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The Information Needs of Contemporary Academic Researchers

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**Thesis submitted in fulfilment of the requirements
for the degree of Doctor of Philosophy**

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Appendices

VOLUME TWO

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Appendix 1

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Appendix 2

The Academic Enterprise in the Information Society

The Changing Countenance of Academe

The magnitude of the changes, which seem to be transforming the face of academia, as we know it, can probably be best illustrated with the recent focus on the future of the university. In a much quoted 1997 interview Peter Drucker, the renowned management theorist, pronouncing higher education in its current set up doomed, gave voice to a growing concern with the impending obsolescence and delegitimation, if not demise, of the university, as a result of the undermining of its traditional functions of cultural reproduction and knowledge production. Perhaps more outspoken than most in proclaiming outright that "thirty years from now the big university campuses will be relics...universities won't survive... the system is rapidly becoming untenable... higher education is in deep crisis..." (Lenzner and Johnson, 1997, p. 127), Drucker certainly has not been alone in gloomily prophesying the decline of the university. Summing up the current reflections on 'the end of knowledge in higher education' (Barnett and Griffin, 1997; Delanty, 1998) or of 'the university in ruins' (Readings, 1996), Barnett finds that they take three forms: "*Substantively*, it is felt that the knowledge sustained by the university has no particular status: it simply takes its place and its chances amid the proliferating knowledges that society has now to offer. *Ideologically*, it is felt that the knowledge for which the university stands lacks legitimacy: it can be simply understood as a set of language games of a rather privileged set of occupational groups ('academics') that reflects their interests and marginal standing to the rest of society. *Procedurally*, it is implied that the university can now secure its future only by marketing its knowledge wares; in the process, its knowledge becomes performative in character [i.e. aimed at 'knowing how', as opposed to 'knowing that'] and loses power to enlighten" (Barnett, 2000, p. 411). These predictions of the looming end of academe have not gone uncontested, as Altbach (1998, pp. xvii-xviii), for one, puts it: "There is one institute that has always been global and that continues to be a powerful force in the world after a half-millennium. This institution is the university. With its roots in medieval Europe, the modern university is at the centre of an international knowledge system that encompasses technology, communications and culture. The university remains the primary centre of learning and the main repository of accumulated wisdom. While it may be the case that the university has reached the end of unprecedented growth and expansion, it remains a powerful institution. In the knowledge-based society of the twenty-first century, the university will remain at the very center of economic and cultural development... The university is far from collapse. It continues to play a necessary role in modern society – as an institution that educates, performs research, provides opportunities for social mobility, and certifies expertise and professional competence. Universities have been transformed in less than a century from small, elitist institutions fulfilling a limited educational mission to one of the main engines of the knowledge-based society." Whichever view is taken as to the future of the university, there can be little doubt that the controversy as to its fate in itself serves to indicate the extent of instability characterising today's world of science and scholarship.

The literature identifies a host of closely linked circumstances, conditions and forces, some primarily contextual (economic, political, social and technological), and as such external to the academic

community, others internally generated, propelling the plethora of changes which converge to fashion the newly emerging academic landscape.

Tertiary Education in Flux: Towards 'More Education for More People'

Proceeding from the notion that education is the key to future economic prosperity, a salient feature of knowledge societies is a national policy of promoting the expansion of higher education in terms of student numbers. Thus, in the UK the 1997 general election brought the labour Government with a strong election commitment to 'education, education, education', and similarly the Dearing Committee saw the widening access to higher level study as the fundamental theme in the learning society; in France a policy of systematic elevation in the attainment of high school diplomas is bound to result in a buoyant demand for third-level places; and the European Commission pursues the highest possible level of knowledge for all citizens, understood as a broad accessibility to and attainment in higher education, as well as a permanent updating of knowledge through lifelong learning (de Weert, 1999). Although not all higher education researchers agree that the pressure for 'more education for more people' is rooted in deliberate actions stemming from national policy (for example, Trowler, 1998, cites both Scott, who observes that Britain has acquired a mass system of universities and colleges 'in a fit of absent mindedness', and Fulton, who describes the expansion of the British higher education as 'slouching' towards a mass system), there can be little doubt that since the 1970s we have been witnessing, at least in the Western world, the massification or democratisation of higher education. By the end of the second millennium the envisaged transition, based on Trow's (1970) classic formulation, from elite (up to 15 percent of the age grade in higher education) to mass (up to 40 percent) and then to universal (more than 40 percent) systems of higher education, seems to be well on its way to become reality. If in the immediate period after the Second World War fewer than 5 percent of the relevant age cohort in the European nations attended post-secondary institutions of learning, and even in the United States their percentage came to no more than 30 percent, by the 1990s most European countries enrolled more than 30 percent of the relevant age group and the United States and Japan increased its portion to around 50 percent (Altbach, 1998; Farnham, 1999).

The development of mass higher education in the modern industrial societies has been traced back to a number of more or less independent forces: the democratisation of society at large, epitomised both in the radical transformation of women's status and in the pluralism and cultural diversity typical to inhabitants of the fin du siecle global village; the growth of the public sector that requires more white collar workers and university graduates; the growing and increasingly complex industrial society and economy that demand more highly skilled and educated workers; the widespread belief that further economic development depends on educated manpower, especially scientists and engineers; the growing number of occupations and positions for which academic certification is deemed to be a necessary prerequisite; the increasing demand for academic qualifications, seen as the key to success; and finally the attractiveness of education itself as a major element of the new welfare states, sustaining and legitimating democratic societies (Altbach, 1998; Farnham, 1999a; Gibbons et al., 1994). Thus, with the growth in the number of students seeking a university-type education, came the development of open, mass systems of higher education in the industrialized countries, taking the place of the closed, elite ones of yesteryear (Farnham, 1999a). First came the growth in the old, elite universities; next, the creation of new universities; then the

expansion of non-university forms of post-secondary education offering different or no degrees, and lastly, the assimilation the new sectors to the degree granting system, and the inclusion in both old and new universities of new faculties and department representing subjects formerly excluded from them, preparing students for new or semi-professions (Gibbons et al., 1994). By the third millennium these mass systems of higher education, which mushroomed rapidly in most developed countries, find themselves facing new challenges in fulfilling their mission of imparting knowledge, arising from fundamental changes in the nature of the student population.

The essence of these changes, considered by Levine (1997) the greatest in higher education (at least in America) in recent years, has to do with who the students are. Apparently, by the 1990s the lion's share of growth in U.S. college enrolment came from 'non-traditional students': half of new students were twenty-five years of age or older, 74 percent of the increase was female, and 56 percent were part-time students. To boot, 38 percent of all college students were over twenty-five years of age; 61 percent were working; 56 percent were female, and 42 percent were attending part-time. Thus, less than a fifth of all undergraduates fit the traditional stereotype of the American college student – eighteen to twenty-two years of age, attending full-time and living on campus. The composition of the student body in Britain seems to have altered in much the same manner, or in Trowler's words, "at many universities and polytechnics during the 1980s and 1990s it became more likely that one would meet students who were female, older, working class, and studying part-time than it had been before". If in 1982 only 42 percent of first year higher education students in the U.K. were women, their number rose to 47 percent in 1989, and by 1994 the genders became equally represented among first year full-time undergraduates. Also, by 1992 the percentage of all students aged 21 and over in the UK was 42 percent, compared with 33 percent in 1982, with the widening of access of benefit to first generation students from lower social strata, many of them mature students (Trowler, 1998, p. 10). Moreover, as Gibbons et al. (1994) point out, not only is this new breed of students more democratic in its background (neither predominantly male nor drawn from the upper middle and professional classes), but also it is no longer destined to fill elite positions in society and the economy; most graduates now go, not to positions of leadership, but to join the vast middle-range salariat of the public services and private corporations, more often than not in their own communities.

These developments towards the massification and democratisation of tertiary studies, the direct derivatives of the ethos of the learning society, in which life-long study, as well as training and retraining, are possible and taken for granted by large segments of the population, bring about the notion of higher education as just one of the many activities in which people engage in the course of their daily living. With learning thus becoming a routine and ongoing feature of their lives, today's students bring to the university exactly the same consumer expectations of convenience, quality, service and cost they have for every other commercial enterprise with which they deal. They want their institutes of learning nearby and open during the hours most useful to them; they want easy, accessible parking, no lines, and a polite, helpful, and efficient staff; they want high-quality education at a low cost; they do not want to pay for activities and programs they do not use or can get elsewhere (Levine, 1997). To cut a long story short, they regard the university as the supplier of expert services, expected to give them the education they want and pay for, a rather novel attitude in academia, and one which certainly necessitates some

adjustments on the part of the faculty who teach them. What further seems to complicate matters is that nowadays the student population is changing in additional ways, which also require that faculty adapt to their needs: since undergraduates seem to be not as well prepared to enter college as their predecessors, faculty are being forced to teach more basic-skills courses, 'dumb down' the level of their classes, and reduce the number of advanced courses they offer, all of which influence their ability to enjoy teaching. Also, since students are more likely to prefer concrete or practical subjects and active methods of learning, while faculty are predisposed to abstract and theoretical subject matter and passive methods of learning, the resulting discrepancies in attitude often cause frustration on both sides and a tendency for faculty to interpret as deficiencies what may simply be natural differences in learning patterns (Levine, 1997).

Another problem originating with the changed nature of the student population is that of a tendency towards alienation in the academic community. Emanating from the fact that the majority of students are now working and increasing proportions are studying part-time, so that faculty are spending less time with their students and the campus is becoming less and less a community (Levine, 1997), the problem is exacerbated by the spread of the new teaching technologies. Formerly students were taught in classrooms and laboratories, face-to-face, and ideally, in small groups; these days they are also taught through computers, videos, television, and at a distance. This, of course, has very real benefits at least in undergraduate education, for the new technology allows additional access to higher education and encourages independent learning (albeit more mechanistic in nature); however, it can also contribute towards the creation of an aloof, anti-humane environment (Gibbons et al., 1994).

It seems then, that the academic world has indeed become geared towards the teaching of large numbers of students from all walks of life, for a university and its faculty cannot but provide adequate responses to the demands of the changed realities of higher education, or students might 'take their business elsewhere', a prospect which not many institutes can face with equanimity in our era of financial difficulties. In these circumstances it is fairly surprising to find that the fundamental orientation in academe has nevertheless remained towards research, not teaching. For instance, in the U.S. the call for new definitions of scholarship and research, through a broadening of the criteria, by which faculty are judged in their development, to include "the full range of academic work...not only the *scholarship of discovering knowledge* but also the *scholarship of integrating knowledge*, the *scholarship of applying knowledge*, and the *scholarship of teaching*" (Boyer, 1995, p. 2), although originating in the 'grand old man' of American higher education, Ernest L. Boyer, and evoking untold number of discussions, has so far remained largely unheeded. Even if Massy and Zemsky's (1994) somewhat extremist concept of the 'academic ratchet', a process whereby faculty act on their preferences to do more research by encouraging the increased recruitment of new colleagues so that their own teaching loads can be reduced, is not universally accepted, there can be little doubt that academics are more research than instruction focussed, mostly for intrinsic reasons (many simply seem to enjoy research work more than teaching), but also in view of incentives inherent to university reward systems, which favour research over teaching when considering tenure, promotion and salaries (Rhoades, 2000). However, the winds of change are felt not only in the sphere of university teaching; they also seep (and with increasing velocity, at that) into that hub of academia, research.

Scholarship in Transition: New Orientations and Shifting Patterns in Academic Research

The literature abounds with discussions of the changing nature of contemporary academic research, more often than not converging around the notion of its 'marketisation' or 'commercialisation'. If the juxtaposition of the terms 'marketisation' and 'commercialisation', on the one hand, and 'research', on the other, seems (at least at a first glance) incongruous, since the word research still conjures up visions of an inherently elite activity, aimed at developing knowledge and understanding for the benefit of mankind and reserved for the select few of the highly esteemed scholarly community, the development of entrepreneurial patterns of academic research, intent on cashable knowledge production, is nevertheless indubitable. Thus, while many of the characteristics of the traditional academic research model remain intact, some of its attributes are being modified or transformed in response to a variety of external forces and constraints, bringing about the trends towards the 'marketisation', 'commercialisation', massification, instrumentalisation and bureaucratisation of scholarship.

Traditionally, the scholarly quest for knowledge was seen as end to itself, and in consequence, its major (if not sole) custodians, the universities, were generously supported from public funds in order to facilitate their taking upon themselves the responsibility for fostering research and scientific progress. However, as part and parcel of global processes driven by the rhetoric of 'quality', 'efficiency' and 'value for money' and culminating in the state-enforced transfer of concepts and organisational forms from the private to the public sector (Harvie, 2000), and with knowledge becoming a commodity of major value, the justification of academic practices has become the production of 'knowledge for use' instead of 'knowledge for its own sake', leading to a gradual break-up of the historic pact between knowledge production agents and the state (Delanty, 1998). Thus, if up until a decade or so ago the relationship between the state and the university could be described as a partnership, particularly in the area of research, today that partnership has unravelled, becoming more a process of procurement than a partnership (Duderstadt, 1997). As Calas and Smircich (2001, p. 148) observe, "the moment 'knowledge' was positioned as a commodity in the wider context of capitalist modes of production and ('free') market forces, universities were to receive declining support for continuing as sanctioned sites for the production of innovations in the arts, the sciences and the professions, and still much less support for continuing as places for 'disinterested knowledge' in the quest for a better society." The subsequent decline over the last few decades in the financial resources of universities in the developed countries, although seeming to fly in the face of the consensus, pointed out among others by de Weert (1999) and Farnham (1999a), as to the central role accorded to knowledge and its producers and propagators in all spheres of social and economic life, is nevertheless undeniable: for example, a 1991-1992 survey of academics in 14 countries, initiated by the Carnegie Foundation for the Advancement of Teaching, revealed that one common denominator among higher education systems in all the countries surveyed was fiscal constraint, ranging from modest to severe (Altbach and Lewis, 1995). Since the ability of higher education to attain its most important goals, the free pursuit of the discovery and dissemination of knowledge, is very much limited as well as enabled by the economic context in which it is embedded (Davis and Chandler, 1998), the retreat of the state from its role as primary provider and financier of knowledge and the ensuing dearth of resources has forced universities to seek alternative sources of funding: obviously, once state support was no longer forthcoming unconditionally, universities could no longer afford to go on financing the rising

institutional operating costs without distributing the results of their research beyond the academic community, no more than a business enterprise can mount up stocks of finished goods without making an attempt to sell them. In result, a multi-billion dollar knowledge industry has developed in and alongside universities, with the unequivocal purpose of providing more direct and effective responses to the needs of industry and the labour market in return for financial support (Gibbons et al., 1994; Massey, 1997).

Thus, amidst increasing pressures to become extra-focussed on revenue generation, these days universities intersect nationally and internationally with a multitude of knowledge producers, within and without academe, a development made possible through novel information technologies' enabling and encouraging collaborations across geographical distances by virtue of making connections with research sites throughout the world immediate (Rhoades, 2000). As Gibbons et al. (1994) in their extensive analysis of the emergence of cooperative trends in research observe:

A host of new institutional arrangements link government, industry, universities and private consultancy groups to further research, which, therefore, is less dependent on funding from central government or non-profit foundations, and more on the firms, industries and social lobbies directly involved, though central government may add its money to that of the universities and the private industry when the research is deemed beneficial for national purposes. In fact, state-funding of university research, perhaps diminished and stagnating, but still an important source of research budgets in most highly industrialised countries, is made more targeted by allocation mechanisms mimicking the market, in order to enable governments to commission useful research, designed explicitly to boost industrial performance and increase support for science, with the enhancement of the country's economic competitiveness in mind. With research moving from the university to other forms of organisation, in which the university is only one participant, close working relationships have been developing between people located in different institutions, not all of whom need be researchers; there are frequent interactions and growing non-governmental international cooperation of university based research scientists with business people, venture capitalists, patent lawyers, production engineers and scientists located outside the university. If in the past the transmission of knowledge from universities to industry proceeded linearly, from discoveries and inventions through the hiring of graduates, the publication of results of university research in professional journals, and the consulting by university staff, to production, in a manner resembling a relay race, in which the baton is passed cleanly and quickly from one runner to the next, the vastly expanded knowledge production process of today is more like a soccer game in which the ball is passed back and forth constantly among academic and lay members of the team engaged in knowledge generation.

With higher education thus becoming more and more instrumental, and with universities increasingly drawn into the heart of the commercial process and becoming part of a larger and denser network of knowledge institutions that extends into industry, government and the media, control of the universities no longer follows traditional patterns. Farnham (1999a, p. 10), exploring the roots of the shift in the control of universities away "from what Clark...describes as 'academic oligarchy' towards, somewhat paradoxically, both more market and more state control", analyses the process whereby the state, which continues to provide the lion's share of universities' resources, seeks greater accountability for them and more marketisation: "More state control emerges by monitoring 'quality' centrally, reducing subsidies to

institutions and their students and encouraging institutions to 'sell their services' in the marketplace. At the same time...the state seeks, through 'new' management processes and systems, greater efficiency of provision." In consequence, institutions of higher education have been facing for quite some time now ever-growing demands for accountability to those controlling their resources (government and managers) and those benefiting from their activities (students and employers). Furthermore, as Hackett (1990) points out, today's research sponsors, be it private or governmental bodies, take measures to ensure close control of scholarship by explicit steering of research into 'the most advantageous channels' (at least from their point of view), either directly, through major funding initiatives or indirectly, through grant selection mechanisms.

In an attempt to comply with these increasing pressures for quality, performance, value for money and economic relevance in both their teaching and research, universities, often criticised for their inherent inefficiency, have been compelled to move much closer to an industrial pattern of organisation, with senior management teams and strategic plans, line managers and cost centres and more active Boards of Trustees. True, as Gibbons et al. (1994) are quick to point out, within the new, more outer-directed managerial model thus created, knowledge production is no longer inhibited by collegial government, nor tough choices obfuscated by the need to secure consensus, and there is unquestionably greater flexibility of response to fast-changing intellectual and professional needs. However, the advent of managerialism in higher education, often interpreted as an expression of the withdrawal of trust by the government in the institutions of higher learning on the grounds of their being 'full of less able students and teachers', and as such incapable of improving their own performance (see, for example, Farnham, 1999a), can be seen as tantamount to a reduction in the autonomy of the universities. With the locus of control for decision making shifting away from departments and their faculties and toward various state-level actors and university spokespersons (Gumport, 1997), there is both a greater involvement of the government in decisions that were once regarded as the prerogative of faculty, such as the choosing of targets for institutional development, and an increase in government regulation of higher education, encompassing such matters as faculty workloads or tenure (Levine, 1997). The retreat from time-honoured faculty expectations for shared governance and active participation or at least consultation in academic decisions has come to be felt so acutely, that Gumport (1997) even questions the ability of higher education institutions to sustain their status under the circumstances as organizationally and intellectually viable and attractive places for academic work.

Along with the vulnerability of institutes of higher education to political and administrative dictate, a gradual erosion in the social status and professional leadership of faculty also seems to have been taking place, to the extent that Halsey (1992, p. 13) is driven to say that "...the don becomes increasingly a salaried or even a piece-work labourer in the service of the expanding number of administrators and technologists". Clark's description of the move towards weakened professional control in academia, rooted in the specific setting of the American higher education scene but, given the similarities among higher education trends in the Western world, probably no less applicable elsewhere, sounds dismal: "Professors in research universities and leading private four-year colleges certainly encounter trustee and administrator influence. Their professional position is also increasingly challenged by the professionalisation of administrative occupations clustered around central management...But academics

in these favoured sites generally have strong countervailing power of a professional kind that is rooted in their personal and collective expertise... They expect to dominate in choosing who to add to the faculty and what courses should be taught. They expect to be consulted in many matters rather than to receive orders from those in nominally superior positions. But in public and private comprehensive colleges and especially in community colleges, the foundations of authority change. Subject expertise becomes more diffuse, occasionally amounting only to sufficient knowledge in the discipline to teach the introductory course to poorly prepared students, while at the same time the role of trustees and administrators is strengthened, sometimes approaching the top-down supervision found in local school districts" (Clark, 1997, p. 34). This waning of the professional domination in academia has been accelerated by the diffusion of scientifically literate people through society, consequent to the massification of higher learning, for many people nowadays seem to feel that being familiar with science and technology and the methods and procedures of science, they are in a position not only to understand what university researchers are doing but also to pass judgement on the quality and significance of their research (Gibbons et al., 1994).

As this greater awareness of the workings of academe does not seem to have counteracted the still very much prevalent myths concerning the 'leisurely lifestyle' of academics, mentioned among others by Rhoades (2000), which stem from the notion held by most everyone outside academe that a professor's workload equals no more than the six to fifteen hours a week he spends in actual classroom teaching, the call for greater accountability and for strengthening the link between money and work in higher education has been continuing unabatedly, bringing about the introduction of measures of assessment involving the quantification or valorisation of research. In the U.K. this has been happening through the five-yearly nation-wide Research Assessment Exercise (RAE), and in the U.S. and elsewhere in the Western world, through more localised, but no less determined institutional evaluation processes aimed at gauging productivity and assessing quality for both pre- and post-tenured faculty. Thus, on the basis of the 'Mathew Principle' of 'to him who hath shall be given' (Trowler, 1998), essentially immeasurable research outcomes are assigned 'research values' on the basis of varying standards of measurement: in some disciplines authorship of books is the principal unit, in others refereed journal articles are preferred, with journals ranked such that a publication in one may be 'worth' much more than a publication in another. The (many) oppositions to the mere idea of attempting to assess and measure research are outside the scope of this discussion, bar the one noted by Harvie (2000), which has to do with the constraints which seem to be imposed thereby on researchers' free thought and creativity: the strong pressure on academics to produce research output, as opposed to being engaged in research, means that there is an incentive to undertake 'safe' research projects, that is, those which are more likely to yield publishable, if not earth-shattering, results, as well as to plan and execute these projects with the next evaluation process in mind (for example, with assessment every few years, the incentive must be not to embark upon lengthy research projects). No wonder Choi, in his guide to academic authors on how to publish in top journals, openly recommends that they do not to write papers on 'breakthrough' ideas, at least not in the early stages of their careers, and warns against putting two good ideas in the same paper (cited by Harvie, 2000, p. 6). This seems to provide some explanation to the phenomenon, pointed out by Gibbons et al. (1994), that the emphasis in many research fields has switched away from primary production of data and ideas to their configuration in novel patterns and dissemination to different contexts; apparently, not only is it

cheaper, but also much 'safer'.... All this leads Harvie to ponder, what would have become of the British mathematician Andrew Wiles in such an environment: "In 1994, whilst based at Princeton University, Wiles solved the 350 year old Fermat's Last Theorem, a fantastic achievement. Wiles had been fascinated with the problem for much of his life and during the seven years he spent working on the problem in Princeton, with no certainty of success, he did little other research" (Harvie, 2000, p. 6).

Having thus portrayed the salient features of the fundamentally changed (and still changing) world of university research, we also need to see the significance of these developments from the perspective of the individual researcher.

The Academic in the Changing World of Higher Education: Aligning Old Priorities with New Agendas and Expectations

What does it mean then to be a scholar in the radically changing contexts of contemporary higher education? It seems to mean, first and foremost, a constant grappling with the disparity between what is traditionally valued as scholarship and the pragmatic needs and dictates of modern society.

The time-honoured image of the archetypal academic researcher is that of the highly autonomous scholar, able to set his own research goals in accordance with his interests, work diligently towards them with what he judges to be his own capacity and to do so without much direct interference from anybody (Ziman, 1981). In fact, although in the past too a level of research activity was expected of the academic, for research was considered to be the central professional endeavour and focus of academic life, his obligation was to engage in research or other 'scholarly activity', rather than to produce a research output; thus, for all practical purposes he was doing research because he wanted to, working alone and enjoying a considerable degree of autonomy, and publishing only if he thought he had some ideas or results worth making public. Therefore, although research output of high quantity and quality would almost certainly be rewarded in terms of academic prestige and promotion, which may or may not have brought financial benefits, his mission in life was considered to be the pursuit of knowledge for its own sake, with no close correlation assumed to be necessary between research quantity and quality, on the one hand, and material reward, on the other (Harvie, 2000; Rice, 1996). Nowadays, although the academic core values, such as autonomy, freedom, and personal commitment still appeal strongly to scholars, affecting profoundly the choices made in the course of their work (Hakala and Ylijoki, 2001), extrinsic factors play an increasingly significant role in their research decisions. And so, with the emphasis in university research moving away from free enquiry to problem solving within the framework of specific programmes funded by external agencies for defined purposes (Gibbons et al., 1994), the academic researcher's work is less and less curiosity-driven, or initiated with the sole purpose of contributing to the advancement of human knowledge per se. Institutional policies often coerce him into targeting his research to commercially attractive issues and marketable outcomes, if he is not compelled to do so anyhow in order to secure the necessary financing for his work, so that the scholar has to become in the words of Slaughter and Leslie (2001) "a state-subsidized entrepreneur who vies for external resources in a competitive environment", with the highest mark of academic achievement becoming entrepreneurship (Delaney, 1997). Thinking along the same lines, albeit approaching the subject from a slightly different angle, Podgorecki (1997, p. 128) examines how modern professional scholars differ from traditional scholars: "...traditionalists were

mainly interested in developing those scientific ideas that had pure, universal and eternal values [whereas] modern professional scholars are concerned almost exclusively with detailed analyses of limited subjects that lack a broader cultural perspective. They are concerned with the pragmatic use of their knowledge and the enhancement of their own careers." Moreover, as Gumpert (1997, pp. 127-129) insists (admittedly giving voice to the most extremist stance in the matter), the academic of today, considered a redeployable resource and a source of potential revenue, to be utilized and monitored at the discretion of the management, is freely given revised or additional workloads, told how to spend his time and which programs to devote his energy to, and asked to report office hours, consulting activities, and time spent out of town. Also, she says, with the preferred approach to faculty hiring having become, for reasons of cost-efficiency, that of filling vacancies with part-time faculty, the coveted tenure is no longer a routine stage in his career, no matter how successful he may be. And, she concludes, since he is no longer seen as professionally self-regulating and autonomous, trusted to work according to internalised standards, his work is increasingly under scrutiny, weighed, measured and quantified in response to societal insistence on accountability, entailing annual performance reviews which document how he spends his time and what he produces, in terms of the number of courses taught, student credit hours per term, research dollars brought in and publications produced.

Indeed, Rhoades (2000, p. 47), lamenting these shifts in the academic ethos draws a rather bleak portrait of the contemporary academic: "As a faculty member, I am now not principally an intellectual but an economic being. In my teaching I am now focussed not on intellectual development but on preparation for employment. In my connections to alumni, I am now not a concerned professor following up with my students, but a fund-raiser, expected to play a role in the capital campaign of my university by tapping my former students. In my research activities I am pursuing discoveries not to advance knowledge in the public domain but to pursue economic interests in the in the private marketplace. Moreover, I am now an entrepreneur, seeking venture capital from foundations and corporations and private parties to support revenue-generating activities. And in cultivating connections in the community I seek to engage in outreach as a service not for free, but for a fee. In this configuration of values, the public interest is served by professors working not as public servants in an institution oriented to knowledge growth, but as private entrepreneurs in an enterprise oriented to revenue generation."

However, Rhoades' tongue-in-cheek description of his and his colleagues' utter compliance with the seemingly rigorous dictates of the new academic culture masks the far more heterogeneous reception they actually accord to the ostensibly ubiquitous requirements for changes in attitude, values, and behaviour in academia.

First of all it seems that the picture of the changes in contemporary research work is more nuanced than the mournful accounts of entrepreneurship marking the end of 'the good old days of true scholarship' would have us believe. True, the purely academic orientation in research is no longer considered the only viable alternative open to the scholar; in fact, findings of a recent study among senior researchers in Finland (Hakala and Ylijoki, 2001) indicate that four different orientations of research are clearly discernible in academia, according to the audience for the research, the nature of the knowledge produced, and the motive for doing research: academic, civil society, state-governmental and

entrepreneurial. However, research is still often academically oriented, with the traditional academic values and norms stalwartly upheld, and with the researcher, motivated mainly by the achievement of recognition within the academic community, choosing his research topic out of scientific curiosity and aiming at generating knowledge of a theoretical nature. For obvious reasons the academic orientation is strongest among researchers who are not dependent on external funding, but undoubtedly working on intellectually challenging research topics, contributing to one's field and achieving academic merit within the scientific community are regarded as important values among all researchers. Moreover, at least in theory the traditional academic research orientation can reside side by side with the other, more application-oriented approaches to research work, although in practice often one dominates in any given institute or unit within an institute, and there are tensions among them (for example, the academic and entrepreneurial orientations, which can and frequently do exist in good balance, are sometimes problematic to combine, for these two orientations entail a wholly different rationale and time-span: whereas the academic orientation appreciates theoretical work and allows for risk-taking, the entrepreneurial orientation puts weight on direct utility and commercial benefits in a shorter time-span; also, whereas in the former making results public forms an essential norm, the latter approves of keeping some important results secret).

Moreover, not only does this multi-coloured research terrain seem to have the traditional approach to research as its focal point, but academics' varying reactions to the numerous options and/or demands arising from the new trends in research also indicate that acquiescence is by no means as prevalent a coping strategy as it may seem at first glance. Thus, findings of a study (Trowler, 1998) on the responses of academics to the shifting environmental and policy contexts of British higher education during the first half of the 1990s, although based on a single-site ethnographic case study and focussing on curriculum issues, nevertheless provide interesting insights as to the differential approaches of faculty to the novel concepts and practices in their professional surroundings. Apparently, academics' responses to the changes in their working contexts can be seen as falling into four broad categories: sinking, swimming, coping and reconstructing, where these categories represent types of behavioural response, not types of academic, and as such they are not mutually exclusive (in fact, academics move from one category to another in the course of their professional lives). The academics who are 'sinking' essentially accept the situation mutely, demonstrating passivity, conformity, ritualism and even retreatism in the face of unwelcome change, which in turn lead to weariness, disillusionment, considerable stress and even illness; the academics who are 'swimming' not only accept the new environment, but also thrive in it, identifying windows of opportunity and enthusiastically taking advantage of them; the academics who are 'coping' have developed strategies to deal with their new environment and therefore feel the stressful effects of their situation to a lesser extent than their 'sinking' counterparts, but on the whole their coping is based on negative attitudes (thus, for example, they may retreat from innovation in order to cope with administrative demands, or start unofficially to 'work by the book'); and finally, the academics who are 'reconstructing', proactively use strategies to effectively change the policy, sometimes resisting change, sometimes altering its direction.

It seems then, that if in the past different persons' adopting different personal research policies was seen as wholly "related to the imponderable temperamental factors that presumably govern their plans over the

long run of a lifetime" (Ziman, 1981, p. 15), in the academic milieu of today the academic researchers are called upon to adjust their priorities and long-standing professional values to the host of new challenges posed by the far-fetching changes in their professional world.

To the extent that their research is dependent on the availability of financial support, the pressure is for the researchers to take on new, entrepreneurial roles, aimed at securing funding and entailing the preparation of countless research proposals;

To the extent that their research is dependent on research monies, the pressure is for the researchers to conduct research cost-effectively;

To the extent that the university they are affiliated with is market oriented and encourages revenue-generating research, the pressure is for the researchers to reorient their research to commercially exploitable undertakings;

To the extent that in their disciplinary environs and professional milieu research is focussed on solving real-world problems in a context of application, and in consequence research monies are concentrated more and more on 'useful' research, the pressure is for the researchers to reorient their research so that it is aimed at practical outcomes;

To the extent that in their disciplinary environs and professional milieu research is focussed on an interdisciplinary approach, and in consequence research monies are concentrated more and more on interdisciplinary teams, the pressure is for the researchers to work more and more in cooperative groups with other academic researchers;

To the extent that these cooperative units link up more and more with organizations external to the university, the pressure is for the researchers to work more and more with people outside the university as well. In both cases, their working in a team means that they have to change their practices of conducting and disseminating research, adopting a different frame of mind and mastering new technologies;

To the extent that managerial values and measures of accountability are put into practice in the institution they are affiliated with, especially if and when it is with an eye to the allocation of funds, the pressure is for the researchers to be more productive in their scholarly work (and to prove their productivity by recording and reporting their professional activities in standardised formats, at a considerable cost in time devoted to the purpose), while at the same time they are expected to teach more, teach better, take on administrative tasks and reach out to the community at large;

To the extent that their research productivity, in terms of both quantity and quality, is periodically evaluated and assessed at the institutional and state levels, the pressure is for the researchers to undertake research projects according to the likelihood of these yielding publishable results.

Having thus taken a look at the new breed of scholars increasingly peopling the corridors of our higher education institutions, whose priorities and long-standing professional values have been changing in response to the challenges posed by the shifting academic scene of the knowledge society, it seems most unlikely that their information needs could have remained those of their predecessors.

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Appendix 3

Reprinted from: Herman, E. (2001). "End-users in Academia: Meeting the Information Needs of University Researchers in an Electronic Age. Part 2: Innovative Information-accessing Opportunities and the Researcher: User Acceptance of IT-based Information Resources in Academia". Aslib Proceedings, 53(10), 431-457.

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Appendix 4

Pilot Project Interview Guide

Subject

In comparison with the past, is his current/recent research more/less specialised? What implications, if any, does this development have for his information needs? And for his information seeking practices?

In comparison with the past, has his current/recent research become more/less multi- or interdisciplinary, with/without his consequent participation in cooperative research projects? What implications, if any, do these developments have for his information needs? And for his information seeking practices?

Function (use to which the information is put)

Which research tasks, if any, impelled him in his current/recent research to actively search for information? Reviewing the existing knowledge on a given topic? Keeping abreast of new developments? Solving topical problems? Getting ideas for a new research? Other?

How did he go about fulfilling these information needs during his current/recent research project?

What were the reasons behind his decisions which method(s) to use for which task: what did the resource he used offer for the particular task it was chosen for, and what were its specific advantages and disadvantages for him, from the point of his individual capabilities, preferences and facilities?

In comparison to his past practices, have any changes occurred in the range of his customary information activities? Does he perceive any changes in the relative importance of the different activities for his research work?

Nature

What specific types of information does he need (theoretical, conceptual, historical, descriptive, statistical, methodological)? Do specific research tasks necessitate information of a different nature than others?

Does he specifically set out to search for a particular type of information?

How does he obtain the primary information he needs? Does he go about it utilising different methods than those he uses for obtaining secondary information?

Intellectual level

If his research has become more/less multi- or interdisciplinary and/or more/less specialised: how does it affect his information needs? For example, does he need information of a different intellectual level outside the limits of his own field of specialisation?

In view of the easy accessibility of IT-based information, is he prepared to compromise on the intellectual level of the information he incorporates in his work?

Viewpoint

How does he identify information presented from a particular viewpoint or approach?

Does he ever look for information presented from a particular viewpoint or approach, and if he does, how does he go about finding it?

Quantity

To what extent does he feel overwhelmed by the quantity of information available to him? Does he need/ has he adopted coping strategies to deal with problems of information overload? And if he does need coping strategies, what are they? Has he found over time more efficient, quicker and easier (electronic?) information services and systems to overcome problems of information overload?

Has he become more of a passive recipient of information, relying either on services, which see to the delivery of full-text reports on relevant research conducted in his area to his desktop, or on the ease of maintaining contact with expert colleagues, or on both?

Is he now more/less satisfied with the results of his information seeking compared to his former habits? Why?

When he wants comprehensive or exhaustive information in his research work: has his working definition of 'comprehensive or exhaustive information' changed in the realities of the information society?

Quality/Authority

How does he go about assessing the quality of the information he obtains (for example, when he accesses information via the Internet)?

If he is pressured for time, is he ready to accept (if need be) less than top-quality information?

In his give and take with his colleagues (especially if he participates in collaborative research ventures): to what extent is he prepared to rely on information contributed by his colleagues?

Date/currency

Is up to date, state of the art information a requirement in his research? How does he define 'current' information? How does he go about making sure that his needs for current information are adequately met?

Speed of delivery

In comparison with the past, is he more/less pressured for time? And how does the time issue affect his information needs? For example, if and when he is pressured for time, is he prepared to/forced to make do with whatever information is already at hand, such as his own collection, or whatever information is easily and quickly accessible, instead of actively seeking targeted and focussed information?

Has he felt/does he still feel the need for more efficient, quicker and easier (electronic?) ways and means to speed up the processes of fulfilling his information needs? What (if any) coping strategies has he developed/adopted in result?

Is he prepared to/forced to pay for speeding up information delivery?

Place of publication/origin

With the global village becoming more and more a reality felt in all aspects of life, to what extent is he ready now to accept information, which does not originate in his own country/in the English speaking world/in the Western world?

Processing/packaging

How aware is he of novel information opportunities (broadly defined to include: information seeking, using online and CD-ROM databases, library catalogues, and WWW search engines; information retrieval from electronic journals, books, full-text documents, and commercial and non-commercial Internet resources; and information communication via email, electronic discussion groups and electronic conferences)?

Does he routinely use novel information opportunities for research purposes? And if he does, does he consistently choose specific methods for specific tasks?

How does electronic information-resources use impact upon his use of other sources/communication channels? Does he express the need to have contact with people, libraries and books as well? Does he see the electronic library as posing a threat? Can the electronic equivalent truly take the place of a traditional method for him? For example, does he consider e-mail discussions as measuring-up to 'real-time' discussion with colleagues? Are there instances when he sees the electronic equivalent as the better option?

If he avoids the use of novel information seeking methods: Has he never tried? Has he tried and rejected? In either case, why? And is he prepared to do/has he been doing anything about becoming a user? What? (For example, try to master new IT based information seeking methods on his own? Learn from his peers/assistants/family? Participate in any form of formal instruction/training? Go through intermediaries?)

1.1.1 Obstacles to meeting information needs

What are the constraints preventing his meeting his information needs? Information overload? Lack of time? Problems of availability/limited access to relevant information sources and systems? Lack of training? Other?

Appendix 5

Phase Two Interview Guide

Subject

Hypothesis no. 1

With research increasingly focussed on ever-narrowing, ever-more specialised subject areas, the traditional distinction between the researcher's primary/secondary/peripheral fields of attention is fading away, and along with it the notion that information needs vary in accordance with the centrality of a subject area to the researcher's interests.

The specific points to be looked into in this context:

In comparison to the past, does the researcher discern any changes in the scope of his interests and attention? Does he testify to more/less specialisation in his research work? Are there any changes in result in the scope and/or depth of the information he requires? How does the scope of his interests/attention impact on the scope and/or depth of the information he requires: does his approaching his research problems from a more/less constricted angle mean that he needs information that is correspondingly broader/narrower in scope and/or more/less expert, intricate and complex in nature? Under what circumstances (if ever) does he need all (or at least most) available information on a given subject for his research work? Why then and not on other occasions? How does he go about making sure that he does indeed have all the information he deems necessary, but that it is no more than that, either?

Hypothesis no. 2

When inter- and multidisciplinary research ventures call for information in subjects outside a researcher's own area of expertise, he or she copes by taking one of three possible routes: depending on the level of 'outside' information believed to be necessary, either embarking on a collaborative research venture, or undertaking to extend his or her knowledge base by mastering unfamiliar domains, or simply trying to make do with more basic level information.

The specific points to be looked into in this context:

Has the researcher participated in inter- and multidisciplinary research ventures as of late? Have any of his recent research projects called for information in subjects outside his areas of expertise? How did he go about bridging over the information gaps arising when he thus crossed over the boundaries of his core knowledge domains to fields in which he may have been less familiar with the literature, the methodologies and the jargon? What were the reasons for his choosing/preferring any particular coping strategy he describes? Did he consistently choose/prefer any specific coping method? If not, under what circumstances was each particular method used?

Hypothesis no. 3

Keyword-based information seeking is the researcher's method of choice for information retrieval.

The specific points to be looked into in this context:

In recent instances of information seeking, what information retrieval techniques are reported to have been used? What reason does the researcher give for choosing/preferring the information retrieval techniques used? How (if at all) do his current methods of information seeking differ from past ones? What are the reasons given for any differences discerned?

Function/purpose (to which the information is put)

Hypothesis no. 1

The key purposes and functions to which information is put in contemporary research work have remained those previously identified in the literature, with little or no change at all. Basically, researchers still need information for reviewing the existing knowledge on a given topic, for keeping abreast of new developments, for solving topical problems, and for getting ideas for a new research.

The specific points to be looked into in this context:

In recent instances of information seeking, what were the researcher's specific purposes? Which research tasks impelled him to actively search for information? How did he go about meeting each specific information need he reports? How does he customarily deal with unintentionally encountered information of current and/or future potential usability?

Hypothesis no. 2

The need to review the previous knowledge on a given topic is met by the researcher's actively searching for information, with his choices of information sources and information seeking methods firmly embedded in the conventions traditionally associated with his discipline.

The specific points to be looked into in this context:

How did the researcher go about gathering information on recent occasions when he needed a thorough review of the previous literature on a subject? What were the reasons behind his choice of method(s) and resource(s)? What were the particular advantages of the method(s) and resource(s) chosen, both from the point of view of the task at hand and that of the researcher's individual capabilities, preferences and facilities? In comparison with his past practices, does the researcher now customarily use different methods and/or resources whenever he needs to review the previous knowledge on a given topic?

Hypothesis no. 3

The range, variety and frequency of a researcher's activities aimed at keeping current are determined by the level of awareness deemed necessary in his or her disciplinary milieu to the work being done by others.

The specific points to be looked into in this context:

How important is it for the researcher to keep current? How apprehensive is he about the possibility of his missing a piece of information on progress made in his own field/ in adjacent fields? Why? How does he define 'keeping up': getting hold of new publications as soon as they appear or following research in progress (or both)? What are his habitual/preferred methods for keeping up? To what extent does he rely upon novel updating/current awareness services to deliver to his virtual doorstep any pertinent scientific/scholarly news? To what extent does he rely upon his colleagues for keeping him up to date as

to pertinent scientific/scholarly news? What are the reasons behind his choice(s) of method(s) and resource(s) for keeping current? What are the particular advantages of the method(s) and resource(s) chosen, both from the point of view of the task at hand and that of the researcher's individual capabilities, preferences and facilities? Do his methods of keeping current provide adequate responses for his needs? If not, what (if anything) is he doing about finding improved solutions to the problem?

Hypothesis no. 4

Whenever a researcher comes across a missing piece of information in the course of a research programme, he has two venues of action open to him: he can either stop working on the specific project until his information need is met, or he can provisionally substitute some sort of a tentative hypothesis for the information needed and carry on with his work until the information eventually obtained settles the issue. In either case the preferred method for fulfilling this kind of topical information need is consultation with a knowledgeable colleague.

The specific points to be looked into in this context:

How did the researcher solve the need for a piece of topical information, which had cropped up in the course of a recent research programme? How much of an interruption was it to his workflow? How does he usually go about obtaining such topical information? Why does he consider the particular method(s) he habitually chooses the most suitable for this purpose? Has he tackled the task any differently in the past? How? If he did, what makes the method(s) he now uses more/less preferable to the method(s) he used in the past?

Hypothesis no. 5

The manner whereby a researcher looks for information to serve as the spring board and the trigger for a new research has its roots in his disciplinary culture: in fields of intense competitive activity stimulation-seeking through information is a regularly carried out, intentional and focussed element in the researcher's professional pursuits, whereas in subject areas characterised by a less hectic scholarly work-pace finding suitable topics for a new research is a rather less purposeful and intense undertaking.

The specific points to be looked into in this context:

How did the researcher come up with the idea(s) for his latest research project(s)? What/who were his sources of inspiration? How does he customarily detect a topic worthwhile of investigation? Has he gone about it any differently in the past?

Hypothesis no. 6

Although theoretically allowing for more passivity on the researchers' part, neither the availability of services, which see to the delivery of full-text reports to their desktop, or the ease of maintaining contact with expert colleagues, have changed the determination with which they go about acquiring the information they need.

The specific points to be looked into in this context:

In comparison with his past practices, does the researcher now use the same/different methods and/or resources whenever he needs to: review the previous knowledge on a given topic, keep abreast of new developments, solve topical problems, get ideas for a new research? What are the reasons he gives in either case for doing as he does?

Nature

Hypothesis no. 1

Although the nature of the information being sought is a crucial factor in ensuring that the answer found is truly relevant to the question asked, it is seldom consciously formulated in the context of research-work related information seeking.

The specific points to be looked into in this context:

In the course of his last research project(s) did the researcher specifically set out to search for a particular type of information (for example, statistical or methodological information)? If he did not, what reasons does he give for refraining from doing so? If he did, what was the problem, which prompted him to seek a certain kind of information? How did he go about finding it?

Hypothesis no. 2

The nature of information needed in scientific/scholarly work varies first and foremost with the subject area of the research underway, inclusive of the methodology customarily used therein.

The specific points to be looked into in this context:

What kinds/types of information did the researcher use in his last project(s)? Are these the types of information his research usually calls for? What types of information does he rarely (if ever) require?

Hypothesis no. 3

Specific requirements arising at the different stages of scientific work call for different types of information: at the initial stages the perception of the research problem involves heavy use of theoretical and conceptual information; at the stage of reviewing the existing knowledge on the subject being queried historical and/or descriptive information is needed; the formulation of procedures appropriate to the inquiry necessitate methodological information; at the intermediate stages that follow, when information is required to solve problems as they come up, specific information is usually the answer, along the lines of statistics or details of techniques and methods; and at the final stages, when the researcher seeks to fully interpret his data and integrate his findings into the existing body of knowledge, the need for information is focussed yet again on theoretical and conceptual, as well as descriptive and/or historical information.

The specific points to be looked into in this context:

What were the discernible stages of progress in the researcher's last research project(s)? What specific research tasks were performed at each stage? Which of them gave rise to information needs? What specific purposes did the information serve in each case? What were the types of information, which were used to meet the needs thus arising? What were the reasons behind the choice made in each case as to the type of information to be used? Are the work practices and ensuing information uses identified and described any different from past ones?

Hypothesis no. 4

Access to primary sources of current information has been greatly enhanced through the introduction of novel information technologies. However, access to primary sources of past

information remains problematic, often requiring, if not as the sole, then at least as the best option that the researcher actually go to the information wherever it is to be found.

The specific points to be looked into in this context:

Does the researcher need primary sources of current/ past/ both current and past information? How did he go about obtaining the primary information he needed in his last research project(s), as compared to his customary practices in the more remote past? What were his reasons for any change reported? If no change is reported: is he aware of other options available to him for accessing primary material, and if he is, why did he choose not to use them?

Intellectual Level

Hypothesis no. 1

Since the material floating around on the Web is so often popular level information of uncertain vintage, researchers prefer to rely in their information seeking on the traditional scholarly communication channels, by way of making sure that the information they find is fitting to their knowledge and intelligence level.

The specific points to be looked into in this context:

How did the researcher go about ensuring that his information needs were met on an appropriate intellectual level in his last research project(s), as compared to his customary practices in the more remote past? More specifically, what (if anything) in his information seeking activities was then/is nowadays intended to guarantee that the results obtained are on an appropriate intellectual level?

Hypothesis no. 2

In their specific area of interest researchers consistently need scholarly information of the highest level; however, in areas outside their chosen spheres of expertise their needs vary according to the level of 'outside' information deemed to be necessary: often no compromise as to the level of the information source used is possible, but sometimes, especially when consultation with an expert colleague is known to be readily forthcoming, more basic level information suffices.

The specific points to be looked into in this context:

In his last research project(s), when (if ever) did the researcher use information, which was not expressly intended for a scholarly audience? Why? What were his criteria for deciding, that a piece of information, although not in line with his intellectual requirements, was still of use to him? How did he go about obtaining such non-scholarly level information? How did he go about integrating such non-scholarly level information into his thesis?

Viewpoint

Hypothesis no. 1

Given the vital importance accorded in the scholarly endeavour to scientific integrity, in areas where diverse interpretations of facts and data are possible and expected it becomes an important part of research work detecting whether a particular piece of information on hand is presented (overtly or covertly) from a certain point of view, approach, or angle.

The specific points to be looked into in this context:

How relevant is it in the researcher's particular field to speak of the point of view from which a piece of information is presented? If it is relevant, how does the researcher discern if some information is presented from a particular point of view?

Hypothesis no. 2

Once the biased and/or one-sided approach used in a piece of information is openly acknowledged, or at least once it is identified, the information therein has its welcome uses for constructing a multi-faceted understanding of a topic.

The specific points to be looked into in this context:

Does information presented from a particular point of view have any use for the researcher? Does he ever deliberately set out to look for information presented from a particular viewpoint or approach, and if he does, how does he go about it?

Quantity

Hypothesis no. 1

Although vast amounts of information are a predominant component of the present-day scholarly environment, problems of information overload in research work are considered virtually non-existent; rather the contrary: the exposure to huge quantities of information is seen as a veritable blessing.

The specific points to be looked into in this context:

How comfortable does the researcher feel with the amount of information available to him? Does he feel a need for modifying his exposure to information and/or for controlling his information consumption? What reasons does he give for feeling as he does?

Hypothesis no. 2

The lowering of academic standards associated with the present-day profusion of scientific and scholarly publications (the 'publish or perish syndrome') has brought about a change in attitude to information in academe. No longer treated with deference bordering on reverence, information is customarily appraised for its merits just like any other commodity, and of the more easily available and plentiful variety too. Therefore, selection is now the key to effective information consumption, with scholars using selective reading as their main, if not only strategy to cope with the quantities of information of potential importance to them.

The specific points to be looked into in this context:

How did the researcher deal with the quantities of information that were available to him in the course of his last research project(s)? What strategies and/or techniques did he use for selecting the items of potential value to him? Was there any difference in his strategies of dealing with information flowing to his desktop, as compared to information retrieved through intentional information seeking? Can he discern any changes over the past years in the way he usually deals with the quantities of information available to him? If he does, what reasons does he give for any such change?

Quality/authority

Hypothesis no. 1

The traditional measures for establishing the authority and/or determining the quality of scholarly and scientific information (authorship and channel of publication) are still the only ones in use; moreover, they serve the researcher's purposes as effectively as ever.

The specific points to be looked into in this context:

In a recent information seeking experience, how did the researcher go about establishing the authority of a piece of information he retrieved? How did he go about judging its quality? On this (or any other recent) occasion, did he employ the same/different criteria for judging the authority and/or quality of traditional and electronic publications? Have his measures for determining the authority and/or the quality of an information item changed over the years?

Hypothesis no. 2

If and when relevant and available the publications of personal acquaintances are often researchers' first choice for meeting an information need. Therefore, the IT based communication opportunities by no means diminish for them the importance of attending professional events, if not solely, then at least to a considerable extent for the purpose of meeting with fellow researchers.

The specific points to be looked into in this context:

In a recent information seeking experience, was the author of any of the items chosen a personal acquaintance of the researcher? If yes, how (if at all) did the fact affect his decisions which items of the potentially relevant information retrieved were to be paid closer attention? Ranking by importance, where (if at all) would he place 'being acquainted with the author' among his criteria for selecting the item(s) he

chose? What were his reasons for taking into account/ignoring his knowing the author of an item under consideration?

Hypothesis no. 3

Although in accordance with the widely accepted norms of the prevalent system of scholarly communication the quality and authority of a piece of information are held to be in direct correlation with the reputation of its publishing house or journal, researchers are now increasingly prepared to communicate their work via non-traditional and/or more obscure channels. In result, they are becoming growingly aware of the possibility that scholarly information of value may be found in novel and/or more marginal publishing venues, which, however, does not mean that they act upon this new understanding.

The specific points to be looked into in this context:

Does the researcher customarily search for secondary information on the Web? If he does, what are his reasons for doing so? How satisfactory did he find the results of his search on the last occasion(s) he looked for secondary information on the Web? To what extent does the Web serve for him as the source of secondary information: does it replace/complement other sources? If he does not search for secondary information on the Web, why does he refrain from doing so? Has the researcher noticed in his field a move towards publication with more marginal publishers and/or second and third line journals and/or novel channels, such as self-archiving servers? If he has, does he discern in result a change of attitude among his colleagues to the information to be found in second or third line publications and/or outside the traditional venues of publication in his disciplinary domain? Does he recognise such a change of attitude in himself? In a recent information seeking experience, did he turn to second or third line publications and/or novel sites of publication? If yes, which ones; and what were his reasons for doing so? If not, what reasons does he give for refraining from doing so?

Date/currency

Hypothesis no. 1

Today's researcher, just like his predecessors, considers keeping informed of new developments in his field an essential part of the scholarly endeavour.

The specific points to be looked into in this context:

How important is it for the researcher to learn of new developments in his field as soon as they occur?

What are his reasons for keeping up to date?

Hypothesis no. 2

Scientists and social scientists exhibit unchanged levels of need for current information (crucial to the former, somewhat less imperative but still central to the latter), and follow traditional patterns in limiting their information consumption to no more than a few years old material.

The specific points to be looked into in this context:

What is the researcher's definition of 'current' information? Has his definition of what is current changed? In comparison with his past practices, does the researcher now feel more/less/equally pressured to obtain information on the latest developments in his field? What reasons does he give for any change in

his need to keep current? How does he go about making sure that his needs for current information are adequately met? How far back in the literature did he go on recent occasions when he needed a thorough review of the previous knowledge on a subject? Why did he decide on the cut-off date he specifies?

Hypothesis no. 3

Humanists now demonstrate a lesser degree of the complacency traditionally ascribed to them with regard to the need to keep up-to-date and to obtain the latest information on a subject, for obsolescence in humanities information is no longer an unheard of phenomenon.

The specific points to be looked into in this context are similar to those pertaining to hypothesis no. 2: What is the researcher's definition of 'current' information? Has his definition of what is current changed? In comparison with his past practices, does the researcher now feel more/less/equally pressured to obtain information on the latest developments in his field? What reasons does he give for any change in his need to keep current? How does he go about making sure that his needs for current information are adequately met? How far back in the literature did he go on recent occasions when he needed a thorough review of the previous knowledge on a subject? Why did he decide on the cut-off date he specifies?

Speed of delivery

Hypothesis no. 1

In view of the easy availability and wide accessibility of the host of resources, channels and facilities, which enable the transferring of information from one end of the world to the other in a matter of seconds, today's researchers have high expectations as to the speed with which their information needs are to be met.

The specific points to be looked into in this context:

In comparison to the past, does the researcher now expect to obtain the information he needs more/less/equally rapidly? Why? Does the awareness that information is quickly obtainable affect his information delivery expectations? How? Has he actually felt in the course of his last research project(s) a need (as compared to expectation) for slowing down/speeding up the processes of obtaining information? If he did, what were the specific circumstances? What strategies/methods/services (if any) did he use in the course of his last/recent research project(s) to expedite information delivery? In comparison to the past, does he now obtain the information he needs more/less/equally rapidly? Would he be prepared to pay for speeding up information delivery?

Hypothesis no. 2

Researchers' perceived need for speedy access to information is in direct correlation to the extent to which they feel compelled (for extrinsic or intrinsic reasons) to produce and announce the results of their work quickly.

The specific points to be looked into in this context:

In comparison with the past, is the researcher now more/less/equally pressured to produce research results quickly? How does he account for the change he identifies (if any)? How does the change reported (if any) affect his information needs and information seeking behaviour?

Hypothesis no. 3

Even when researchers express a need to expedite the processes of obtaining information, speed of delivery is never a paramount enough consideration for them to justify their compromising on the more central attributes of a piece of information, such as its quality or intellectual level. . Still, when the need for information cannot be met speedily enough, the abstract is an adequate interim solution.

The specific points to be looked into in this context:

Under what circumstances (if any) is the researcher prepared to make do with whatever information is already at hand, or whatever information is easily and quickly accessible, instead of opting for 'the best fit' for his needs?

Place of publication/origin

Hypothesis no. 1

With the trend towards the internationalisation of research, researchers have become more global in their information needs, more readily accepting information hailing from countries on the periphery of scientific and scholarly activity.

The specific points to be looked into in this context:

In his recent/last information-seeking venture, did the researcher actively search for information hailing from countries outside the Anglo-American world and or European countries? What were his reasons for doing so/for refraining from doing so? In his recent/last research project(s) did he use information originating from countries outside the Anglo-American world and/or European countries? What were his reasons for doing so/for refraining from doing so?

Hypothesis no. 2

Although owing to the trend toward the internationalisation of science and scholarship, much of the research activity carried out worldwide is nowadays reported in English, considerable quantities of information are still published on the national level too; in result, lack of proficiency in languages other than one's mother tongue and English is seen as detrimental to research work, inasmuch as it constitutes a barrier to the adequate meeting of research information needs.

The specific points to be looked into in this context:

In his last research project(s) did the researcher use information in any language other than English? If he did not, why not? If he did, what were his reasons for doing so? Had he been purposely searching for non-English information? Why? Had he chanced on non-English and/or non- Anglo-American information and decided to use it? Why? Had he chanced on non-English and/or non- Anglo-American information and decided not to use it? Why not?

Processing and Packaging

Hypothesis no. 1

Electronic information work has become the norm in academia, no longer treated with reservation, but not evoking much enthusiasm either. Rather, electronic systems and methods are seen as a means to an end, to be chosen when deemed both the most appropriate for meeting an information need, and reasonably well-suited to individual inclinations, capabilities and circumstances.

The specific points to be looked into in this context:

Does the researcher customarily use traditional and/or novel information opportunities for research purposes? What information resources/ information communication channels did he utilise in his last research project(s)? Was an electronic equivalent available to him when he reports to have chosen a traditional information resource/communication channel, and vice versa? What were his reasons for choosing as he did in each case? Does he feel a need for changing his current practices of information work (more/less traditional/non-traditional information sources and services)? Why? How (if at all) does he plan to go about it?

Hypothesis no. 2

There is a consistent pattern in the choices made as to the most suitable communication medium (traditional versus electronic, mediated versus unmediated) for meeting each of the different information needs arising in research work. When the researcher needs information for gaining an overview of the existing knowledge on a given topic and/or for learning of new developments in his field, electronic and/or mediated sources and tools are eminently suitable for his purposes, since the retrieval of factual information involved does not require that the communications media used be rich or of high social presence. However, when he needs information either for solving specific problems or for getting ideas for a new research, traditional and/or non-mediated communication of high social presence best serves his purposes, for on these occasions thought processes are shared and ideas and thoughts, rather than dry facts are exchanged.

The specific points to be looked into in this context:

In the course of his last research project(s) how did the researcher go about obtaining the information he needed for reviewing the literature on the topic being investigated, for learning of new developments in his field, for solving specific problems and for getting ideas for a new research? What were his reasons for choosing as he did in each case?

Hypothesis no. 3

Informal communication among researchers has been greatly enhanced by the ubiquitous use of e-mail. Thus, despite its limitations as a communications medium (lesser degree of richness and social presence than face-to-face contact), e-mail has served to cement invisible colleges.

The specific points to be looked into in this context:

How does the researcher keep in contact with his colleagues/members of his invisible college? Does he discern a change over the years in the nature of his communication with his colleagues (purposes, frequency, ease, etc.)? If he does, to what does he attribute the differences noted? Have his relations with his colleagues become more/less warm and friendly in result? How has it been affecting his research work in general, and the information component of his research work, in particular?

Questionnaire for the Academic Researcher: Research Information Needs*

This questionnaire survey is part of a study devoted to a re-examination and re-assessment of the information needs of academic researchers. Proceeding from the notion that the concurrent development of strikingly new orientations in both the scholarly world and its information environs puts in quandary the validity of anything and everything we have traditionally been holding true as to the information component of academic research work, this investigation seeks to gain fresh insights into universal patterns of research information needs, as well as their variance by age and disciplinary affiliation. As your work-experience based insights into the information element of academic research work are obviously the essential input necessary for this investigation, would you please complete the following questionnaire?

The questionnaire is anonymous. Therefore you are kindly requested to remove the first page of the questionnaire, which bears your name, before you send it back to me by internal post. Please note: the return address is already specified on the third page of the questionnaire.

Thanking you in advance,

Eti Herman

The Library and Library and Information Studies

***The questionnaire is written in the masculine form, but it is meant both for women and men.**

Part 1

As mentioned above, this questionnaire is anonymous. However, you are kindly requested to supply some background information on yourself, in order to make it possible to identify the information needs characteristic of the different groups comprising the academic community. Please place an x in the appropriate box:

Age group:

Up to 44

45 – 60

61+

Gender:

Male

Female

Academic degree:

Lecturer

Senior Lecturer

Assistant Professor

Full Professor

Research Area (for example, developmental psychology):

Part 2

The following statements are based on quotes from interviews with academic researchers on their information needs and information behaviour. Please indicate by placing an x in the appropriate box to what extent these statements are true of you, that is, how faithfully they reflect your own views and experiences concerning the information component of your research work.

	Always true of me	Often true of me	At times true of me and at times not	Seldom true of me	Never true of me	Irrelevant for me
Subject of the information						
Nowadays I don't need as much information as I used to at the beginning of my academic career because I've become more focussed in my interests.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Since in general I know my field, I need information expressly on the specific topics I'm specializing in.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I choose my research subjects mindful of the quantity of information on it and my ability to deal with that much. That is, the question I will work on is to some extent dictated by my ability to handle a certain quantity of information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nowadays, when it's impossible to cover all the knowledge in a subject area, so that specialisation is unavoidable, it's very difficult to be "a lone wolf" in research work. Wolves succeed in snaring their prey because they hunt in packs; that's the right way to work in research too.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Always true of me	Often true of me	At times true of me and at times not	Seldom true of me	Never true of me	Irrelevant for me
When I set out to tackle a multi- or inter-disciplinary subject, or a subject that is beyond my specific areas of expertise, for all practical purposes I have to start reading from the basics and really get submerged in the literature.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If, in the course of a multi- or inter-disciplinary investigation, or one, in which I the work extends beyond my specific areas, I need some information in an area I'm no expert in, I'll look for more basic level information, for instance in those databases on the Internet, which offer scientifically correct information meant for laymen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I search for information by trying various word combinations, until I find the combination which is the most appropriate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Function/ purpose of the information						
When I start working on a new research project, I try to locate all the knowledge to be had on the subject; I perform a very thorough literature review.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I make every effort to ensure that I know what is going on in my area of interest, so as not to re-invent the wheel, so as not to work on an idea which has already been published.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Always true of me	Often true of me	At times true of me and at times not	Seldom true of me	Never true of me	Irrelevant for me
If in the course of a research project I encounter a problem, so that I cannot make further progress, I turn to the literature in search of solutions, clarifications and ideas, to get me out of the dead-end I find myself in.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The ideas for new research projects crop up whilst reading the literature, out of the existing knowledge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I begin the work on a new research project by first locating the journal articles on the subject.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When I want to review the knowledge accumulated on a subject, I mostly need books.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I begin the information gathering for a new research project with the books I know; only afterwards do I go on to articles in journals I usually read.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When I embark on a new research project, I begin with a few pages long summary of the knowledge amassed on the subject (in a textbook, a Ph.D. thesis or a review article); it saves reading the original publications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When I gather information at the outset of a new research project, I ask colleagues to refer me to pertinent information sources.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When I embark on a new research project, I seek help from the experts in the subject area: I ask them to explain to me the background, to give me the basic information on the topic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Always true of me	Often true of me	At times true of me and at times not	Seldom true of me	Never true of me	Irrelevant for me
When I tackle a new subject, I gather the information I need by means of a very thorough search on the Internet, as in my field the journals are on the Net.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When I set out to work on a new subject, I locate one good publication, and then one work leads to another.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When I assemble the information I need at the outset of a new research project, I only use journals. I do use books, which provide the best of the knowledge accumulated on a subject, but only for my teaching.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When I get these notifications on new publications, I may put them aside for a week or two, a month even, but eventually I do peruse them.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I check for new publications in my areas of interest on a daily basis; not a day goes by without my looking for new material. In my field, if you want to survive, you've got to do it, you've got to keep up with the very latest developments, for if you don't know other people's current work you're as good as dead.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If in the course of my research work I find that need some specific information, I turn to the library for assistance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If I need some specific information in the midst of working on a research, I simply e-mail a colleague and ask him to send me the publication.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Always true of me	Often true of me	At times true of me and at times not	Seldom true of me	Never true of me	Irrelevant for me
If I suddenly find that I'm missing a specific piece of information, which I need for my research, I turn for help to an expert colleague, as he may have the answer for my question.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If in the midst of working on some research it turns out that I need some specific information, with the aid of one of the search engines I can find answers very quickly on the Internet.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When I'm looking for a new topic of research, a new problem to work on, I actually set out to survey the literature, either to locate problems, already solved, but in need of better solutions, or to find problems, which still haven't been solved.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When I collaborate with a colleague, we spend a lot of time just sitting together, trying to see what we'd like to work on and looking for a research topic together.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My coming up with an idea for a new research may very well be a piece of pure luck. For example, I may attend a lecture at a convention, find the topic interesting, and eventually end up with a new idea for a research project.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ideas for new research projects crop up in the course of my conversations with colleagues.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Always true of me	Often true of me	At times true of me and at times not	Seldom true of me	Never true of me	Irrelevant for me
I get notified of new publications directly to my desktop, but I don't rely on these current awareness services; where keeping up with new developments is concerned, I prefer to take the initiative and search for new information on my own.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I'd be glad of a service which would bring directly to my desktop the information on all of the new publications pertinent to me, according to a pre-set profile of interest.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have a problem with the current awareness services meant to inform me of new publications on my subjects: having been notified again and again of articles of no interest to me, at some stage I have stopped using them altogether.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A lot of information lands on my desktop, because I participate in listserves on subjects of relevance to me and colleagues send me e-mails with information, too, but still I initiate information searches.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nature of the information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I may set out to look for a specific type of information, say, theoretical, descriptive, methodological, statistical or technical information. For instance, if I want to perform some experiment, I may look for technical information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Always true of me	Often true of me	At times true of me and at times not	Seldom true of me	Never true of me	Irrelevant for me
Being able to download so easily from the Internet the primary sources of information that I need, statistics, government documents, committee reports, is a great help in my work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There are circumstances in which the only way to integrate a specific item of primary information in my research is actually going to where it is located.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intellectual level of the information						
I don't search for scientific theories and scholarly approaches on the Web; if it's academic level information, it'll appear in the journals we are familiar with or in books of the serious publishing houses.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When I need basic level information in subjects beyond the scope of my areas of interest, I locate the information and ask expert colleagues to explain it to me. This way I get to understand the subject sufficiently to do my research.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Viewpoint of the information						
It can undeniably happen that a piece of information I encounter is presented from a certain point of view, and it's important that I realise that it is the case.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Always true of me	Often true of me	At times true of me and at times not	Seldom true of me	Never true of me	Irrelevant for me
If the information I have is presented from a certain point of view, I detect it very quickly, because I read the article or the book critically: for instance, the sources the author uses and his terminology can testify to it's being an objective research or not.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I may definitely set out to look for an article, which has been written from a specific point of view, because in many instances you can deal with a topic only if you are well aware of the points of contention involved.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quantity of the information						
I'm truly flooded by large quantities of information, but I consider it a blessing, I'm glad that it is so.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My life is easier with this abundance of information at my disposal than without it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
These days I need many more rakes, many more filters in my treatment of information. The publications industry of the promotions, all this 'publish or perish' have brought about an exponential increase in information, but in quantity, not quality.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Careful selection is the only way to deal with the abundance of low quality information, which is brought about by the culture of publish or perish.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Always true of me	Often true of me	At times true of me and at times not	Seldom true of me	Never true of me	Irrelevant for me
Quality/authority of the information						
I look for articles published in journals of good reputation, because when there is such an avalanche of material, that's the way to ensure the quality and authority of the information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I judge the quality of an article in a two-tiered process: first I take a look at who the author is (where he teaches, what his academic degree is, etc.), and note the journal in which it is published. If by this stage the article looks worth my while, I look at the references, read the abstract and devote some time to a more in depth reading.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If the author is a personal acquaintance of mine, I know exactly what he works on, and I know the value of the information I'll be getting from him. Thus, when I am about to pick the articles I want from a list of information items, I'll favour the publications of authors I know.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I attend conferences primarily for the social encounter, for the opportunity to form ties with other researchers in the field.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In my opinion, journals published in an electronic format only are not on the same level as traditional journals, which come in an electronic version too, because only people, who don't get accepted by the regular journals, publish there.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Always true of me	Often true of me	At times true of me and at times not	Seldom true of me	Never true of me	Irrelevant for me
I don't limit my information seeking to the top journals only, being conscious of the possibility that articles of value will be published in more marginal journals too.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When I look for information, I check out personal or institutional websites and electronic archives too. True, the information there is not always peer reviewed, but it is available ahead of the formal publication and reports more fully on the research done.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I do use Web-based scholarly information, of the sort to be found on personal or institutional websites or in e-print archives, but in view of the liability that much of this information will not conform to my standards of quality and authority, I only do so after careful inspection.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Date/currency of the information						
First thing in the morning, I check the new articles posted overnight to see if there's something new and interesting, something, which may just link up with my research. I'm "addicted" to this!	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In my field some of the research conducted a few years ago has already become obsolete because there is a great deal of research going on and swift progress made.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I really need to keep up with the current information because my area changes so much, it's very dynamic indeed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Always true of me	Often true of me	At times true of me and at times not	Seldom true of me	Never true of me	Irrelevant for me
If I have some difficulty in understanding something, I go back to the original article on the topic; I find that it is easier to understand the original idea, the message, when it is being described for the first time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Speed of delivery of the information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I like to work quickly, so that when the need for some information crops up in the course of my research, I want immediate response.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When I do some research, I want it chalked up to me, but if simultaneously others work on the same idea, somebody may 'get there' ahead of me. Therefore, I must obtain information very quickly, so as not to get delayed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I'm even prepared to pay for speeding up the process of obtaining information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My personal experience is that the pressure to publish as much as possible in a given period of time, and as part of it, the pressure for obtaining information without undue delays, are associated with getting promoted and tenured.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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In my case the pressure to obtain information quickly is the result of my wish to make undisturbed progress with the development of the idea at the basis of my research. Therefore, getting promoted or acquiring professional reputation are not the primary sources of the pressure I feel in this matter.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am prepared to accept a less than optimal level of information, as long as I get it very quickly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I will see to it that I get all of the information necessary for my research, even if I have to wait or postpone getting on with my work until I do.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If I need information quickly, I'll make do with the abstract, and not read the article itself.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Place of publication/origin of the information						
As far as I'm concerned it's immaterial in which country the article or the book has been published, it simply doesn't matter.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I'll certainly check to see in which country the information has been published when I'm not acquainted with the name of its author; in this case it definitely makes a difference for me if the information was published in a developed country or in a third world one.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Always true of me	Often true of me	At times true of me and at times not	Seldom true of me	Never true of me	Irrelevant for me
Command of languages other than Hebrew and English is important for the quality of my research work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In my field the research is international, and the accepted language of publication is English. Therefore, for the purposes of my research work, I don't need any other language.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I don't look for articles or books in any language other than English, because I think that if a research is a significant contribution, the researcher will see to its being published in English.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Processing and packaging of the information						
In my research work, I use both paper based and electronic material; as far as I'm concerned, the format in which the information comes has no importance whatsoever.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I'm not much of an electronics fan; I succeed in my research work very well without it too.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If I have to send some information to a colleague, pointers to items of interest to him or some information he wants, I prepare a file and send it off. However, for the purposes of brainstorming, of thinking together, it's vital for me that we meet and talk.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Always true of me	Often true of me	At times true of me and at times not	Seldom true of me	Never true of me	Irrelevant for me
Collaborating on a joint research venture with a colleague involves face-to-face meetings, because we have to explain abstract ideas, to exchange opinions, to think together. Then the writing itself can be done with the aid of e-mails.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The electronic media come in very handy when I need some concrete information: I'll just post a query on a listserv or I send an e-mail to somebody who may know the answer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thanks to e-mail I'm in touch with colleagues from all over the world on an ongoing basis, we write articles together, work together.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-mail helps me a lot to maintain professional ties with other researchers, inclusive of colleagues from the leading universities in the world.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My research related information work has improved enormously ever since I have the electronic information services at my disposal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>