system, and thus were left out by our study, may have been less concerned with a career change and therefore may have exhibited different beliefs and intentions toward boundaryless career behavior. However, such individuals would also provided less valuable insights into boundaryless career intentions. Future research may usefully compare the psychological mobility of those who are seeking career change in contrast to those who are not.

CONCLUSION

The study reported in this paper focuses on examining cognitions predicting boundaryless career intentions. An examination of 225 IT professionals from Europe shows that although career self-efficacy, social pressure and career attitude are each positively correlated with boundaryless career intention, only professional identity appears to be a significant predictor of boundaryless career intentions.

This finding provides a useful contribution to unfolding career theory and future research directions. First, it contributes to the increasingly central

discussion about the importance of identity in boundaryless careers. Second, it offers empirical support to the relationship between professional identity and boundaryless career intention. Third, it invites further discussion about the necessity to distinguish three beliefs (i.e., career self-efficacy, social pressure and career attitude) in predicting behavioral intention. Finally, it calls for better understanding of how the concepts of self-efficacy and professional identity may be related.

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P A R T II

TECHNOLOGY-ENABLED CAREER SUPPORT

ESSAY 4

COMPUTER-BASED CAREER SUPPORT[4]

Computer-Based Career Support (CBCS) systems are Information and Communication Technology (ICT) applications aimed at assisting individuals in their careers through the provision of online career support services. CBCS systems include a mix of career support services that correspond to four general functions of 'social support.' They include informational, appraisal, instrumental and emotional support. Informational CBCS is provided through information on occupational and career-related topics (Harris-Bowlsbey et al., 1998; Offer and Sampson, 1999). Appraisal support consists of feedback from personality and skills assessments (Barak and Cohen, 2002; Chartrand and Walsh, 2001). Instrumental support includes, for example, e-learning, job vacancies and career-decision making support (Gati et al., 2003). It has also been recently shown that emotional support can be provided through online communication functions such as e-mail, chat and discussion forums (see e.g., Barak, 2003).

CBCS systems can be either (a) intra-organizational, with a restricted access, or (b) publicly available, Internet-based. Intra-organizational CBCS may be offered as an independent career management application for employees or as part of an organization-wide e-HRM system. Public Internet-based career support is often associated with independent online recruiting and career counseling sites. Most of the Internet-based career support services are offered for free or at the cost of basic registration. Although both forms of CBCS are concerned with finding the

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[4] Forthcoming as:
Khapova, S. N. & Wilderom, C. P. M. (2006). Computer-based career support. In J. H. Greenhaus & G. A. Callanan (Eds.), *Encyclopedia of Career Development*. Thousand Oaks, CA: Sage Publications.

best possible person-job fit, the key objective of intra-organizational career support is to maximize individuals' performance. The key objective of Internet-based career support is to improve users' careers.

Integrated CBCS systems are a fairly recent development. Thus far, very few empirical studies have reported on such systems' usage and effects, nor on users' and providers' perspectives. The available studies point to an under-utilization of integrated or all-inclusive career support systems. CBCS, no matter how sophisticated or integrated it is, is often merely used as just another online recruiting service (see e.g., Khapova et al., 2005). The studies that focus on examining single CBCS functions, such as career counseling, career-decision making, recruiting, and so on, however, report quite the opposite results. For example, Coates et al. (2004) report a high popularity and positive reception of a web-based career advisor application for medical students. Gati et al. (2003) and Eveland et al. (1998) demonstrated students' increased career decidedness after the use of an Internet-based interactive career planning system and computer-based career guidance system. Buckley et al. (2003) and Van Rooy et al. (2003) note an increase in the quality of selection outcomes and hiring, as well as of job search process efficiency. Thus, current key questions in regards to the practice and research of the integrated CBCS are: Why does the provision of all-in-one career support not appear to be accepted by its intended users? And, how to re-conceptualize the integrated provision of a CBCS in order to get accepted and used effectively in the future?

Recent literatures on the effective provision of interactive professional services, such as also CBCS, distinguish two approaches. One takes a socio-technical perspective, and the other a social perspective (Koh and Kim, 2004). The socio-technical perspective suggests that career support belongs to a range of professional services that are currently difficult to provide through the web (e.g., Cho and Park, 2002). Services of this group require high customization of highly advanced technologies, which is only emerging. Recent literature notes the importance of gender, age, language, and ethnicity issues in the customization of such services (Barak, 2003). However, much more research is needed in order to identify all critical areas for CBCS customization.

The social perspective, however, is not constrained by technological developments, and offers vast opportunities for new social-science research. For example, studies of online communities suggest that CBCS may be conceptualized as a virtual social structure of relations or a virtual community, rather than a mere source of career-service provision (Andrews, et al., 2002; Butler, 2001). From this

perspective, the studies of CBCS would need to include the design principles of a traditional community. As Kollock (1998) notes, virtual communities succeed not because of flashy graphics, but because they contain a number of requisite elements for a successful community such as: identity persistence, a coherent sense of space, and a sophisticated set of rituals. The incorporation of social network research on the various ways people operate within social networks may also determine who and how will use CBCS effectively.

The social perspective calls for consideration of further study of social career support processes for making CBCS usable and effective. Recent empirical investigation of integrated CBCS systems suggests that the current process of virtual career support is quite different from what is provided by career counselors (Khapova et al., 2005). The current CBCS systems allow selective usage of career support functions, or "cherry-picking," while the process of traditional counseling is more guided and prescribed (Khapova et al., 2005).

Further research on the effectiveness of CBCS will need to question whether a single source of career support, that includes career-counseling services on the one hand and recruiting on the other, does not undermine the trust of users (see e.g., Andrews et al., 2002). If so, that could be a reason for poor usage of a CBCS. The basic idea behind this assumption is that very few users would be willing to expose their career uncertainties to a CBCS if it is part of an online recruiting agency's or an employers' eHRM system, and if it may be a vehicle to new career or job opportunities in the future.

In sum, CBCS is a novel and sprawling phenomenon that, in theory and practice, offers large potential efficiency gains. The efficiency gains (on an individual as well as an organizational level) to be had from a CBCS appear obvious and perhaps, therefore, have not received much serious research attention. In terms of the perceived intrinsic value of the content of the offered support: much more research across both users and those who design and sustain the support will point to new ways of designing more effective and better used systems. Approaching CBCS from multiple and interdisciplinary research perspectives, including both the socio-technical and social perspectives, would help to make it more accepted and effective.

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ESSAY 5

USAGE OF WEB-BASED CAREER SUPPORT[5]

INTRODUCTION

The dynamics of the post-industrial information age challenge workers with employment uncertainty. Fluctuations in the economy are causing periods of labor shortages to be followed by periods of oversupply and vice versa. At the same time, the industrial model of long-term employer-employee relationships is fading (Cappelli, 1999), while rapid changes in technology render existing skills obsolete (Agarwal and Ferratt, 2002). As a result, we witness the emergence of the so-called do-it-yourself career (Trommel, 1997, 1999). Individuals no longer opt for a lifelong commitment or loyalty to a single employer, but take a more independent approach to their own careers (Arthur et al., 1999).

Despite the numerous literatures that point out the emergence of these "new careers," not every aspiring professional is born with the necessary prerequisites for self-career management. Especially, people who are seeking to enter or re-enter a certain professional field may lack the insight, experience and knowledge to make appropriate career decisions. In such circumstances external career support may be required. Traditional forms of career support and career counseling are expensive and often unavailable to the average worker, so that alternative forms of support are desired. As various career scholars and

[5] Forthcoming as:
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practitioners suggest, the Internet can offer such alternatives (Kleiman and Gati, 2004).

On the Internet we already see an explosion of so-called e-recruiting (Kumar, 2003), and also the Internet's training and career-counseling potential has been recognized (Boer, 2001; Clark et al., 2000; Harris-Bowlsbey et al., 1998). Therefore, predictable attempts have been made to develop what we call web-based career support (WBCS). WBCS is career support that is provided via the Internet or an Intranet. WBCS systems may offer, electronically, a combination of key career counseling and support functions, such as:

- appraisal support through personality assessment and skills assessment, including some degree of personalized feedback (Oliver and Zack, 1999; Reile and Harris-Bowlsbey, 2000);
- informational support through advising users on available career paths (Gati and Asher, 2001; Gati et al., 2003);
- instrumental support through web-based recruiting (Kumar, 2003) and (e- or web-based) learning opportunities (Reile and Harris-Bowlsbey, 2000);
- social-emotional support, in terms of on-line forums and self-moderating discussion groups (Gati et al., 2003).

While integrated career-support systems continue to emerge, we address in this chapter the actual use of this type of system. We pursue the following research question:

To what extent do individuals make use of integrated web-based career support when offered to them?

Why is this question important to address? There are widespread literatures on the new demands of post-industrial labor markets (e.g., Trommel, 1997, 1999; Soidre, 2004). A key question in those discussions is to what extent these new demands are indeed recognized by the relevant individual labor market participant. The academic observation that employees need to take responsibility for their careers by no means implies that everyone already recognizes this. Given the strength of industrial institutions, it is likely that many professionals and companies prefer to stick to older ideas, relying on in-company training and traditional, company-oriented career management. Moreover, there is a deep gap between people's recognition of a potential career problem and their own concrete action (Amundson, 2002). It is quite possible that individuals will recognize a change in labor market functioning, but will not show any great change in their career-orienting behaviors.

The actual use of the newly emerging WBCS systems might be further complicated by the complex nature of the career-counseling task. Moreover, the cognitive and emotional intricacies of electronic support in career self-management have not yet been fully explored. Today, many if not most computer-aided guidance systems are designed so that they can be used on a stand-alone basis, often at a distance, without the support of a human counselor (Watts, 2002, p. 144-145). This mode of application, however, will only fit the cognitive capabilities and personal preferences of certain types of individuals. Other individuals may experience technical, affective or cognitive constraints, which may hinder such usage (Savard et al., 2002). They may require additional assistance in operating these complex systems, in selecting the appropriate information, or in initiating interaction with others, such as career counselors. In this respect, most experts advocate the integration of computer-aided guidance into more broadly based guidance services, i.e., services in which the use of such systems is integrated in a context of additional interaction with a human counselor (Barak, 2003). However, the empirical questions of whether and how people use either integrated or stand-alone WBCS remains unanswered.

CHANGE2IT: A WBCS SYSTEM FOR IT PROFESSIONALS

The research reported in this paper concerns a case study of the actual use of a WBCS system within the Information Technology (IT) sector. This case study was (a) conducted in a specially selected field: the field of aspiring IT-professionals, and (b) focused on a specific WBCS system: Change2IT.

In this section, we discuss the specifics of the case selection, after which we present the way in which we examined the usage of this specific case of WBCS.

THE FIELD OF ASPIRING IT PROFESSIONALS

The field of aspiring IT-professionals was selected for this case study. We chose this field and not any other because if there would be one turbulent, professional field where a WBCS ought to succeed, it would be the IT-field. There are several reasons for expecting success of a WBCS system within the IT field:

- Within this relatively new labor market, and especially for those employed by small and medium enterprises, structures for delivering traditional types of career support are weak;
- People aspiring to a career change into a new sector lack knowledge about that sector because of limited access to existing professional networks;
- Aspiring IT-professionals are expected to be more open to the idea of using web-based technology for acquiring personal services than workers in other sectors.

We now provide a brief explanation for each stated reason.

Various scholars and practitioners suggest that the IT sector is very different from other business sectors of the present economy (e.g., Saxenian, 1996). Due to the rapid economic changes and continuous emergence of new technologies, it performs under especially dynamic conditions. New companies and competencies are being constantly formed, while outdated or non-viable ones are closing down. For most of its employees - IT professionals – working for the IT sector offers numerous advantages, such as creative work environments with flexible working hours. However, it also offers numerous challenges as, for instance, frequent inter-firm mobility and career instability (Saxenian, 1996).

Given the predominant small size of IT companies, there are relatively few organizational structures that may provide individuals with opportunities for growth. Most of the learning is offered as part of the job. Professionals are expected to learn as they participate in projects. Moreover, the projects are the only real formal structures through which performance of employees can be quantified or assessed. In these "weak situations" (ambiguous situations with few salient guidelines for action) IT professionals are challenged to take on responsibility not only for their careers, but also for the design of structures and process of the employing organization (Weick, 1996, p. 43).

The circumstances in which IT professionals perform invite them to seek career support outside their employing organizations. Established professionals may seek support within their informal networks, often comprised of former project co-workers, team leaders or bosses, and their peer professionals. However, the characteristics of the IT sector suggest that there is a high possibility that people aspiring to make a career change to the IT sector will experience serious challenges in making career decisions. This is due to their limited knowledge about the sector and their limited access to existing professional networks. In this respect, career support provided through the Internet might be of great help to enter the industry. Finally, given that aspiring IT professionals are generally experienced IT

users, they are likely to seek career assistance through the Internet. Moreover, they are likely to be able to understand systems such as newly developed WBCS-systems.

So, all in all, the field of aspiring IT professionals can be regarded as a field with a relatively strong likelihood to adapt to the usage of a WBCS system.

THE WBCS SYSTEM: CHANGE2IT

Within the selected field, our main case study focuses on one, newly developed WBCS system, named Change2IT. This system was developed with support from the European Commission, and recently introduced throughout Europe. It is aimed to provide integrated career support to individuals who are interested to find a suitable job in the IT sector. Not only are current IT professionals invited to use this system, but so too are people with any other background who intend to start working within the IT sector.

The particular WBCS system we studied combines several approaches to make career support work. It requires from users:

- to post a curriculum vitae (CV-posting), aimed at providing employers with details about the user's employment preferences and relevant work and educational experiences;
- to go through three "Role Diagrammic Approach" (RDA) tests, aimed at measuring values, behavioral tendencies and personal skills of the users. These tests are expected to provide the users (and, if given permission, also potential employers) with information about a user's suitability to a desired job;
- to go through IT-skill tests, aimed to determine the user's level of IT knowledge and skills;
- to participate in on-line community activities, aimed to provide a meeting point for individuals interested to pursue a career in IT.

In addition, Change2IT provides information and links to e-learning courses and information about IT labor market trends. It also matches CV-profiles against labor market demand for any of the IT profiles. Finally, a sophisticated job-matching function of Change2IT continuously and automatically matches CV-profiles of its users with new IT vacancies. All services are publicly accessible and free-of-charge. The system is fully digitalized and aims to provide career support services at any time and at any place. Furthermore, a core assumption behind Change2IT is that it can be used independently from any other support by human

experts or career counselors. In other words, it is considered an example of a 'pure,' integrated WBCS.

RESEARCH DESIGN AND MEASUREMENTS

The specific objectives of the research were:

- to monitor the behavior of users with respect to the whole Change2IT system and its separate functions; and
- to evaluate users' system acceptance.

The research was carried out during a period of 6 months after the system was launched in 2003, in 4 European countries: Austria, Greece, Italy and the Netherlands. The users of the system were the participants in the evaluation. They were recruited through similar, national marketing efforts within each of the participating countries. All individuals interested to find a suitable job in IT were invited to become users of Change2IT. The recruiting was carried out through national and local media outlets; official networks of IT professionals; conferences and other events through which Change2IT was promoted.

The actual usage of Change2IT and its functions was monitored electronically. Moreover, after a 6 months period all users were contacted with an e-questionnaire. The questionnaire was aimed to collect data about users' views on Change2IT. It included questions about users' sense of the system's usefulness; its ease of use; and whether it was worth their time. Users were also queried on their perceived frequency of Change2IT usage; motivation to use the system and self-reported usage of the various Change2IT functions.

Three criteria -- "useful," "easy to use" and "worth the time" -- were used to measure users perceived acceptance of Change2IT. According to various researchers on technology acceptance, the criteria "useful" and "easy to use" provide a reasonable view of users' satisfaction with IT applications (e.g., Davis 1989; Davis et al, 1989; Taylor and Todd, 1995). Perceived usefulness is referred to as the degree to which a person believes that using a particular system may enhance his or her career. This follows from the definition of the word useful: "capable of being used advantageously." Thus, a system high in perceived usefulness is one for which a user believes in the existence of a positive use-performance relationship. In contrast, perceived ease of use refers to the degree to which a person believes that using a particular system would be free of effort. This follows from the definition of "ease": "freedom from difficulty or great effort." All

else being equal, an application perceived to be easier to use than another is more likely to be accepted and used by users. We chose to add a third criterion, regarding whether each separate Change2IT treatment was worth the user's time. With this additional criterion, we wanted to examine whether users perceived value in what was being offered in various system functions, in contrast to the effort of co-production (e.g., filling in their CVs and answering personality tests).

Thus, users perceived acceptance of the system was measured on a five-point scale (1 "not at all" to 5 "to the maximum extent") with three single item questions that measured "usefulness," "ease of use" and "worth the time" of each of the system's functions. An example question is: "To what extent do you perceive the following functions as useful?" The possible answers regarded the various functions within Change2IT (e.g., CV-posting, etc.).

The perceived frequency of the Change2IT usage was measured through one question: "How regularly have you used Change2IT?" The multiple-choice answers included "only once," "sporadically (a few times in total)," "regularly (at least once a week)," "often," and "daily."

The motivation to use Change2IT was measured on a five-point scale (1 "disagree completely" to 5 "agree completely") with the question: "Please indicate what motivated you to use Change2IT." Eight possible answers were provided. An example is "I was interested to find a new job." All items are included in Table 4.

Self-reported usage of the different functions of Change2IT was measured on a five-point scale (1 "not at all" to 5 to "the maximum extent") through: "To what extent have you used the following functions of Change2IT?" In terms of the answers, the 5 core functions of Change2IT were then listed (i.e., CV-posting, RDA personality tests, IT-skills test, E-learning, and Online community).

EMPIRICAL RESULTS

The following analyses were carried out in relation to the evaluation of Change2IT:

- actual usage of the Change2IT functions;[6]
- user satisfaction with Change2IT; and
- the relation between user satisfaction and actual usage of Change2IT.

[6] Please note that IT-skill tests became available on Change2IT only during the second half of the evaluation, thus data about their actual usage are missing in Tables 1 and 2.

In the following sub-section the results of the analyses are reported.

ACTUAL USAGE OF CHANGE2IT

The actual usage of Change2IT was assessed on the 2089 users registered in the Change2IT system. Table 8 provides information about the actual usage of Change2IT by the 2089 registered users. System usage data yielded the following:

- Among the 2089 registered users, only 855 users (or 41%) posted their curriculum vitas (CVs) on the system;
- About 4% of all users took one or more of the RDA personality tests;
- Two hundred seventy-six (or 13%) of all users entered the online community.

Table 8. Actual usage of the Change2IT functions (N=2089)

Usage	CV-posting	RDA Values Test	RDA Behavior Test	RDA Skill Test	Online Community
Used %	41	4	3	1	13
Not Used %	59	96	97	99	87
Total %	100	100	100	100	100

Furthermore, the monitoring of the actual usage revealed information on patterns of usage. A usage pattern is defined as the combination of Change2IT functions selected and used by a single subject. Table 9 presents the results of the patterns of usage for Change2IT. By viewing the data in terms of patterns of usage, additional insights emerge. Table 9 shows that there is no single user of Change2IT that made use of all the system's career support functions. Hence the key logic of the system's developers --that this career support system integrates 5 interdependent career support functions-- has not been fully exploited or accepted by its users.

Table 9. Patterns of Actual Usage of Change2IT Functions (N=2089)

Number of persons	(%)	Change2IT Functions				
		CV-posting	RDA Values Test	RDA Behavior Test	RDA Skills Test	Online Community
1196	57%	-	-	-	-	-
33	2%	-	-	-	-	x
1	0%	-	-	-	x	-
2	0%	-	-	x	-	-
1	0%	-	-	x	-	x
1	0%	-	x	-	-	-
529	25%	x	-	-	-	-
175	8%	x	-	-	-	x
2	0%	x	-	-	x	-
3	0%	x	-	-	x	x
43	2%	x	-	x	-	-
27	1%	x	-	x	-	x
39	2%	x	x	-	-	-
37	2%	x	x	-	-	x
2089	100%	855	77	73	6	276

The information about system logins in Table 10 provides additional insights. From the login data, we see that users varied in terms of intensity of system usage. There were 602 users (or 29%) who registered but never came back. There were 805 persons (or 39%) who logged-in once after registration, most probably to post their CV. Four hundred twenty-two persons appeared to have logged-in to Change2IT 2 or 3 times. Assuming that any logins above 4 are a frequent usage, only 260 persons (or 13%) logged-in between 4 and 33 times during our 6 months observation period. This shows some fledgling interest in more then mere CV posting. Thus, despite the lack of familiarity with career services beyond "e-recruiting," quite a few users had taken the time to try to get familiar with the relatively unknown further functions that Chang2IT was offering.

Table 10. Login Frequencies of Change2IT Users (N=2089)

Login Frequencies	Users %
0	29
1	38
2	14
3	6
4-8	10
9-16	2
17-33	1
Total	100%

In sum, our analysis of the usage patterns of Change2IT led to the following results:

- More than half of the registered persons have not used any of the functionalities (we may call these persons registered non-users);
- About one quarter of the persons who did register, used the CV-posting function only;
- About 12 percent of the users have used a combination of two or three functions;
- None of the registered users have used all functions in combination;
- Only a rather limited number of users (13%) visited the site frequently.

USER SATISFACTION

User evaluation of Change2IT was carried out with our e-questionnaire sent to all users. The legible response consisted of 93 users, which is about 11 % of the total number of persons that made any real use of the system, i.e., at least posted their CVs (N=855).

The respondents indicated various reasons for joining Change2IT (Table 11). Most users were attracted to Change2IT as a source of finding a new job (N=60 out of N=93). Among the 93 users who responded to the post-test questionnaire, there were 34 interested to get personalized career advice, and 23 users were interested to test their IT skills. Twenty-four users were interested to join the online

community and 14 users were somewhat interested to get information about e-learning. Eleven users indicated that their curiosity was the reason for them to join Change2IT. In other words, the majority of Change2IT users (65 %) intended to get a new job.

Table 11. Motivations to Join Change2IT

	Mean	Standard deviation
I was interested to find a new job.*	4.4	1.1
I was interested to post my CV in Change2IT.	4.3	1.0
I was interested to get personalized career advice.	3.8	1.2
I was interested to join the online community.	3.5	1.3
I was interested to test my IT skills.	3.3	1.4
I was interested to get information about e-learning.	2.8	1.5
I was just curious.	2.5	1.5
I was urged to become a user of Change2IT.	2.3	1.5

* Measured on a five-point scale: 1=disagree completely and 5=agree completely

In order to find out the degree of users' acceptance of Change2IT, the users were asked to evaluate the Change2IT offerings in terms of "usefulness", "easiness to use" and "worth the time" (Table 12). In general, we see that the users are most positive about the CV-posting function (with mean scores: 4,5 for "useful," 4,0 for "easy to use," and 4,4 for "worth the time"). The other functions are evaluated more neutrally.

Table 12. Users' Evaluations of Change2IT

	Useful		Easy to use		Worth the time	
	Mean	st. d.	Mean	st. d.	Mean	st. d.
CV-posting*	4.5	0.8	4.0	1.1	4.4	0.9
RDA (overall)	3.4	1.2	3.5	1.3	3.4	1.3
IT-skills test	3.6	1.2	3.4	1.3	3.5	1.3
E-learning	3.3	1.2	3.3	1.3	3.3	1.2
Online community	3.1	1.2	3.3	1.3	3.3	1.2
	3.6	0.8	3.5	1.0	3.6	0.9

Change2IT (as a whole)	

* Measured on a five-point scale: 1=not at all and 5=to the maximum extent

In sum, the results of the user satisfaction analysis are very similar to the results from the actual usage of Change2IT functions; the users of Change2IT were mainly interested in the system as if it were a sole recruiting facility. Most of the users indicated that they came to use Change2IT with the idea of finding a new job. Also, from all Change2IT functions, they graded CV-posting as most useful, easy to use and worth their time.

RELATION BETWEEN SATISFACTION AND USAGE

A final analysis focuses on the relationship between usage of the individual functions and the perception of these functions as presented above: to what extent is the usage related to the perception of usefulness, ease of use and worth the respondent's time? Table 13 offers an interesting result: although the total use of the system is not significantly related to these perceptions, the usage of different functions often is. Especially for the CV-function, there is a clear indication that people will use it more when they judge it as useful and worth their time (R=.36**; .27; and .31** for "useful," "easy to use," and "worth the time" respectively).

Table 13. Self-Reported Usage of the WBCS and its Evaluation

Function	Self reported usage		Correlations between self-reported usage and its evaluation as...		
			Useful	Easy to use	Worth the time
	Mean	st. d.	(R)	(R)	(R)
CV-posting	4.3	1.0	.36**	.27	.31**
RDA tests	2.7	1.6	.20	.18	.18
IT-skill tests	1.9	1.4	.06	.19	.17
E-learning	1.6	1.0	.25*	.26*	.31**
Online community	1.7	1.2	.28*	.28*	.32**
Change2IT (as a whole)	2.5	0.8	.08	.18	.18

* sign level =< 0.05 ** sign level =< .01

In sum, the analysis of the relationship between the usage of the individual functions and the perception of these functions suggests that users made more intensive usage of those functions which they perceive as "useful," "easy to use," and "worth the time."

DISCUSSION

During the first six months, Change2IT has attracted a substantial number of registered participants. Nearly 2100 people have registered as users of the system and in this sense the system may be called a success. More careful observation, however, shows that of the 2089 registered people, only some 43 percent actually used any of the systems functionalities. Moreover, most of these 43 percent were in effect superficial or one-dimensional users, people who only used some of the functionality, especially CV-posting.

When we compare this last observation with the intentions of the designers of the system, there is reason to be dissatisfied. As far as the objective of Change2IT was to provide integrated career support, it has not succeeded, so far. The question is: Why? This question may be answered, in part, by interpreting the results of the evaluative survey. Although the survey only concerns a relatively small proportion of the total user population of Change2IT, it revealed two things:

- limited usage does not seem to be the simple result of lack of interest: a substantial number of users in the survey indicated that they were motivated to improve their careers;
- limited usage does not mean necessarily a general dissatisfaction with the system: the average evaluation of the system is mildly positive and many users seem to enjoy it.

What then may cause the reported limited usage? As we observe the results of our analysis of the relationships between usage and user evaluations, one answer might be: The system allowed its users the opportunity for selective usage.[7]

[7] An interesting aspect of the results reported in this chapter is that they do not stand by themselves. In our earlier pilot evaluation of a similar WBCS system roughly the same results were found. This system, called iCIS Community (i.e., "Integrated e-training and recruiting community for IT professionals and IT SMEs") was designed to assist European IT professionals in their career development, providing them with a similar set of integrated career support

Or to formulate it in another way: it allowed for cherry picking. The users of Change2IT have used those functions within Change2IT that they considered useful, easy to use and worth their time. Other functions, evaluated to be of lesser importance, have generally been skipped. From the perspective of the individual, this is of course a rational and justifiable behavioral choice. People used the system for their personal purposes, and invested their own time and effort to do so. Why invest in a function they do not feel they need?

Having said this, it is interesting to compare this practice of selective usage to practices of personal career support by human career counselors. Could the same explanation be applied in such an interpersonal context? Would a human career counselor accept the idea of this type of selective usage by clients?

The literature on traditional (or non-virtual) career counseling (e.g., Amundson, 2002; Gati, 2001; Flores, 2003) suggests that interaction between a career counselor and a client is usually led by the former. The interaction includes several career counseling stages during which the problem of the client is explored, supported with a rational decision-making process and actual action planning. The change may even be supported through "verbal persuasion" (Amundson, 2002, p. 138). The input of career counselors is complex. First, career counselors are expected to distinguish client's career problems from personal problems (Herr, 1997). Often problems related to depression or selection of an occupation within the social circle of family and friends may influence career indecisiveness (or difficult career decision-making). Second, career counselors are expected to create for their client an environment in which the client will feel welcome and important (Schlossberg, Lynch and Chickering, 1989). The idea is to create an inviting and warm climate, prompting clients to fully tell or express their story. Third, counselors are expected, using their own creativity and imagination, to help clients to imagine new career possibilities (Amundson, 2002).

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functions: CV-posting, RDA personality tests (values, behavior and skills), IT-skill tests as well as free e-learning courses. The pilot ran only for about two months, in the countries: the Netherlands, Portugal, and Italy. The evaluation was set up in a similar manner. Although in the iCIS Community only a total of 45 persons became registered users (and their motivations were slightly different) the results, in terms of usage, were almost identical. With the exception of one person, the complete, integrated iCIS Community career support was not used either, although other functions than mere CV-posting were used somewhat more than in Change2IT.

Of course, a human career counselor does not forcefully engage clients in counseling interventions. However, they lead the clients --through the process of counseling, explaining and persuading-- to take assessments tests, use card sorts and many other counseling techniques.

While we do not expect selective usage in the context of inter-personal career counseling, the context of career counseling through web-based systems seems quite different. Here the freedom to choose is - thus far - much larger. In order to serve latent career-support needs of working individuals, a WBCS system may need a better introduction, stronger marketing or an established reputation before its use will become more commonplace.

Figures 2 and 3 summarize the processes applicable to receiving career support from (a) a traditional or non-virtual career counselor, and (b) a WBCS system. In both cases the processes are presented in a simplified version.

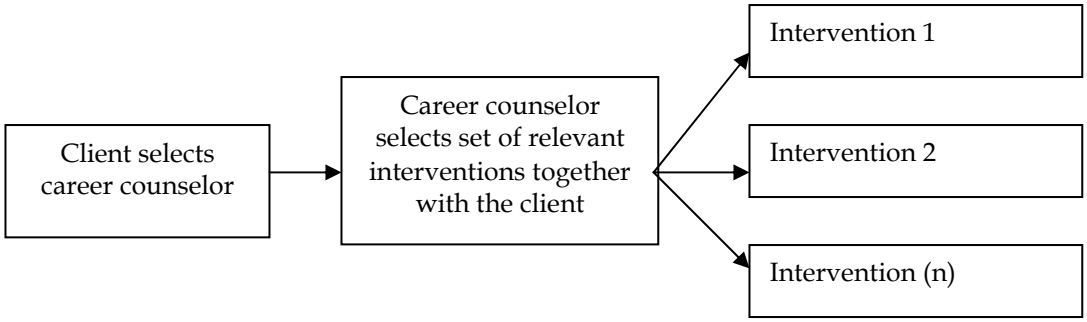

Figure 2. Simplified Process of Traditional Career Counseling

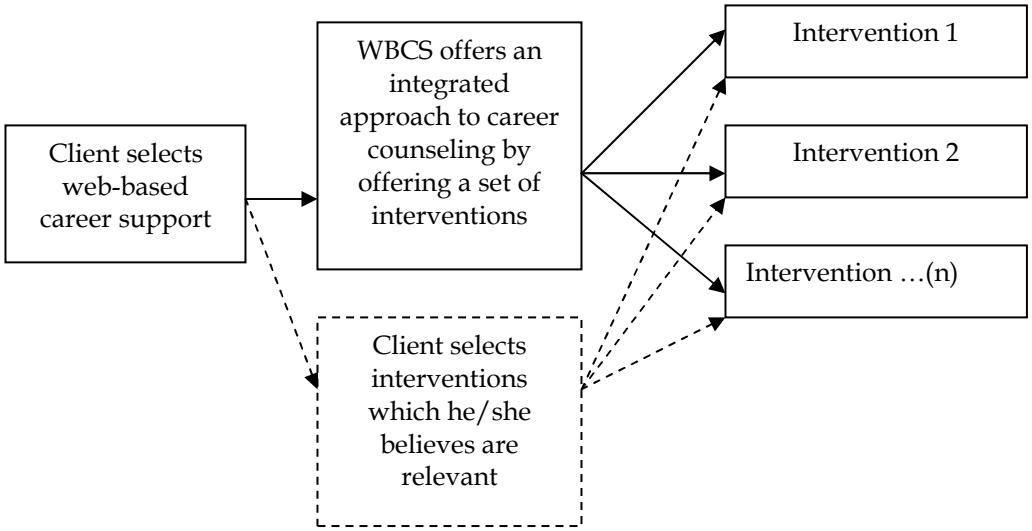

Figure 3. Simplified Process of Web-Based Career Support

Within non-virtual career counseling a client is only responsible to initiate the interaction between a career counselor and him- or her-self. After that initiation it is the responsibility of the career counselor to steer the discussion with a client that would help the client to reveal insights important for his or her future. In this discussion process with the client, the career counselor selects what he or she sees as the most relevant counseling interventions that will assist in further career decision-making.

Within the context of career support provided through the web, the client is responsible for finding a career support system that he of she will be willing to use. A WBCS system, designed to offer a generalized integrated career support approach such as Change2IT, offers a set of what its designers see as effective interventions. However, given that electronic or web-based systems are not capable (or have not yet been designed to be capable) to interactively communicate with and persuade their clients about which interventions would be most appropriate for their career decision-making, the clients independently select interventions that they perceive as relevant. This usually limits the client's choice to a minimal or narrow selection of interventions, if any at all. As stated earlier, the

selective usage of WBCS functions or interventions thus raises questions about the effectiveness of the career support provided through the web.

Further complications may stem from the plethora of web-based choices that face any prospective WBCS client, the lack of commitment they need to show to any system that they choose, and the lack of personal guidance about which web-based system to pick and why. These complications add to the fundamental problem reported here, that WBCS systems as presently developed are at risk of losing touch with established career counseling practice.

In this respect, three basic recommendations may help to increase usage and acceptance of Change2IT and other --currently under development-- WBCS systems: (1) strengthening of the system's design, (2) better consideration of users' needs and characteristics, and (3) availability of human support.

Strengthening the design. Although Change2IT seems to have a solid design, the question can be asked if its design is sufficiently understood by its users. An integrated career support site is something hardly anyone is used to working with. Perhaps, to some extent, this design logic could be better clarified by the system itself. The designers could, for instance, introduce mechanisms that more or less force the users into the intended optimal pattern of use (although it should be stressed, of course, that this would invited other unintended consequences.) In this respect, the system may also require a higher degree of system intelligence. If a system (like Change2IT) aims to provide career support, as is normally provided by career counselors and HR experts, it needs to be an adequate substitute for the traditional human approach. This is, at present, unrealistic.

Consider user's needs and characteristics. It may well be that aspiring IT professionals will differ from other target groups in terms of career ambitions and the preparedness to reflect on and invest in them. However, we should note that this specific target group was actually selected because of the idea that they were excellently suited for this type of innovative career support. A system like this may be even less likely to succeed for other, less computer literate, clients. This can also be a matter of time; awareness among the working population about the possibilities of WBCS is only just starting to grow. The whole idea of employing a structured method in order to better think about one's own career is new. So too, for many, is the thought that they do need to become "agents of their own development" (Weick, 1996, p. 45).

Accompanying e-services with human support. At the moment, purely web-based or virtual career-support may be a bridge too far. But, based on this study with some fledgling and serious interest among members of our target group, the

question may be raised whether now and in the foreseeable future, people with a need for career counseling are willing to fully rely on electronic systems. Although the use of electronic support in non-virtual career counseling has become indisputable, the availability of non-virtual, human expertise may also be essential for most. A pressing question in this respect is whether purely virtual forms of career counseling will be able to deal with the various motivational and attitudinal aspects. A point of reference, in this respect, might be the experience of 10 years of research and evaluation work conducted on e-learning. E-learning seems to be most effective if it is supported by good rapport with the teachers, as the experts who deliver customized feedback, support, coaching and referrals (Frank et al., 2003).

CONCLUSION

Web-based career support systems are being developed to assist individuals in their task of career self-management. The study reported in this chapter examined one such system: "Change2IT." The system was aimed to support aspiring IT professionals in career change towards or within the IT-sector. Change2IT offers an integrated career support service and has attracted quite a number of users in the first few months of its existence. The evaluation of Change2IT's actual usage and perceived acceptance by users showed that, although the users themselves appeared to be pleased with the system, they used in fact rather little of what the designers of the system aimed to offer. Instead of using Change2IT as a career development tool, most users merely handled it as just another online recruiting service.

In this chapter we propose that current web-based career support systems allow for selective usage of the system's functions, or "cherry-picking." WBCS provides the freedom to use only the functions that people find relevant to their career development and career decision-making. This is of course the user's right, but if users of WBCS do not adopt the design logic of the system developers, the system's benefits may disappoint. WBCS systems appear to not yet be adequately designed either for stand-alone use or use with a career counselor. More research is needed if the next generation of WBCS systems is to be more effective.

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ESSAY 6

BOUNDARYLESS CAREER INTENTION AS A PREDICTOR OF WEB-BASED CAREER SUPPORT USAGE[8]

INTRODUCTION

The use of the Internet for career support is expanding rapidly. There are already numerous Internet-based applications that provide career support to different groups. Some career support applications are assisting students and career starters (Gati, Kleiman, Saka and Zakai, 2003; Eveland, Conyne and Blakney, 1998). Other applications are supporting mid-age career changers (Andrews, Preece, Turoff, 2002). Employees are supported by intra-organizational career support systems. Moreover, nearly everyone in the Western world has access to the online job-search databases and recruiting agencies (Niles and Hanson, 2003).

Significant benefits from using Internet-based career support are easily observable. For organizations, for example, online recruiting services save sizeable costs (Buckley, Minette, Joy and Michaels, 2003), attract more candidates, and make the process of recruiting more efficient (Van Rooy, Alonso and Fairchild, 2003). Online career-services on campuses occur to be effective in career and job selections of students (Davidson, 2001). Online job-change communities provide platforms for individual career changers to communicate with their career changing peers (Andrews, Preece, Turoff, 2002). Various researchers and practitioners suggest that, in the future, ICT will play an even more significant role in individuals' career development (Ensher, Heun & Blanchard, 2003).

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[8] This Research Note will be submitted to an international journal later in 2006.

In response to what may seem a large market niche, more sophisticated, integrated career support systems are appearing. Such web-based integrated systems typically include a combination of career support functionalities such as curriculum vitae databases, assessments and tests, online learning, career planning and advising, forums and discussion groups functionalities (Khapova et al., 2006).

However, recent research also notes an underutilization of integrated web-based career support systems. Andrews, Preece, Turoff (2002), for example, found resistance of mid-age career changers to participate in an online career support community. Khapova et al. (2006) report that an integrated career support system is used as just another online recruiting service. Several researchers have already begun to identify the reasons underlying underutilization. Davidson (2001), for instance, notes as the challenges faced by the web-based career service providers: (a) appropriateness of some of the career services for online provision, (b) recognition of users' differences and differences in their needs, (c) ethics of providing relevant career services, (d) provision of a combination of technology-enhanced-services and physically accessible services, and (e) distinguishing personal from career related problems. Thus far little is known about people's intentions that lead them to use web-based career support systems. This research note aims to shed light on this yet under-researched issue.

THEORETICAL FRAMEWORK

THEORIES OF IT ADOPTION AND USE

During the past 20 years of IT research, a rich and diverse body of concepts has been accumulated on the adoption and use of technology (Jeyaraj, Rottman and Lacity, 2006). It involves the Theory of Reasoned Action (Fishbein and Ajzen, 1975), Innovation Diffusion Theory (Rogers, 1983), Social Cognitive Theory (Bandura, 1986), Technology Acceptance Model (TAM) (Davis, 1989), Theory of Planned Behavior (TPB) (Ajzen, 1991), Perceived Characteristics of Innovating (Moore and Benbasat, 1991), Social Cogntive Theory (SCT) (Compeau, Higgins and Huff, 1999), TAM2 (Venkatesh and Davis, 2000), and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). This research has produced useful insights into the cognitive, affective, and behavioral reactions of individuals to technology, including the factors influencing these reactions.

In each of the theories noted above, behavior is viewed as the result of a set of beliefs about technology and a set of affective responses to the behavior (Compeau, Higgins and Huff, 1999). The beliefs are represented by the perceived characteristics of innovating in innovation diffusion research, by perceived usefulness and perceived ease of use in TAM, by behavioral beliefs and outcome evaluations in TPB, and by outcome expectations in SCT. Affective responses are typically measured by attitudes toward use: that is an individual's evaluation of the behavior as either positive or negative.

While each of the theories makes important contributions to the literature on user acceptance of information technology, they all focus on individuals' adoption of new information technologies (or technological innovations) in organizations and in other work-related formal environments. Very few studies actually examined individuals' adoption of Internet-based public services. Even less is known about the adoption of human services offered through the Internet.

Adoption of Internet-based human services is an instance of IT acceptance and use within a setting that combines technology adoption with marketing elements. It, therefore, requires distinct theorization within the information systems literature. However, despite an emerging interest among IS researchers (e.g., Pavlou and Fygenson, 2006) toward Internet-based human systems, we still have a very limited and fragmented understanding of intentions that lead people to actually use such systems. The purpose of this research note is to report the results of our empirical test of intentions underlying people's use of web-based career support.

RESEARCH MODEL

Unlike the noted studies of IT acceptance and use, which view technology acceptance and use as the result of a set of beliefs about new technology, we believe that people's usage of an Internet-based career support system is predicted by their career-related intentions. For a large part of the Western population, the Internet is a well-integrated medium in people's everyday activities. It is used as just another source or tool for achieving desired (behavioral) outcomes. We, therefore, propose to shift the research focus from people's beliefs focused on new, web-based career-support systems to people's personal beliefs that may underlie their usage of such systems. We suggest that revenant beliefs are associated with the expected outcomes from the use of a system.

Our approach is in line with the recent plea by Jeyaraj et al. (2006, p. 12) to further study the predicting validity of "personal outcome expectations." Personal outcome expectations appear to be one of "the promising predictors" of individual technology adoption and use (Jeyaraj et al., 2006, p. 12). Personal outcome expectations "relate to expectations of change in image or status or to expectations or rewards, such as promotions, raises, or praise" (Compeau, Higgins and Huff, 1999. p. 148). In a longitudinal study of 394 computer-users, these expectations were found to be positively related to the actual usage of information technology (Compeau, Higgins and Huff, 1999).

Recent investigations of Internet-based human services, such as computer-based career guidance and e-learning contribute to our conceptualization of beliefs predicting usage of career support systems. For example, Sampson's (2004) recent conceptual paper on individuals' readiness for effective use of computer-based career resources and services indicates that individuals' readiness may be influenced by: (a) personal characteristics (e.g., acute and disabling thoughts and feelings), (b) personal circumstances (e.g., family, social, economic, or organizational factors that influence decision making), (c) knowledge of self, options, and decision making (e.g., limited inclination to reflect on self-knowledge gained from life experience), and (d) prior experience with career resources and services. In addition, an empirical study of Lee, Cheung and Chen (2005, p. 1102) shows that for the Internet-based human service like e-learning, perceived ease of use is "no longer a crucial factor in explaining [people's] attitude toward" this service. Their empirical examination of the use of a new learning medium by 544 undergraduate students showed that perceived usefulness and enjoyment are more important factors than ease of use.

In this study we assume that the people's key objective to use a web-based career support system is to attain a better job and/or career opportunity. We employ Ajzen's (1991) Theory of Planned Behavior - one of the most reputable theories for understanding predictors of behavior. Among most relevant studies employing this theory are recent investigations of people's job search behaviors by Van Hooft and his colleagues (e.g., Van Hooft, Born, Taris & Van der Flier, 2004), and studies that use Ajzen's theory to predict people's acceptance and usage of new technologies (e.g., Pavlou and Fygenson, 2006). According to the theory, behavior is predicted by the intention to pursue the behavior, which is, in turn, predicted by three beliefs – self-efficacy, perceived social pressure to pursue the behavior, and an attitude toward the behavior. Employment of Ajzen's theory to a career change situation means that the change and the consequent attainment of a

better job and/or career opportunity will be predicted by people's boundaryless career intentions. This intention will, in turn, be supported by people's confidence in their ability to make this change possible (or self-efficacy), the social pressures in the direction of undertaking actions toward a better job or career (or perceived social pressure), and their attitude toward the change (or attitude).[9]

Until recently people's search of new career opportunities had been mainly supported by their social contacts (Higgins, 2001). Granovetter (1995) describes people's contacts, instrumental in finding new jobs, as "weak" and "strong" ties. Today, we see many people turning to the Internet for help in finding jobs. Therefore, the key assumption of this study is that, considering an increasing popularity of the Internet in finding new jobs, people's boundaryless career intentions will predict their usage of web-based career support (WBCS) systems.

Hypothesis 1. Users' boundaryless career intentions will be positively related to their web-based career support usage.

In Essay 3, professional identity appeared as a significant predictor of people's boundaryless career intentions. In the context of WBCS usage, we wondered: What is the relationship between professional identity and WBCS usage? May it be that professional identity is a more influential factor in predicting WBCS usage than one's boundaryless career intention? This may be possible since those who opt to use a WBCS system may score higher on this professional orientation. Professional identity is also said to be a guiding factor for professionals in the boundaryless career world (see Essay 3). Therefore, our next two hypotheses are:

Hypothesis 2a. Users' professional identity will be positively related to their web-based career support usage.

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[9] Given that the empirical research reported in this research note builds on research reported in Essay 3, we leave out the descriptions of hypotheses related to the conceptualization of relationships between three career beliefs such as career self-efficacy, perceived social pressure, and the intelligent career attitude and boundaryless career intention. All these relationships appeared significant.

Hypothesis 2b. In the relationship with web-based career support usage, users' professional identity will have more explanatory power than their boundaryless career intentions.

EMPIRICAL EXAMINATION

We test our theoretical model with data derived from users of a publicly accessible web-based career support system Change2IT (www.change2IT.com). As it was described in Essay 5, it provides integrated career support to individuals who are interested to find a suitable job in the IT sector. Change2IT involves:

- a curriculum vitae posting (CV-posting);
- three "Role Diagrammic Approach" (RDA) tests;
- IT-skill tests;
- on-line community.

In addition, Change2IT provides information and links to e-learning courses and information about IT labor market trends. It also matches CV-profiles against labor market demand for any of the IT profiles. Finally, a sophisticated job-matching function of Change2IT continuously and automatically matches CV-profiles of its users with new IT vacancies. The system is fully digitalized and aims to provide career support services at any time and at any place.

SAMPLE

The hypotheses are tested on a sample of IT professionals who subscribed to use Change2IT. Most of them were from Austria, Greece, Italy and The Netherlands, since the career support system was designed to cater for individuals from these countries in the first place. IT professionals' initial registration with the web-based career support system was followed immediately by a questionnaire. The registration was voluntary and based on the individual's desire to register for the career support system. The questionnaires were offered in English to both the Dutch and Italian system-users, in Greek to the Greek users, and in German to the Austrian users. To ensure validity of the translated questionnaires, they were back translated.

The hosting company of the web-based career support permitted us to post our questionnaire on the web-site for only three months. Therefore, the recruiting

of the research participants was stopped after this period, after receipt of 250 questionnaires. Inspection of data on a number of control items and removal of bad records created by disinterested participants left us with a sample of 225 participants. Of these, 41 were from Austria, 128 from Greece, 19 from Italy, 14 from the Netherlands, and 23 in total from various other European countries. Among 225 participants 129 were employed and 96 were unemployed. In total 189 participants had been employed in IT before and 36 were aspiring IT professionals. The degree of IT work experience varied between 0 and 38 years.

MEASUREMENTS

Boundaryless career intention was measured with a seven-item five-point Likert-type scale (1 = "Disagree completely" to 5 = "Agree completely") that measured interest in a new career opportunity. An example item is "I plan to make a career change and I am choosing where to go next." The Cronbach's alpha of this seven-item scale was .82.

WBCS Usage was defined as the degree of use of the system's functionalities. For each member of the experimental group we registered the degree of use: i.e., the usage of CV-posting, RDA tests, IT-skills tests, online learning; and online community. The scale 'WBCS Usage' distinguishes four usage levels:

0 - No use, users who visited the WBCS site, but did not use any of the functions;

1 – Use of 1 WBCS function;

2 – Use of 2 WBCS functions;

3 – Use of 3 WBCS functions.

Table 14 gives an overview of the actual distribution of usage types.

Table 14. Usage of the WBCS System

Type of Use	N
None	17
Use of 1 function	58
Use of 2 functions	27
Use of 3 functions	13
Total	115

RESULTS

The total data set, consisting of questionnaire data and usage data, was analyzed in several steps, using SPSS. The analysis involved:

(i) a calculation of the reliability of each scale;

(ii) inspection of Pearson correlations among boundaryless career intention, professional identity and WBCS usage;

(iii) regression analyses to determine which of the two variables -- boundaryless career intentions or professional identity-- would appear as a significant predictor of WBCS usage; and

(iv) ANOVA analysis of relationships between beliefs and usage of different Change2IT functionalities.

The Pearson correlations method showed that all three variables are significantly correlated among each other. Table 15 provides an overview of the significant relationships. This suggests that both boundaryless career intention and professional identity predict people's usage of WBCS, supporting Hypothesis 1 and 2a.

Table 15. Means, Standard Deviations, and Pearson Correlation Coefficients Among Study Variables

Variable	Mean	SD	1	2	3
1. Boundaryless Career Intention	.66	.22	1		
2. Professional Identity	.63	.26	.35**	1	
3. WBCS usage	.79	.41	.24*	.24**	1

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

In order to find support for Hypothesis 2b we ran stepwise regression analysis. It shows that only boundaryless career intention appears as a significant predictor of WBCS usage, providing no support to Hypothesis 2b. The results of this analysis are depicted in Table 16.

Table 16. Results of Hierarchical Regression Analyses for WBCS Usage

Variable		B	Std. Error	Beta
Step 1				
Constant		.35*	.17	
Boundaryless	Career	.52*	.25	.24
Intention				
R^2 = . 06				
Step 2				
Constant		.06	.29	
Boundaryless	Career	.40	.27	.18
Intention		.72	.57	.16
Professional Identity				
R^2 = .08				

* $p < .01$

In sum, we found that boundaryless career intention predicts WBCS usage, offering support to Ajzen's theory of planned behavior. As mentioned earlier, this theory suggests that one's behavioral intention predicts one's behavior. Professional identity, in turn, was only found to be significantly related to boundaryless career intention, bringing us back to the finding reported in Essay 3.

To attain a deeper insight on the beliefs that predict the use of specific WBCS functions (i.e., CV-posting, RDA-tests, IT-skills tests, and online community), we ran additional ANOVA analyses. Only relationships between boundaryless career intention and professional identity and CV-posting usage appeared significant. The results of this analysis are depicted in Table 17. They show that usage of CV-posting is predicted by both higher boundaryless career intention and professional identity.

Table 17. Comparison of Mean Scores of Boundaryless Career Intention and Professional Identity of (a) Non-Users, and (b) Users of CV-Posting Function.

CV-Posting	Boundaryless Career Intention	Professional Identity
a) Non Users		
Mean	.58	.50
N	22	24
Std. Deviation	.23	.12
b) Users		
Mean	.69	.56
N	51	91
Std. Deviation	.19	.09
Total		
Mean	.66	.54
N	73	115
Std. Deviation	.21	.10
ANOVA		
F	4.27	7.04
Statistical Significance	.04	.01

DISCUSSION

This research note examined and explored a number of hypothesized relationships between boundaryless career intention, professional identity and WBCS usage. The central hypothesis concerned the relationship between boundaryless career intention and WBCS usage is confirmed; Boundaryless career intention appeared as a significant predictor of WBCS system usage. The second hypothesis concerned a positive relationship between professional identity and WBCS usage and was not supported. However, the correlations between both variables appeared statistically significant. In addition we found that both professional identity and boundaryless career intention are significant predictors of CV-posting usage.

In general, these findings support Ajzen's (1991) theory of planned behavior. However, they also offer additional insight into the theory's possibilities. In particular, our study shows that usage of a web-based career support system may be studied as predicted by people's career intentions. This is because the Internet is an integral part of our lives, and it offers just another, additional source of support in the process of career change. Future examination of other Internet-based services instrumental to human behaviors will show the robustness of our assumption.

However, one of the most interesting outcomes of this study is that analysis of relationships between different beliefs and usage of specific functions revealed that boundaryless career intention and professional identity are significant predictors of CV-posting only. These findings support results of our previous examination of the use of a web-based career support system (Khapova et al, 2006). In that study, we found that the system was used as just another recruiting site. Among all career support functionalities, users found CV-posting also most useful. This conclusion, together with the finding of our present study that only the relationships between people's boundaryless career intention, professional identity and usage of CV-posting are significant, raises a number of questions for future research and practice.

The first question is whether the offering of an all-in-one, automated career-support solution is a good thing. In line with the suggestion of Davidson (2001), we wonder to what extent and which career services are appropriate for the provision through the Internet? Is the fact that only few users took personality tests to learn about more suitable career options for them a coincidence? Are people looking for another job perhaps already past the self-searching stage and would not need personality reflection while looking for their next career move? Would personality assessments need a more non-virtual or human approach, as for example, interactive Internet-based counseling with a human counselor? Davidson (2001, p. 225) notes that "career counseling is not merely a technological exercise where trained technicians can provide services. Rather, career counseling is an area where professional and paraprofessionals are needed." Furthermore, is it appropriate to match personality assessments and recruiting facilities where there may be some fear attached that a future employer may have access to the personality profile data?

Second, if boundaryless career intention beliefs do indeed predict the usage of the system, as our study shows, future research needs to consider social rather than technical theories for explaining usage and patterns of usage of such

human services. For example, studies of online communities suggest that WBCS may be conceptualized as a virtual social structure of relations or a virtual community, rather than a mere source of career-service provision (Andrews, et al., 2002; Butler, 2001). From this perspective, the studies of WBCS would need to include the design principles of a traditional community. As Kollock (1998) notes, virtual communities succeed not because of flashy graphics, but because they contain a number of requisite elements for a successful community, such as: identity persistence, a coherent sense of space, and a sophisticated set of rituals. Next, the incorporation of social network research on the various ways people operate within social networks may also determine who will use WBCS effectively, and how. Recent empirical investigation of integrated WBCS systems suggests that the current process of virtual career support is quite different from what is provided by career counselors. The systems currently allow selective usage of career support functions, or "cherry-picking," while the process of traditional counseling is more guided and prescribed (Khapova et al., 2006). However, there are also systems that already adopted non-virtual social processes for their services. For example www.H3.com Internet-based recruiting service mimics a referral practice of finding an employee through current employees and social networks by offering a financial reward for a good reference. The effectiveness of such a service is still unknown.

Furthermore, there are also questions with respect to theories and methods of examining motives behind the usage of human web-based services, as well as their usage itself. To what extent can we assume that the Internet indeed became an integral part of people's lives and may be treated as just another source of support, as we did in this study? This is by itself a valid research question, which would contribute to a better understanding of the usage of human web-based services, as well as the usage of other IT and Internet-based applications.

CONCLUSION

This paper examines whether people's boundaryless career intentions predict their usage of web-based career support: as predicted from Azjen's theory of planned behavior. The results of the examination of responses of 225 aspiring IT

professionals who registered as users in a WBCS system (called Change2IT) show that

(a) of the two beliefs, professional identity and boundaryless career intention, the latter appeared to be a significant predictor of WBCS usage;
(b) both professional identity and boundaryless career intention appeared to be significant predictors of CV-posting usage.

The findings of this study, and particularly the latter unexpected one, contribute to the yet limited knowledge about people's usage of web-based career support systems. On the one hand, the study provides new insights about the usage of web-based career support. On the other hand, it raises numerous questions for future research. Among some of these questions is the appropriateness and effectiveness of providing an all-in-one, automated career support service; utilization of social and social-network theories for designing and researching the usage of such systems; as well as further examination of the Internet as a mediating factor in social relationships. Future research will help to uncover these and many more insights about the effective provision of complex human services online.

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KEY FINDINGS AND DISCUSSION

INTRODUCTION

The purpose of this thesis is to examine a number of challenges for career research and practice associated with an increasing emergence of the knowledge economy. In particular, we focus on the challenges for career research and practice concerned with: (a) the economy's greater reliance on professional and intellectual capabilities, and (b) the emergence of technology-enabled career support. In this chapter we summarize our findings, discuss important assets as well as limitations of our research. We also suggest implications of our findings for future career theory and research.

SUMMARY OF KEY FINDINGS

In the introduction, we delineated six issues regarding careers in the knowledge economy that called for conceptual and empirical examinations. We focused on examining: (i) what does an increasing ascription of more importance to the subjective career mean for contemporary career research? (ii) what is the divergence between contemporary career theory and career success research, and what rapprochement between the two can be attained? (iii) what are the key cognitions that predict boundaryless career intentions of contemporary professionals? (iv) why does the provision of all-in-one career support appear not to be accepted by its intended users (v) to what extent do individuals make use of integrated web-based career support when offered to them? and (vi) to what extent do individuals' boundaryless career intentions predict their usage of a web-based career support system? Each question was addressed in one of the six essays included in this thesis. The questions were addressed by (a) reviewing an extensive body of literature, (b) examining a sample of aspiring IT professionals who

registered to use a web-based career support system named Change2IT (as part of one of the eContent projects funded by the European Commission), and (c) elaborating on possible mechanisms that may shed light on these yet under-researched issues. Below we briefly summarize the results relevant to each research question, as well as depict the concrete findings in Table 18.

Question 1: What does increasing ascription of more importance to the subjective career mean for contemporary career theory and research? Our examination of contemporary career research (in Essay 1) shows that to focus on the subjective career means to accommodate four basic properties of the subjective career, such as duality, interdependence, time and multiple dimensions. Our analyses of six major behavioral science theories originating from (a) Super and Hall in psychology, (b) Krumboltz and Bailyn in social psychology, and (c) Hughes and Giddens in sociology, has suggested that although all of them remain relevant, the theories' uni-disciplinary orientation no longer provides a sufficiently broad view of the subjective career in the knowledge economy. Instead, to better understand how the subjective career provides for personal and professional growth we need interdisciplinary theoretical approaches. Some of the relevant theories include Bandura's (2001) revised social cognitive theory, Arthur et al. (1995) "intelligent career" theory, and Boyatzis and Kolb's (2000) theory of growth and adaptation. The emerging importance of both the Internet and globalization reinforce the need for such interdisciplinary approaches. It also points out new, important avenues for future career research. The new research avenues include incorporation of how the subjective career shapes individual, collective and institutional forms of participation in a larger economic context enabled by new technologies and continuing globalization.

Questions 2a & b: What is the divergence between contemporary career theory and career success research? What rapprochement between theory and research can be attained, and with what advantages? Examination of 68 articles on 6 attributes of extant career theory showed that (a) most articles use established definitions of career success, and its subjective and objective sides, (b) only 57% (of 68 articles) acknowledge duality of the subjective and objective career success, (c) 32% indicate any interdependence between subjective and objective career success, (d) in 3% of the articles its theoretical adequacy was an issue, (e) 27% examine the links between inter-organizational mobility and career success, and (f) 85% make no reference to the relevance of career support that stems from outside the employing organization.

Table 18. Research Questions and Findings of this Thesis

Research Questions	Essays	Findings
1. What does increasing ascription of more importance to the subjective career mean for contemporary career theory and research?	Essay 1	– To accommodate four basic properties of the subjective career, i.e., duality, interdependence, time and multiple dimensions – To use interdisciplinary approaches – To consider individual, collective and institutional forms of the subjective career participation in a larger economic context enabled by the Internet and continuing globalization
2a. What is the divergence between contemporary career theory and career success research? 2b. What rapprochement between theory and research can be attained, and with what advantages?	Essay 2	Of the 68 analyzed research articles: - Most articles use established definitions of career success, and it subjective and objective sides - 57% acknowledge duality - 32% indicate an interdependence between subjective and objective career - 3% have theoretically inadequate research designs - Few articles consider effects of inter-organizational mobility and extra-organizational support Rapprochement guidelines cover adequacy of research designs, further dimensions of career success, broader

		peer-group comparisons, deeper investigation of the subjectively-driven person, and specification of new connections between boundaryless career theory and career success research.
3. What are the key cognitions that predict boundaryless career intentions of contemporary professionals?	Essay 3	Among Ajzen's three planned behavior beliefs and professional identity, only professional identity appeared as a significant predictor of boundaryless career intention.
4. How to re-conceptualize the integrated provision of Computer-Based Career Support in order to get accepted and used effectively?	Essay 4	- To employ gender, age, language and ethnicity customization - To conceptualize CBCS as a virtual social structure of relations, rather than as a mere source of service provision - To better employ social career support practices and processes - To examine effectiveness of the integrated career support approach as a single source of career support
5. To what extent do individuals make use of integrated web-based career support when offered to them?	Essay 5	Usage of one web-based career support system, Change2IT, showed that people make rather limited and selective usage of the system's functionalities.

6.	To what extent does boundaryless career intention predicts usage of a web-based career support system?	Essay 6	Regression analysis showed that IT professionals' boundaryless career intentions are significantly related to their usage of a web-based career support system.

Essay 2 suggests that rapprochement between contemporary career theory and career research can be attained through (i) the adequacy of future research designs, (ii) incorporation of further dimensions of career success, (iii) broader peer-group comparisons, (iv) deeper investigation of the subjectively-driven person, and (v) seeing new connections between boundaryless career theory and career success research.

Question 3: What are the key cognitions that predict boundaryless career intentions of contemporary professionals? Following Ajzen's (1991) theory of planned behavior, three career beliefs – career self-efficacy, perceived social pressure and "intelligent" career attitude – were hypothesized to predict boundaryless career intentions of IT professionals. Professional identity, uncovered by Essay 3 as a relevant career construct for the knowledge economy, was hypothesized to moderate relationships between the three career beliefs and boundaryless career intention. Examination of these cognitions predicting boundaryless career intentions of 225 aspiring IT professionals in Europe showed that although (a) career self-efficacy, social pressure and career attitude are each positively correlate with boundaryless career intention and (b) the three beliefs correlate positively among each other, only professional identity is a significant predictor of boundaryless career intention. This finding contributes to our earlier theorizing about professional identity's critical role in careers of contemporary workers, in Essay 1.

Question 4: How to re-conceptualize the integrated provision of a computer-based career support in order to get accepted and used effectively? Drawing from literature on socio-technical and social perspectives on the provision of professional services such as also computer-based career support, we suggest that future research needs: (a) to incorporate gender, age, language and ethnicity customizations, (b) to conceptualize computer-based career support as a virtual social structure of relations, rather than a mere source of service provision, (c) to better employ social career support practices and processes in future research and systems' design, and (d) to examine the relative effectiveness of the integrated career support approach as a single source of career support provision.

Question 5: To what extent do individuals make use of integrated web-based career support when offered to them? Usage of one web-based career support system - Change2IT - showed that people make rather limited usage of its integrated functionalities. This finding is in line with an earlier finding of Andrews, Preece and Turoff (2002) that middle-age career changers resist using a career support facility when offered to them. With respect to the actual usage of Change2IT we

found that (i) more than half of the registered individuals (total N=1196) have not used any of the functionalities; (ii) about one quarter of the persons who did register, used the CV-posting function only; (iii) about 12 percent of the users have used a combination of two or three functions; (iv) none of the registered users have used all functions in combination; (v) only a rather limited number of users (13%) visited the site frequently. With respect to users' satisfactions, we found that the users of Change2IT were mainly interested in the system as if it were solely a recruiting facility. Most of the users indicated that they came to use Change2IT with the idea of finding a new job. Also, from all Change2IT functions, they graded CV-posting as most useful, easy to use and worth their time. Finally, with respect to the relationship between satisfaction and usage the analysis of the relationship between the usage of the individual functions and the perception of these functions suggests that users made more intensive usage of those functions which they perceived as "useful," "easy to use," and "worth the time."

Question 6: To what extent do individuals' boundaryless career intentions predict their usage of a web-based career support system? An examination of the relationship between individuals' boundaryless career intentions and their WBCS usage on 225 aspiring IT professionals showed that boundaryless career intention is a significant predictor of the WBCS usage. Professional identity, hypothesized as another possible predictor of WBCS usage, did not appear as a significant predictor. However, additional exploratory analysis showed that both factors - boundaryless career intention and professional identity – are significantly related to the usage of CV-posting.

KEY CONTRIBUTIONS OF THIS THESIS

Several findings reported in this thesis provide original contributions to theory and research on careers and web-based career support. We specify them below.

Essay 1 contributes by identifying four important properties of the subjective career, and reviewing the 6 key behavioral science theories on accommodation of these properties. It shows the theories' distinct perspectives on each of the basic properties of the subjective career. It also provides an original interpretation of Weick's work on contemporary careers, noting his invitation for utilization of the interdisciplinary perspectives for understanding contemporary careers. Moreover, the essay offers an original analysis of three interdisciplinary theories, such as Bandura's (2001) revised social cognitive theory, Arthur et al.,

(1995) "intelligent career" theory, and Boyatzis and Kolb's (2000) theory of growth and adaptation, on their accommodation of (a) the properties of the subjective career, and (b) interdisciplinary views. Finally, the essay proposes new research direction for better understanding of the subjective career in the knowledge economy.

In Essay 2 important attributes of career success originating from the theories of the Chicago School of Sociology are identified and examined across 11 years of research on career success. Although known to researchers, the attributes had been poorly utilized in many previous studies. To assist future studies in more adequate examination of the career success concept, this essay offers fresh guidelines for rapprochement between career theory and career success research covering a range of highly relevant topics.

Essay 3 offers an examination of IT professionals' career intention and beliefs underlying this intention. A fresh construct - boundaryless career intention – is identified as the relevant career intention. The essay further offers an examination of the relation between professional identity and boundaryless career intention, which lead to the novel empirical finding of professional identity's statistically significant relation to boundaryless career intention. That finding contributes to both future theorizing and new research on boundaryless careers.

Essay 4, for the first time, defines computer-based career support. Given that our research on complex, integrated web-based career support has pioneered the field, we were asked to outline the concept of computer-based career support in the *Encyclopedia of Career Development* (edited by Greenhaus and Callanan, 2006). Published as part of the encyclopedia, the essay presents current challenges of computer-based career support provision. It also presents a summary of current challenges related to doing research on computer- and web-based career support provision.

Essay 5 presents the results of an examination of an integrated, web-based career support system – Change2IT. This first of its kind system, developed in Europe by a consortium of European IT firms, research institutions and universities, was examined on a sample of 2089 aspiring IT professionals from four countries: Austria, Greece, Italy and The Netherlands. The study provides a unique analysis of usage patterns, motives and satisfaction with this career support system.

Finally, Essay 6 contributes by finding a significant relationship between boundaryless career intention and WBCS usage. This finding suggests that people's intention to use a web-based career support system is motivated by their

interest in new career opportunities, rather than their interest in using the system per se. This finding invites information systems researcher to reconsider their conceptualizations of beliefs predicting usage of the Internet-based systems.

In sum, this thesis provides a set of findings that contributes to future theory and research on careers in the knowledge economy and technology-enabled career support. After specifying limitations of our research, we turn to discussing implications of our findings for career theory and research.

LIMITATIONS

Like any study, this thesis also involves several limitations. The first limitation concerns the used sample for investigating IT-professionals' boundaryless career intentions in Essay 3. Although our sample of European IT professionals who voluntarily subscribed to a web-based career support system was useful for examining our hypotheses, it may also limit the generalizability of our results. Individuals who did not come to use the system, and thus were left out by our study, may have been less concerned with a career change and therefore may have exhibited different beliefs and intentions toward boundaryless career behavior. However, such individuals would have provided less valuable insights into boundaryless career intentions.

The second limitation concerns the examination of only one web-based career support system - Change2IT. However, as footnote 7 in Essay 5 suggests another web-based career support system "iCIS Community" had been examined as well within the confines of this PhD project. iCIS Community involved very similar functionalities to Change2IT, such as CV-posting, RDA-tests, IT-skills tests, and e-learning, and was employed in Italy, The Netherlands and Portugal. Unfortunately, very few people became users of iCIS Community during our study (45 in total). Therefore, its investigation was excluded from the main analyses of this thesis. The few results received from iCIS Community point out similar usage patterns and beliefs underlying the systems' usage. We concluded that this kind of a system is still quite exclusive but nevertheless an example of underutilization of an integrated web-based career support. As more similar systems come into play, researchers will be able to bring more clarity on usage patterns and explanations thereof.

Further limitations concern some of the measurements used in the empirical parts of the thesis. For example, career self-efficacy may be criticized for being somewhat general in representing one's confidence about his or her ability to pursue boundaryless career behavior. More precisely, the measurement used in this thesis may be said to reflect one's confidence in one's ability to be in charge of his or her career, and in one's ability to undertake necessary action to attain career success. However, it does not operationalize specifically one's confidence in his or her ability to pursue boundaryless career choices as suggested by Arthur and Rousseau (1996). A necessity to use a specific self-efficacy measurement applicable to the very behavior under investigation, rather than a more generalized measurement of 'career' self-efficacy, has only been recently clarified by Betz and Hackett (2006). This requirement was published in a special issue of the Journal of Career Assessment published in January 2006, when this thesis was almost finalized.

Similarly, the boundaryless career intention scale was developed long before Sullivan and Arthur (2006) clarified that the boundaryless career behavior involves both physical and psychological changes. The current measurement of boundaryless career intention reflects one's readiness or intention to make a physical career change. Due to the lack of earlier conceptualizations on this topic, the measurement does not distinguish between physical and psychological career changes. Future research on boundaryless career intentions and behavior would need to make that distinction.

IMPLICATIONS FOR CAREER THEORY AND RESEARCH

Despite the aforementioned limitations, we believe that the results presented in this thesis have theoretical implications that lead to recommendations for future research in the fields of careers and web-based career support provision. These implications and recommendations are discussed in each chapter. In this section we briefly summarize the key theoretical implications and associated recommendations.

INTERDISCIPLINARY APPROACHES FOR FUTURE CAREER RESEARCH

The key message of Essay 1 is that we need to use interdisciplinary theories to fully understand careers in the knowledge economy. In contemporary processes of knowledge-intensive activity creation careers do not only specify people's paths

through their work lives. Careers also guide both individuals and organizations through development and growth. Weick (1996) speaks about careers' ability to turn weak situations – that is, more ambiguous, more unstructured, and with fewer salient guides for action - into stronger ones. He also elaborates on careers' influences and engagement on different levels of social interaction. In this elaboration, Weick uses (a) a psychological perspective to describe one's agentic activities toward learning and development; (b) a social psychological perspective to explain how these individual activities organize into learning communities; and (c) a sociological perspective to explain how people's learning processes get turned into scripts that impose structures around previously ambiguous situations. In sum, Weick (1996) calls successively on the three behavioral science disciplines for the purpose of explaining contemporary careers, challenging the utility of any one discipline on its own.

However, Weick's call for a greater utility of interdisciplinary theory for career research in the knowledge economy is not new. Earlier literature has already noted that "the career concept provides an excellent nexus for transdisciplinary debate" (Arthur, Hall and Lawrence (1989, p. 10). Mitroff and Kilmann (1978, p. viii) also noted that career theory provides a forum for "taking us beyond the limitations and confines of disciplines as we currently conceive them." More than 15 years ago, Arthur, Hall and Lawrence (1989, p. 7-8) already called "to re-establish the importance of [the] shared view of the career concept and to examine the process by which disciplinary cross-fertilization may help move career theory in new directions." Despite such calls, only some progress has been made toward integrating different disciplinary views in career theory. Essay 1 once again invites career researchers to use interdisciplinary theories. They, as we further argue, are most suitable for researching people's careers in the knowledge economy. Among some relevant theories are the revised social cognitive theory of Bandura (2001), the "intelligent career" theory of Arthur, Claman and DeFillippi (1995), and the theory of growth and adaptation of Boyatzis and Kolb (2000). Each of these theories accommodates the basic properties of the subjective career. They also, as we show in Essay 1, draw on different behavioral science perspectives.

ACCOMMODATION OF NEW REALMS OF THE INTERNET AND THE GLOBE INTO FUTURE CAREER RESEARCH

Today's careers do not occur only within or between organizations. The new economic context --enabled by the rapid spread of the Internet and continuing

globalization-- offer many more possibilities for individual careers. Increasingly we observe individuals engaging in work relations over the Internet, such as Indian programmers who provide outsourced services to their counterparts at distant locations. We also observe higher mobility of workers around the world, as more walls and geographical boundaries are dissolving. Today, not only expatriates are considered to be global workers. Rather, everyone who is engaged in cross-cultural business activities may be perceived as such. This may include small producers who export their services and or goods to other countries, or Indian telephone operators who answer your outsourced calls for a dinner-reservation in your local restaurant (Friedman, 2005). This may also include careers of programmers unfolding within the global open source communities, and careers of social activists who are part of global communities. Career possibilities are vast today, and have fewer borders than ever before. However, career research seems to be lagging behind in realizing the significance of new careers in the global economic arena. In particular, we found very few empirical studies focusing on the career implications of the new economic realities. Research on careers enabled by the emergence of the Internet is limited to studies on IT professionals. In our view, this is not sufficient if we want to keep up with the pace of the developments in the knowledge economy. In Essay 1 we identify some important directions for future research. They involve new research questions concerning the individual, his or her relation with the collective, as well as with institutions in the larger economic context enabled by the Internet and globalization.

RAPPROCHEMENT BETWEEN CAREER THEORY AND CAREER SUCCESS RESEARCH

Many career studies build up on the results of previous empirical investigations omitting important assumptions and attributes of fundamental career theory. As a result we get empirical studies focused on examining only one side of career success (i.e., objective or subjective), research designs that measure career progress in single organizations, and career support limited to in-company mentoring. However, such research does not help us better understand career success criteria in the knowledge economy. As recent literature suggests, current work practices are rapidly moving away from the traditional organizational norms. Markets of objective careers such as titles, positions, and stable employment become less available (Weick, 1996); increasing job mobility, generalized know-how and extra-organizational networks of contacts are becoming a new reality. However, many of the reviewed empirical articles published in a period of 1992-2002 seem to ignore

the emerging developments in the world of work. Some of the studies make even inadequate use of fundamental career theory. For example, as our analyses show, only 57% (of 68 articles) acknowledge the duality of the subjective and objective career, and only 32% indicate any interdependence between the subjective and the objective career. Contemporary career theory is accommodated even less. For example, only 27% of articles examine in any way the links between inter-organizational mobility and career success, and only 15% make some reference to the relevance of career support that stems from outside the employing organization.

Our general observation is that there is an urgent need for rapprochement between extant career theory and career research on career success. To do this a series of aspects needs to be taken into consideration by future studies. Among such aspects are the key attributes of career success examined in Essay 2, such as the duality of objective and subjective career success; interdependence between the two sides; inter-organizational mobility and extra-organizational support. However, also accommodation of additional aspects is important for attaining rapprochement between career theory and career success research. These aspects involve the adequacy of future research designs, missing dimensions of career success, the broadening of assumptions about relevant peer groups, examining career-relevant ability, recognizing the developing, subjectively-driven person, and expanding the career success agenda.

FURTHER INVESTIGATION OF THE RELATION BETWEEN PROFESSIONAL IDENTITY AND BOUNDARYLESS CAREER

A statistically significant relation between professional identity and boundaryless career intention is one of the unexpected, but at the same time one of the most valuable empirical outcomes of this thesis. This finding contributes to boundaryless career theory and research. First, it contributes to the ongoing dialog about the importance of *identity* in shaping a boundaryless career (Baker and Aldrich, 1996; Sargent et al., 2005; Svejenova, 2005). It also contributes to the emerging observations of the possible significant relation between the two concepts. Although, Svejenova (2005) established a conceptual parallel between identity and authenticity in careers, Sargent et al. (2005) noted that incorporation of one of the Arthur's et al. (1995) career investments – knowing-why – may help to provide a more realistic depiction of the boundaryless career. However, none of the existing literatures, to our knowledge, provided empirical support for this

relationship. The study reported in Essay 3 shows a statistically significant relationship between professional identity and boundaryless career intention. However, much more empirical research is needed to better understand this relationship.

USING SOCIAL THEORIES FOR BETTER UNDERSTANDING THE USE OF WEB-BASED CAREER SUPPORT SYSTEMS

The results from our examination of usage, motives and beliefs leading to the usage of a computer or web-based career support system show that career support provision is not a simple service to be provided through the web. It involves complexities of human interaction, emotional and cognitive intelligence that are still rarely found in digital form. However, contemporary career support systems, as we experienced in Change2IT, involve simply a compilation of career counseling treatments. Furthermore, as our study of usage patterns shows, lack of guidance in the system prompt users to choose services that in their view provide them with an immediate solution. More research on non-virtual career counseling and career support practices that help to transfer physical practices into virtual once is urgently needed. Some studies, such as a study of Andrews, et al. (2002) of a virtual community of career changes, and Butler's (2001) study of online social structures already propose to conceptualize WBCS as a virtual social system of relations or a virtual community, rather than as a digital service. The incorporation of social network research on the various ways people operate within social networks may also help in better understanding who will use WBCS effectively and how. Future research focused on social processes in networks of relations, as well as on human dynamics in counseling processes, will help to understand and to develop more effective WBCS systems.

FURTHER STUDY OF PEOPLE'S BELIEFS PREDICTING USAGE OF WEB-BASED CAREER SUPPORT

Hardly anyone in the countries where the Internet is easily available questions any longer the usefulness of this facility. In Essay 6 we test this assumption, by suggesting that in the Internet era an intention toward an anticipated outcome from the use of a system will predict people's usage of this system. More specifically, we hypothesize that people's boundaryless career intention prompted by a desire to attain a better career opportunity would lead them to use a web-based career support system. The system is assumed to serve as just another source

of support in people's search for career opportunities. Through examining our hypothesis on a sample of 225 aspiring IT professionals who came to use a web-based career support system, Change2IT, we received a confirmation to our hypothesis. In particular, we found that people's boundaryless career intentions predict their usage of a web-based career support system. This is because web-based career support, and especially its function to provide information about available job opportunities, is just another source of support people may receive today when searching for new jobs. Further examination of relevance of people's social beliefs and intentions to the use of human web-based services will help to test the robustness of this assumption. It will also help to explain motives behind people's usage of web-based human services.

In sum, this thesis addressed two large domains of challenges related to the increasing emergence of the knowledge economy. One domain involves challenges related to the career consequences of the economy's greater reliance on people's intellectual and professional capabilities. The other domain concerns the emergence of technology-enabled career support. The research reported in this thesis offers novel insights with respect to both sets of challenges. It introduces fresh conceptions as well as empirical examinations of yet untested relationships. Most importantly, the thesis offers extensive guidelines for future career theories and research.

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