The Dangers of Resource Myopia in Work and Organisational Psychology: A Plea for Broadening and Integration

Pieter J.D. Drenth*

Vrije Universiteit, Amsterdam, The Netherlands

Frank Heller

The Tavistock Institute, London, UK

On souligne dans cet essai les limites de l'approche quantitative traditionnelle en psychologie du travail et des organisations. Il est nécessaire de s'orienter vers un élargissement de la palette des méthodes une ouverture sur de nouveaux problèmes et une meilleure intégration d'une part avec les disciplines connexes, d'autre part avec les applications des résultats des recherches pour garantir l'utilité et la mise en œuvre de la future psychologie du T&O. Ce qui ne signifie pas que les microproblèmes doivent être laissés de côté, mais on part du principe que la psychologie du T&O ne doit pas être privée de la possibilité de s'attaquer aux questions de niveau moyen et global, souvent les plus pertinentes, sous prétexte que l'on ne dispose pas des outils appropriés pour les traiter.

In this essay the limitations of the traditional quantitative approach in work and organisational psychology are put forward. It is argued that an extension of the methods, a broadening of the type of problems to be addressed, and a stronger integration with associated disciplines as well as with the application and implementation of the research findings are needed to ensure the usefulness and application of future W&O psychology. It is not suggested that micro-level problems should not be investigated, but it is postulated that W&O psychology should not be deprived of the opportunity to tackle other, and often more relevant, meso- and macro-level issues because we lack appropriate tools for attacking them.

INTRODUCTION

According to Symon, Cassell, and Dickson (2000) the present work and organisational (W&O) psychology literature and research tradition are

* Address for correspondence: P.J.D. Drenth, Vrije Universiteit Amsterdam, Work and Organizational Psychology, Van der Boechorststraat 1, 1081 BT Amsterdam, The Netherlands. Email: President@allea.org

strongly dominated by a positivistic and quantitative approach, and the epistemological gatekeepers (conference organisers, editors, reviewers, funding bodies) tend to keep it that way. These gatekeepers find non-positivistic methods a threat to the achieved science status for which industrial and organisational psychologists have worked for over a hundred years. A special research forum on knowledge transfer in the *Academy of Management Journal* complains that research methods have increased in sophistication but have become less useful for solving practical problems (Rynes, Bartunek, & Daft, 2001). Likewise, an analysis of industrial relations research, which overlaps with W&O psychology, showed that in six leading journals there has been a shift from inductive qualitative and policy-oriented research to deductive quantitative and discipline-oriented research (Whitfield & Strauss, 2000).

Several of these issues have been raised before, for instance in the 1976 *Handbook of industrial and organizational psychology* edited by Dunnette. Herein, Argyris (1976) puts forward strong arguments in support of a change of approach towards more action-oriented empirical psychology and away from criterion variables derived from scientific management, often based on what he calls "conformity norms". He complains that organisational psychology is oblivious of the environment and its impact on people and organisations, and champions a variety of approaches including longitudinality, unobtrusive measures, and feedback methodology. Hackman (1982) regrets that many important areas of societal problems do not seem capable of being tackled satisfactorily by psychology. He argues that the problem is at least in part due to the "restrictiveness of discipline based research" and in part because "the methodologies used in research in organizations have been far too limited and conventional" (p. 7). Wilpert, in his 1998 Presidential Address to the *International Congress of Applied Psychology*, reinforced the case for broadening and diversification of the field, urging W&O psychology to address global problems that are necessarily transdisciplinary, for instance, world poverty, threats to the environment, and risks in man-made mega systems.

We believe that progress along the lines suggested by Argyris, Hackman, and Wilpert among others, has been very slow and uneven, hence the need to re-examine these topics in the context of the complexity and turbulence of 21st-century conditions. More recently, a similar point emerged from the extensive debate in the US and UK on "the increasing distance of research from its user base and concomitant decline in its ability to influence policy development and practice" (MacLean, MacIntosh, & Grant, 2002).

NEED FOR AN EXTENDED APPROACH

Why do we need more differentiated and varied methods in addition to the prevailing quantitative methodology? The following arguments should be carefully considered: One of the most important reasons for managers and

policy makers to ignore W&O psychological research is that the psychologist does not provide answers to the real questions they have. The often fragmented and detailed laboratory/field studies are thought to make little contribution to understanding or handling the intricate and multifaceted realities that the decision makers face. Managers are confronted with complex problems, such as the proper functioning of industrial relations, dealing with diversity, organisational change, competing markets, mergers, and various environmental pressures. The strict positivistic, quantitative tradition, which often deals with reduced and abstract models of reality, seems inadequate for providing insight into the concrete, contextual complexity of such organisational decisions. Psychologists are conspicuously absent in the discussion on major and prevailing issues in public policy, both at the national and international level. It is regrettable that in recent discussions on a great variety of salient problems in society, for which science is challenged to provide suggestions or solutions, the input of psychology is meagre, in spite of its great potential for such a contribution.

Here are a few examples from the agenda of international research organisations over the last decade:[1] Discussions on *global change* are mainly conducted by natural scientists: climate researchers, geologists, physicists, chemists. There is some economic, but hardly a behavioural science input. Scholars concerned with *peace and international conflicts* are political scientists, sociologists, lawyers, economists, but rarely psychologists. Developments in *information and communication technology (ICT)* are the arena for computer scientists, engineers, mathematicians, information scientists; there is some cognitive science input, but we see no serious psychological contribution in dealing with the wider impact of ICT on society and organisations. *Sustainable development and world population* is a subject area that ought to raise a great deal of interest with psychologists, but again very little is heard. The Royal Society of London has proposed to replace the concept sustainable development with sustainable consumption, a switch that should raise serious interest with behavioural scientists, but no activity on the part of psychologists has been noticeable.

A look at the European Commission's "framework programmes" (FP) especially the 6th FP for the years 2002–2006 (which has been launched with a budget of over 17 billion Euros; see http://europa.eu.int/comm/research/nfp.html) does not give grounds for a more optimistic view. Some psychological bits and pieces are distributed over the priority areas and the new

---

[1] In his function as President of ALLEA (the European Federation of National Academies of Sciences and Humanities) the first author has been extensively involved in the European science policy discussions over the last ten years; in the following observations he speaks from experience.

instruments (integrated projects and networks of excellence), but no significant space is cleared for psychology. This is in spite of the fact that in the debates on the political justification of the FP priorities within the European Parliament and other European stakeholders, a number of highly pressing problems in Europe have been listed for the solution of which psychological research is useful or even indispensable; for instance, reducing unemployment, the untimely drop-out of schoolchildren, handling youth criminality, industrial relations conflicts, tensions in a multicultural society, and insufficient industrial efficiency.

The American picture is no different; two examples will have to suffice, but more will be given in the next section. The *Harvard Business Review* produced a special issue in 2000 called "Breakthrough ideas: 15 articles that define business practice today". Two of the articles are by psychologists: Chris Argyris and Frederick Herzberg. The Argyris article goes back to 1977 and Herzberg's to 1987. In 1997 a book called *Rethinking the future* brought together 17 eminent theorists and practitioners, mainly from the United States, with the objective of "rethinking business, principles, competition, leadership, markets and the world". Not one of the authors described himself as a psychologist. Is it possible to explain this absence of psychology by the fact that the macro-level issues have to be dealt with through a variety of broadly based methods that psychologists are reluctant to use?

Concerns about relevance now threaten to create a growing disenchantment within the W&O psychological establishment. And these worries have been formulated before. More than 20 years ago Van Maanen (1982, p. 13) listed a number of sources for such disenchantment: trivial amounts of explained variance, abstract and remote character of key variables, lack of comparability across studies, failure to achieve much predictive validity, and many research publications being incomprehensible to all but a trained few (Scott Armstrong, 1980). Van Maanen also critiques the causal complexity of multivariate analyses, which, even when understood, makes change-oriented actions difficult to contemplate. To successfully tackle most of the missed research opportunities given above would require a multi-level open system approach rather than the closed system micro-level framework so prevalent in current W&O psychology.

BROADENING OUT

We admit that in the 20 years since van Maanen's book was published some progress has been made in dealing with his critical assessments. First, there has been a broadening of the concept of validation and we give some examples of this below. Second, more reliance has been placed on longitudinal research in which field methodologies tend to use a greater variety of approaches including qualitative as well as quantitative assessments. We

also illustrate this with some examples. Yet we hold the opinion that there is still a long way to go.

A first example of an issue that is clearly a macro-level and multifaceted societal problem is unemployment. Can a single discipline and a single method deal with such an issue adequately? The classical study, called *Marienthal: The sociography of an unemployed community* (Jahoda, Lazarsfeld, & Zeisel, 1972), shows that a multidisciplinary and multi-method approach does bear fruit. The researchers made use of a large variety of methods of data collection, including questionnaires, observation, story telling, essays, meal records, and simple statistics. The study was published in 1930 only in German. It was thought sufficiently important to be translated and published in English in 1972. In the introduction to the English translation Lazarsfeld still gives clear credence to the validity of their approach. Their thinking and experience followed four rules: (a) For any phenomenon one should have objective observation as well as introspective reports; (b) Case studies should be properly combined with statistical information; (c) Contemporary information should be supplemented with information on earlier phases of whatever is being studied; (d) "Natural and experimental data" should be combined. By "experimental" they mean mainly questionnaire and solicited reports, while "natural" is what is now called "unobtrusive measures"—"data derived from daily life without interference from the investigator" (p. xiv).

Another well-known project of a broad social phenomenon is Blauner's (1964) study of "alienation and freedom". It is research on the organisation and subjective meaning of work and Blauner used three methods: a national survey of factory workers, a detailed field study of a chemical plant, and a questionnaire survey of employees at that plant.

Then there is the extensive area of work on socio-technology. Van Eijnatten (1994) lists 3,082 English-language socio-technical publications derived from a classic longitudinal fieldwork project into the effectiveness of coal-mining. The project used a combination of simple quantification plus extensive ethnographic data (Trist & Bamford, 1951). Van Eijnatten's publication is extensively concerned with studies that review, assess, evaluate, and validate basic aspects of the socio-technical model.

Levy-Leboyer (1986) describes two cases of validation through implementation of results (action validity). In a study of telephone box vandalism, the researchers were able to convert a "presenting problem"[2] attributed to socially deviant behaviour and malignant aggressiveness, into a much more valid explanation based on justifiable irritation due to technological malfunctioning.

---

[2] A "presenting problem" is an issue put forward by a client as an alleged explanation or cause of the problem. However, on closer inspection it turns out not to be the real problem.

The study used a combination of survey and participant observation, with the latter method more decisive for the results. A second project took place in a French car factory that was desperate to increase output. To achieve this they wanted to go over to a 24-hour continuous production system to maximally use expensive machinery. There was opposition from work committees that could not envisage how time-tables would affect the various interests of the staff. Leboyer and her collaborators saw an opportunity to test a standard model of decision making (p. 30). Their data were derived from interviewing 254 employees. They were then given a full day to feed back their material and explain the results to staff. "Application followed immediately and successfully . . . the validation of our procedure resulted from the application itself" (Leboyer, 1986).

A similar good example is Kurt Lewin's research investigating the differential effectiveness of methods of communicating information. The validation of the superiority of one of the methods (group decision making) was through observation of actual purchases. The group method was found to be almost three times more effective than alternative methods of changing purchasing decisions (Lewin, 1947).[3]

Systematic feedback of research-generated data has, for some time, been recognised as a flexible methodology for diagnosis and understanding. Argyris (1970) describes various approaches including Heller's "group feedback analysis" and similar methods used by himself (p. 111). Group feedback analysis (Heller, 1969) can operate with either quantified or qualitative data or with a combination (see a longitudinal study on decision making described below). The method lends itself to work with dissonance by feeding back diverse or incongruous data and asking the research participants to "explain". The discussions are usually tape-recorded. The validity of the results is increased by taking account of the interpretation from the research participants; this can be called consensual validity. Consensual validity is only appropriate where the participants in the research have complementary and/or additional information and expertise from that available to the researcher.[4]

A four-year field study in three countries, called *Decisions in organizations*, illustrates the benefits of longitudinality and multi-methodology as well as cross-national comparative data (Heller, Drenth, Koopman, & Rus, 1988; Koopman, Drenth, Heller, & Rus, 1993). One part of the study was

---

[3] The stimulus for this research came from the antecedents of World War II. America was sending extensive convoys of food to Britain and sought to change home consumption habits to liberate butter and meat for these convoys. This is an example of research embedded in an open system perspective.

[4] For instance in research on organisations, employees at all levels have historic and "hands-on" knowledge not available to the researcher. By systematic feedback of results, the co-interpretation of participants can add valuable insights.

based entirely on questionnaires, while the second part derived its data from direct observation, attendance in committees, interviews, and document analysis including minutes of committees. Much of this varied information was quantified into simple categories and validated through feedback with participants. It was then submitted to multivariate analysis.

Pfeffer, a psychologist from Berkeley and Stanford, has over the years been frustrated by finding, again and again, that good academic research was ignored or neglected by the community for which the results were intended. There is "a disturbing disconnect in organizational management. Research experience and common sense all increasingly point to a direct relationship between a company's financial success and its commitment to management practices that treat people as assets" (Pfeffer & Veiga, 1999). The method Pfeffer and colleagues have adopted is to move away from traditional research and attack the problem by presenting material as a combination of in-depth case studies and simple quantification. Pfeffer and O'Reilly adopt a similar approach in a book called *Hidden value* (O'Reilly & Pfeffer, 2000). They tell "the stories of eight remarkable companies that stand out in how they manage to engage with the emotional and intellectual resources of their people". There is no multivariate analysis. The statistics they present are of earnings, sales, total assets, earnings per share, and the like.

Finally, we go back to the Special Research Forum of the *Academy of Management Journal* referred to earlier. As a result of a detailed review of the literature, the authors identify a great divide between knowledge creation and transfer to practitioners. They suggest that "executives typically do not turn to academics or academic research findings in developing management strategies and practices" (Rynes et al., 2001, p. 340). In advertising the Forum, they received 49 manuscripts, and accepted five that had produced some empirical evidence. Two of the articles used case studies, one field research, one used a survey, and one mainly archival material. In the accepted articles, both academics and practitioners provided data and authors assumed that knowledge transfer was a two-way street rather than a unidirectional process.

In all the examples above, the synergy of the results derives from the complementarity of quantitative and qualitative methods. Only one of the projects was cross-sectional. In relation to validation we are not suggesting that traditional criteria should be abandoned, rather that, where feasible, they should be supplemented with new appropriate assessments. Action validity and consensual validity are useful in this context (Mohrman, Gibson, & Mohrman, 2001). It is also worth remembering that quantitative methods alone, particularly the widely used distributed questionnaire, have substantial weaknesses. We give just three references to a very large literature. Starbuck and Menzies (1996) show that researchers as well as decision makers in organisations depend extensively on accurate perceptions, but

their own work and review of the literature shows that large perceptual errors occur regularly, particularly with traditional methods. McGrath (1994), summarising an extensive behavioural science literature, concludes that all methods have some strength and some weaknesses and that, consequently, one way of reducing methodological weakness is to choose more than one method appropriate for a given research issue. In a theoretical analysis of sociological research, Denzin (1989) describes the concept of triangulation and supports the case for looking at complex problems from many angles and therefore upholds multi-methodology.

The literature often makes an unrealistic distinction between quantitative and qualitative research (Judd, Smith, & Kidder, 1991). The majority of texts on methodology specialise in one or other approach with virtually no overlap (for instance, Camic, Rhodes, & Yardley, 2003). There are many journals and books that specialise in quantification, but there is very little that specifically covers multi-methodology (an exception is Mingers & Gill, 1997). We believe that the time has come to be realistic and accept that the boundary between these methods is permeable. Several of the examples we have given suggest that combining two or more methods often gives better results than a single method whether quantitative or qualitative. Attempts to come to a precise definitional separation of these methodologies are not useful for our presentation.[5] More generally, we believe that the psychologist, and especially the W&O psychologist who deals with problems from a complex reality, should not be trapped into adhering to rigid theoretical distinctions between methods when integration or innovation would yield superior results.

NOMOTHETIC OR IDIOGRAPHIC OR BOTH?

As became clear in the above it is not our intention to renounce the quantitative, structural tradition altogether. That would be unreasonable. This tradition has produced a helpful body of knowledge and useful insights into the behaviour of people, including its antecedents and consequences, as well as useful instruments, tools, and intervention techniques. In addition, it was able to expose the claims and pretensions of pseudo-scientific excrescences, like graphology, astrology, neuro-linguistic programming, psychokinesis, reincarnation therapy, and many others (Drenth, 2003). Due to its scientific discipline and reasoning, psychology (including W&O psychology) has progressed by augmenting the body of reliable and generalisable knowledge.

It should be realised that the present discussion is not of a recent date, but rooted in a protracted philosophical controversy, known as the nomothetic–

---

[5] For a more detailed analysis and definition see Kidder and Fine, 1987.

idiographic antithesis. The classical shortcomings of the nomothetic approach (as are well articulated in McAllister, 2002, for example) apply also in the field of W&O psychology. Already at the end of the 19th century Windelband (1894) pointed out that the natural science model would not sufficiently address the full range of problems in psychology. Some elements of the approach of the Geisteswissenschaften, as proposed by Dilthey, are needed as well. Windelband distinguishes two further groups within the empirical sciences, the "Gesetzwissenschaften" (nomothetic approach and invariant laws) and the "Ereigniswissenschaften" (idiographic knowledge of singular events or patterns). The nomothetic approach alone will not account for the distinctive patterns of individual events and will not allow understanding of the individual events and their complexity. Also Rickert (1899) has pointed to the differences in conceptual tools between nomothetic and idiographic sciences: nomothetic sciences develop concepts and generalisations applicable to a wide range of events, and idiographic approaches develop singular concepts that are used to describe specific unique events or configurations. It should be noted that the distinction nomothetic–idiographic does not run parallel to the distinction natural sciences–human sciences: geology, astronomy, and biology contain just as many idiographic elements, as there are nomothetic elements in economics and psychology. The field in which this controversy has been and still is most current is anthropology, where the difference between the so-called "structural" (the tradition of Levy Straus) and "historiographic" (the tradition of Geertz) approaches has led to heated disputes and debates, mostly arranged in favour of the latter.

The weakness of idiographic analysis, if used on its own, particularly through Verstehen (empathic understanding), is the lack of "objective" verification and validation. The well-known German sociologist Max Weber has tried to save this scientific requirement with the introduction of a scheme known as "singular causal analysis", in which specific historical events are traced to their causally relevant antecedents by means of probabilistic and counterfactual reasoning (see McAllister, 2002, p. 29). Also the interpretative process that tries to provide insight in the individual case is an instance of singular causal analysis. The aim is to understand the motives and beliefs that can account for the actual behaviour of the behaving subject. The hope is that, by trying to make the process of understanding transparent, and to substantiate the interpretations as much as possible by "objective" and factual support, others will have the opportunity to validate the data and avoid the historiographic interpretation degenerating into a "subjective" and mysterious process.

Real progress usually does not come from polar extremes. We must be careful not to exaggerate differences unnecessarily. We have put the terms "objective" and "subjective" in inverted commas to indicate that, while the

distinction is useful, there remain difficulties of interpretation. Popper (1972) devotes a whole book to explaining his approach to "objective knowledge". He is mainly concerned with the natural sciences, but finds the distinction between "objective" and "subjective" quite difficult. Moreover, he has some quite positive things to say about subjective knowledge. He believes that we have to start from the fact that objective scientific knowledge is conjectural, and then look for its analogue in the field of subjective knowledge. This analogue can be easily identified. "It is my thesis that subjective knowledge is part of a highly complex and intricate but (in a healthy organism) astonishingly accurate apparatus of adjustment, and that it works, in the main, like objective conjectural knowledge . . ." (Popper, 1972, p. 77).

MODE 1 AND MODE 2

A recent methodological contribution, that may prove useful in this discussion, is given by Gibbons, Limoges, Nowotny, Schwartzman, Scott, and Trow (1994) with their distinction between Mode 1 and Mode 2 research. Mode 1 knowledge production is described as disciplinary, homogeneous, and its scientific orientation is basically structural/nomothetic. The Mode 1 scientific climate is hierarchical, tending to preserve existing forms of research and teaching, the organisation of which is guided through internal control systems. Problems are set and solved in the context of traditional academic concerns of the research community. By and large the traditional research councils and funding bodies operate pretty much according to the rules of Mode 1. By contrast, Mode 2 is transdisciplinary and much more heterogeneous in terms of methods and approaches. Mode 2 is descriptive and includes a variety of qualitative methods of data gathering. Problems are set and solved in the context of application and societal translation. The scientific climate is heterarchical, involving more transient forms of organisation. Quality control involves social accountability as well. Funding sources for Mode 2 are much more diverse.

This is an illuminating distinction. It is likely that many of the problems with respect to traditional W&O psychology, such as excessive concentration on micro-level issues and perceived irrelevance of outcome, would disappear if more research and consulting were executed in keeping with Mode 2. This classification deliberately describes extreme positions, yet most of the examples we give in this paper occupy a middle position, something along the lines of a Mode 1.5, as suggested by Huff (2000).

Parallel to such a new and broadened research orientation we need also a new climate in the education of our students in W&O psychology. The new emerging organisations, with an emphasis on internationalisation, fast innovations both in products and technologies, increasing automation, new

ways of communication, and computer mediated forms of interaction, will have to be more flexible and responsive to dynamic markets and will have to make use of a greater diversity of organisational instruments. Such new organisations will show greater spatial dispersion, will be more goal oriented, less bureaucratic, and less hierarchical. Employees will be more autonomous, demanding, and flexible and less able to rely on life-long careers in one and the same organisation. Research in these variegated organisations will require a variegated range of methodologies to capture the richness of the material.

INTEGRATION

In order to overcome the serious lack of relevance of W&O psychology today, more *integration* is needed in our attempts to define, to investigate, and to manage the problems we encounter in W&O psychology. What does this "integration" mean? Let us elaborate a bit on this concept and distinguish several forms of integration that have a bearing on our concern, partly linked to a recent working paper of the European Commission (2002).

1. *Vertical* integration, encompassing the whole value-chain from knowledge production via technology development towards attaining the expected impact. This means that with respect to newly developed products or services the development of a plan for use and dissemination of the knowledge produced has to be given consideration.
2. *Horizontal* integration, referring primarily to the multidisciplinary nature of the research. Real-life problems in organisations (e.g. efficiency of procedures, improvement of production and climate, team building, organisational change) are multifaceted and multidimensional, and can rarely be understood and solved by a mono-disciplinary research approach. Ideally, this leads to the creation of multidisciplinary teams, in which the mono-disciplinary-educated members are willing to listen to diverse approaches and are able to understand other disciplines.[6]
3. Integration of *activities*; meaning the integration of research activities (problem definition, generating hypothetical solutions, testing, interpretation) with each other and with other types of needed activities,

---

[6] The use of language is an important factor. Disciplines need their own terminology, but in the social sciences there is now a tendency to invent terms unnecessarily, perhaps to gain prestige. Scott Armstrong (1980) found evidence of a positive correlation between the prestige of ten management journals and their "fog" index (an index of reading difficulty). Furthermore, 32 faculty members rated the prestige of four passages from management journals. The content of the passages was held constant while their readability was varied. The passages most difficult to read were rated higher in research competence.

such as explanation, demonstration, training, and dissemination and transfer of knowledge. Whenever possible, it should include education of politicians, decision makers, and the public in general.

4. *Inter-sectorial* integration, referring to a partnership between public and private sector, and in particular between academia and industry. The latter cooperation is seen by the Scientific Council for Government Policy (WRR, 2002) as an essential precondition for the further development of a knowledge-based industry, which is crucial for many countries that have not many resources other than human capital.

5. *Methodological* integration. We will continue to need experimental and laboratory studies with a rigorous design, surveys on representative samples, reliable and valid tests and scales. This will create useful knowledge, generalisations about regularities, predictions, and the opportunity to separate the wheat from the chaff in the explanation of behaviour. But we also need qualitative data: contextualised descriptions, data from focused interviewing and panel studies, observations, analyses of official records, documents, reports, minutes, diaries, stories, and rituals, which are indispensable for the study and understanding of that part of complex reality which cannot be fully understood by analysis of statistical generalities.

FINAL CAVEATS AND CONCLUSIONS

It is appropriate to end with some caveats to avoid misunderstanding. We are aware that interesting and relevant work along the lines we suggest has been carried out in different parts of the world. There is just not enough of it. We are also aware of the resource implications of multi-method, longitudinal, cross-disciplinary research. We do not believe that all the "ideal" choices can be made in every project. It is reasonable to expect that the investment of extra resources has to be balanced against the superiority of the results. We have to persuade research sponsoring and funding organisations in the private and public sector of the practical value of the arguments presented in this paper.

Finally, our plea for opening new doors is not intended to shut old ones; at least not all of them. As we indicated above, we do not believe that progress and wisdom can be found in extreme epistemological positions. We want to build on what we have without destroying the more valuable part of our past achievements. We believe that this objective is compatible with an advocacy for greater method diversity, for a deeper "verstehen-sensemaking", for an integration of social science disciplines and a reconceptualisation and extension of the rigour entailed in validity. At the same time we are sceptical of the various postmodern epistemological positions that, for the most part, practise exclusiveness, substitute florid language for quantification, and

shelter behind esoteric philosophical concepts that eliminate "objectivity". We support Petersen's (1995) warning against ending up in the intuitive never-never land with a too subjective interpretation of the proposal for more "reflection in action". We resist the claim that all facts are "social constructs", and that, therefore, all knowledge is relative. This would be the end of criticism and scientific discussion. We also support Popper (1972) who claims that every research process involves conscious or unconscious hypotheses, leading where possible to theoretical models that must be falsifiable. And, importantly, all hypotheses and models are, in any case, transitional.

We have made a case for applied and W&O psychology to embrace open system thinking and to diversify methodology, but we are not suggesting that micro-level problems should not be investigated. The central purpose of this paper is to argue that we must not deprive psychology of the opportunity to tackle other exciting broad societal issues because we lack appropriate tools for attacking them.

REFERENCES

Argyris, C. (1970). *Intervention theory and method: A behavioral science view.* Reading, MA: Addison-Wesley.

Argyris, C. (1976). Problems and new directions in industrial psychology. In M.D. Dunnette (Ed.), *Handbook of industrial and organizational psychology* (pp. 154–184). Chicago: Rand-McNally.

Blauner, R. (1964). *Alienation and freedom.* Chicago: University of Chicago Press.

Camic, P.M., Rhodes, J., & Yardley, L. (Eds.) (2003). *Qualitative research in psychology: Expanding perspectives in methodology and design.* Washington, DC: American Psychological Association.

Denzin, N.K. (1989). *The research act* (2nd edn.). New York: McGraw Hill; (3rd edn.) Englewood Cliffs, NJ: Prentice Hall.

Dilthey, W. (1989). *Introduction in the human sciences* (English translation of "Einleitung in die Geisteswissenschaften, 1883"). Princeton, NJ: Princeton University Press.

Drenth, P.J.D. (2002). What is the use of work- and organizational psychology? Paper presented at the XXVth International Congress of Applied Psychology, Singapore, August.

Drenth, P.J.D. (2003). Growing anti-intellectualism in Europe: A menace to science. *Studia Psychologica*, *45*, 5–23.

Dunnette, M.D. (1976). *Handbook of industrial and organizational psychology*. Chicago: Rand-McNally.

European Commission (2002). *Provisions for implementing integrated projects; working document.* Brussels: DG XII, Unit B2.

Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P., & Trow, M. (1994). *The new production of knowledge.* London: Sage.

Hackman, R. (1982). Preface in J. Van Maanen, J.M. Dabbs, & R.R. Faulkner, *Varieties of qualitative research.* Beverly Hills, CA: Sage.

Harvard Business Review (2000). *Breakthrough ideas: 15 articles that define business practice today*. Cambridge, MA: Harvard Business School.

Heller, F.A. (1969). Group feedback analysis: A method of field research. *Psychological Bulletin*, *72*, 108–117.

Heller, F.A. (2001). On the integration of the social sciences. *Human Relations*, *54*, 49–56.

Heller, F.A., Drenth, P.J.D., Koopman, P.L., & Rus, V. (1988). *Decisions in organizations: A three-country comparative study*. London: Sage.

Huff, A. (2000). Changes in organizational knowledge production; 1999 Presidential Address. *Academy of Management Review*, *25*, 288–293.

Jahoda, M., Lazarsfeld, P., & Zeisel, H. (1972). *Marienthal: The sociography of an unemployed community*. London: Tavistock Publications.

Judd, C., Smith, E., & Kidder, L. (Eds.) (1991). *Research methods in social relations* (6th edn.). New York: Holt, Rinehart & Winston.

Kidder, L.H., & Fine, M. (1987). Qualitative and quantitative methods: When stories converge. In M.M. Mark & R.L. Shotland (Eds.), *Multiple methods in programme evaluation* (pp. 57–75). San Francisco: Jossey-Bass.

Koopman, P.L., Drenth, P.J.D., Heller, F.A., & Rus, V. (1993). Participation in complex organizational decisions: A comparative study of the United Kingdom, the Netherlands and Yugoslavia. In W. Lafferty & E. Rosenstein (Eds.), *International handbook of participation in organizations. Volume III*. Oxford: Oxford University Press.

Levy-Leboyer, C. (1986). Applying psychology or applied psychology. In F.A. Heller (Ed.), *The use and abuse of social science* (pp. 24–35). London: Sage.

Lewin, K. (1947). Group decision and social change. In T. Newcomb & E. Hartley (Eds.), *Readings in social psychology* (pp. 330–344). New York: Holt & Co.

McAllister, J.W. (2002). Historical and structural approaches in the natural and human sciences. In P. Tindemans, A. Verrijn-Stuart, & R. Visser (Eds.), *The future of the sciences and humanities* (pp. 19–54). Amsterdam: Amsterdam University Press.

McGrath, J. (1994). Methodology matters: Doing research in the behavioral and social sciences. In R. Backer, J. Grundin, & W. Buxton (Eds.), *Readings in human computer interaction: Towards the year 2000*. New York: Morgan Kaufman.

MacLean, D., MacIntosh, R., & Grant, S. (2002). Mode 2 Management Research. *British Journal of Management*, *13*, 189–207.

Mingers, J., & Gill, A. (Eds.) (1997). *Multimethodology*. Chichester: John Wiley & Sons.

Mohrman, S.A., Gibson, C., & Mohrman, A. Jr. (2001). Doing research that is useful to practice: A model and empirical exploration. *Academy of Management Journal*, *44*, 357–375.

O'Reilly, C., & Pfeffer, J. (2000). *Hidden value: How great companies achieve extraordinary results with ordinary people*. Boston, MA: Harvard Business School.

Petersen, D.R. (1995). The reflective educator. *American Psychologist*, *50*, 975–983.

Pfeffer, J., & Veiga, J.F. (1999). Putting people first for organizational success. *Academy of Management Executive*, *13*, 37–48.

Popper, K. (1972). *Objective knowledge: An evolutionary approach*. Oxford: Clarendon Press.

Rickert, H. (1899). *Kulturwissenschaft und Naturwissenschaft*, trans. by G. Reisman (1962). Princeton, NJ: Van Nostrand.

Rynes, S., Bartunek, J., & Daft, R. (2001). Across the great divide: Knowledge creation and transfer between practitioners and academics. *Academy of Management Journal*, *44*, 340–355.

Scott Armstrong, J. (1980). Unintelligible management research and academic prestige. *Interface*, *10*, 80–86.

Starbuck, W., & Menzies, J. (1996). Opening Pandora's box: Studying the accuracy of managers' perceptions. *Journal of Organizational Behavior*, *17*, 99–117.

Symon, G., Cassell, C., & Dickson, R. (Eds.) (2000). *Qualitative methods and analysis in organizational research: A practical guide*. London: Sage.

Trist, E., & Bamford, K.W. (1951). Some social and psychological consequences of the long-wall method of coal-getting. *Human Relations*, *4*, 3–38.

Van Eijnatten, F.M. (1994) *The socio technical system design (STSD): A full bibliography of 3082 English language literature references.* Eindhoven: TU Report EUT/BOK/64.

Van Maanen, J. (1982). Introduction. In J. van Maanen, J.M. Dabbs, & R.R. Faulkner (Eds.), *Varieties of qualitative research.* Beverly Hills, CA: Sage.

Whitfield, K., & Strauss, G. (2000). Methods matter: Changes in industrial relations research and their implications. *British Journal of Industrial Relations*, *38*, 141–152.

Wilpert, B. (1998). Applied psychology: Past and future societal and scientific challenges. Presidential Address: 24th International Congress of Applied Psychology, San Francisco, USA, August.

Windelband, W. (1894). *Geschichte und Naturwissenschaft* (Rectoral address). Bibliotheca Augustana.

WRR (Scientific Council for Governmental Policy) (2002). *Van oude en nieuwe kennis: de gevolgen van ICT voor kennisbeleid* [About old and new knowledge: The consequences of ICT for knowledge management]. Den Haag: Sdu.