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# THE DEVELOPMENT OF INDUSTRIAL PSYCHOLOGY AT SOUTH AFRICAN UNIVERSITIES: A HISTORICAL OVERVIEW AND FUTURE PERSPECTIVE

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## ABSTRACT

Over the past 100 years, Industrial Psychology has developed into a viable discipline that has meaningfully contributed to society's knowledge of work behaviour. This has improved the effectiveness of organisations and has increased the job performance of individuals and groups. The world is in a transitional phase, with organisations finding themselves on the edge of chaos. Industrial psychologists must be ready to help organisations to survive in these uncertain times. It will probably be expected of industrial psychologists to assume specialised roles, rather than the maintenance roles of the past. This offers new challenges to universities regarding the training of industrial psychologists.

## OPSOMMING

Oor die afgelope 100 jaar het Bedryfsielkunde in 'n lewensvatbare dissipline ontwikkel, wat betekenisvol tot die gemeenskap se kennis van werksgedrag bygedra het. Dit het die doeltreffendheid van organisasies verbeter en die werkprestasie van individue en groepe verhoog. Die wêreld is in 'n oorgangsfase, met organisasies wat hulself op die rand van chaos bevind. Bedryfsielkundiges moet gereed wees om organisasies te help om in hierdie onsekere tydperk te oorleef. Daar sal waarskynlik van bedryfsielkundiges verwag word om eerder gespesialiseerde rolle te speel teenoor die instandhoudingsrolle van die verlede. Dit bied nuwe uitdagings aan universiteite met betrekking tot die opleiding van bedryfsielkundiges.

The general aim of this study is to critically analyse the historical development of industrial psychology at South African universities and formulate guidelines to meet the demands of the future.

Such an effort requires, firstly, an explanation of the development of the subject; secondly, an examination of the how the subject developed at South African universities; thirdly, a study of the role of industrial psychologists from a future perspective; and fourthly, the formulation of guidelines on training requirements.

## THE DEVELOPMENT OF INDUSTRIAL PSYCHOLOGY

Although there are indications in the literature that as early as 1527, contemporary industrial psychology terms were used in business, it is generally accepted that industrial psychology as a subject originated at the beginning of the 20th century in the USA. This means that the discipline has a development history of approximately 100 years.

If one examines the history of industrial psychology, two names, Walter Dill Scott and Hugo Munsterberg stand out. Walter Dill Scott was the first person to apply psychological principles in advertisements, personnel selection and management issues. His famous works on inter alia the psychology underlying advertising and human efficiency in business had a profound influence on the public's awareness of industrial psychology.

Hugo Munsterberg, who was regarded by many authors as the "father" of industrial psychology, was particularly interested in applying traditional psychology methods to practical industrial problems. In his work on, inter alia, the selection of workers and the application of psychology in selling, there were even indications of the present core areas in industrial psychology, namely organisational and personnel psychology.

In the literature, the names of Marion Bills, Elsie Bregman, Lilian Gilbreth and Mary Hayes stand out as the four women psychologists who contributed the most to the development of industrial psychology from 1917 to approximately 1947. These four individuals worked in different areas of industrial psychology, but concentrated primarily on personnel matters, which was not unusual for that period. These four pioneers' involvement in the field entailed scientific practice, the application of psychology in industry and professional services (Koppes, 1997).

Although the above-mentioned works evoked a fair amount of interest in industrial psychology, it was the utilisation of psychologists in the area of personnel selection in particular, during the two World Wars, which focused the attention on the operation of the subject. Psychometrics, as a field of application in industrial psychology was established in this way. Thereafter the utilisation of psychological principles and methods in the industry rapidly spread to other parts of the world. It was also during World War II that the development of complex weaponry found expression in engineering psychology. Psychologists and engineers worked closely together to develop advanced equipment to adapt to the limitations of human capacities.

In 1924, industrial psychology was expanded considerably with the application of the Hawthorne studies. The finding of this research, namely that the social and psychological environment has potentially greater importance than physical working conditions, enabled industrial psychology to advance beyond selection and placement to the more complex problems of interpersonal relationships, motivation and organisational issues. During the early period, the Hawthorne studies probably had the greatest influence on industrial psychology.

In 1946, research in industrial psychology came into its own in South Africa with the establishment of the National Institute for Personnel Research (NIPR) at the CSIR. Studies into a wide range of subjects were undertaken over the years. Simon Biesheuvel, who is regarded as the father of industrial psychology in South Africa, was the Director of the NIPR. His research on the selection of flight crews and his presentation of a number of scientific papers (both national and internationally), made him one of the most respected psychological researchers in the country (Biesheuvel, 1984). The establishment of the Human Sciences Research Council (HSRC) in 1969, made a significant contribution to

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the development of industrial psychology in South Africa.

The contributions of the HSRCs Institute of Manpower Research, Institute of Psychometric Research and Institute of the Statistical Research in particular were of special significance to the subject (Raubenheimer, 1974b).

Consumer psychology, whose origin can be traced back to the works of Scott in 1903, developed its own identity after World War II, with fields such as marketing, economics, sociology and personality and social psychology (Jacoby, 1976). After the 1950s, industrial psychology developed rapidly. This period was characterised mainly by the establishment of Carl Roger's person-centred approach and Abraham Maslow's theories of motivation, the initiation of Skinner's research and the application of behaviourism in organisations, the propagation of Peter Drucker's approach to management by objectives, and an unprecedented interest among industrial psychologists in labour relations.

In the 1960s and 1970s, a subject such as work motivation sparked much interest. Vroom's (1964) discussion of this subject in his work, Work and motivation, especially the part in which he expanded on the expectancy model, sparked a great deal of interest among industrial psychologists. Well-known theories, such as McGregor's X and Y theories, Porter and McClelland's performance theory, Herzberg's two factor theory and Locke's goal approach to motivation, were important developments in the field of motivation. Other subjects such as measurement of job satisfaction and quality of work life, the influence of work on people, and research on the validity and fairness of selection tests, also came under the spotlight in industrial psychology.

In contrast to the growing influence of neobehaviourism on management and industrial psychology during this period, there was increasing application of the cognitive approach in certain topics in industrial psychology such as problem solving, decision making, performance evaluation, leadership, job design, motivation and consumer behaviour (Katzell & Austin, 1992).

In the 1960s to the 1980s, the focus also began to shift from the individual worker, his or her work and work groups, to organisational behaviour. Theories and research that dealt with matters such as communication in organisations, conflict management, socialisation, careers in organisations, organisational influence on individual work behaviour and organisation climate in particular, became more prominent in the literature. Together with this interest in organisational psychology, techniques were also developed to facilitate organisational change and development. Examples are laboratory training, diagnostic interviewing, team development and integrated techniques, such as Blake and Mouton's Managerial Grid (Katzell & Austin, 1992).

During the mid-1980s to the early 1990s, the above topics were studied further and continuous attention was paid to validation strategies, validity generalisation, assessment centres, assessment, performance criteria, job analysis, training and development, employment equity, remuneration and promotion. At organisational level, researchers continued to study matters such as organisational design, change management, motivation, attitudes, leadership and job design. Topics such as work stress and the need to maintain a balance between work and family life, continued to receive ongoing attention in industrial psychology.

The contributions of industrial psychology over approximately a century can be summarised as follows (Katzell & Austin, 1992; Koppes 1997):

- Industrial psychology developed into a viable scientific discipline which made a significant contribution to society's knowledge of work behaviour.
- The subject made a noticeable contribution to the development of the management profession. Large numbers of industrial psychologists work in the private and public sector, others are consultants, while others again work as academics involved in the training of managers.
- Industrial psychologists have played a vital role in the establishment of human resource management practices, policies and systems.
- The subject has contributed to the general improvement of the South African community. This is evident in the following areas: people are selected for jobs to which they are suited; they are trained and developed to be more efficient in their careers; prejudice towards the disadvantaged is limited; improvements are evident in the safety and convenience of the workplace; and the quality of work life has been improved.
- Industrial psychologists have undertaken research that is both of professional interest and practical value.
- A body of knowledge, supported by approximately 100 years of research, has been developed and is applied daily in organisations to find solutions to problems.
- Industrial psychology has played a prominent role in improving the effectiveness of organisations as a whole by continually endeavouring to improve the job performance of individual employees and groups.
- Over the years, industrial psychologists have expressed concern about the welfare of workers. Comprehensive research in areas such as job satisfaction, career development, job/family matters, fairness, work stress, safety, training, recognition and ethics bears testimony to this.

However, there are still certain areas that are cause for concern, such as the following (Katzell & Austin, 1992):

- In the subject, techniques whose validity is either unknown or uncertain are being used.
- Too many industrial psychologists are still working as technicians instead of scientists or scientific practitioners.
- There is a tendency to offer available solutions instead of looking at the actual needs of a situation. The work tends to be technique-driven rather than problem-driven.
- The application of psychological research in the industry is declining.

However, industrial psychology can look back with pride at their contributions to all sectors of society over a period of 100 years. However, keeping up this proud record will largely depend on how practitioners deal with the subject. The role of universities is critical to equip future industrial psychologists for the task.

## THE DEVELOPMENT OF INDUSTRIAL PSYCHOLOGY AT SOUTH AFRICAN UNIVERSITIES

The subject, Industrial Psychology, was initially housed in the Department of Psychology at different universities. During the 1960s, there was a significant development when at traditional Afrikaans universities, the subject was transferred to the Faculty of Economic and Management Sciences. The rationale for this move was that industrial psychology has a specific relationship with the economic sciences, and that by placing it alongside its sister disciplines, its application value could be maximised. Raubenheimer (1974b) provided further justification for this development in defining industrial psychology as an intermediate science, which acknowledges psychology as its mother science, on the one hand (and without which industrial psychology as a scientific discipline has no right of existence), and renders a service to the economic and management sciences, on the other. In the early 1970s, Professor Raubenheimer succeeded in continuously highlighting the relationship between industrial psychology and the management sciences. In 1969, the Department of Industrial Psychology at Unisa became a full-fledged department in the Faculty of Economic and Management Sciences, and Professor Raubenheimer was appointed the first Head of Department. The Department also acted as a mother figure for the traditional black universities and full-blown departments were eventually introduced at all these universities, as a direct result of Unisa's influence. Other academics such as Professors Theron, Van Biljon, Langenhoven, Muller and Swiegers, played prominent roles in establishing industrial psychology in its newest form at their respective universities.

The various departments at the Afrikaans universities accepted the challenge of teaching industrial psychology under the banner of the management sciences with great zeal and enthusiasm. It was agreed that the universities would teach Personnel Psychology, Organisational Psychology, Psychometrics, Research Methodology, Career Psychology, Consumer Psychology and Ergonomics as subdisciplines. It is interesting to note that before these developments Mr G F de W Steyn obtained a D.Com in Industrial Psychology at the University of Stellenbosch in 1957. He was the first student to obtain such a degree. The title of his thesis was "Die opleiding van Kleurlingtoesighouers in 'n klerefabriek".

A further development in the 1970s and 1980s was when departments at certain universities changed the name and field of study first to "Personnel Management", and later to "Human Resource Management". In his search for a solution, which preceded this development, Professor Vermeulen (1989, p 12) justified this move as follows:

> Firstly, the designation "Personnel Management" expresses a stronger practical and career-oriented image, secondly, only a small percentage of students ultimately qualify as industrial psychologists, while the vast majority find themselves in human resource management jobs, and thirdly, in the 1970s, researchers described industrial psychology as being in a disorganised theoretical-conceptual state (translation).

Since industrial psychology was still taught as a subject, it was alleged that the subject should continue to occupy its rightful place as an applied science, but at the same time, project a career-oriented image. The role of the practice in this development should also not be underestimated. The need for the operational relevance of knowledge was overwhelming, and tertiary institutions aspired to satisfying this need. Scientific industrial psychology knowledge was probably not that important to the South African business world – pragmatism was the watchword. Although the intentions of the academics who initiated this development were upright, finding a meaningful solution to the scientific nature of this problem, on the one hand, and satisfying the needs of the business world, on the other, would have certain implications for the subject in later years. These implications were briefly as follows:

- The divergence between the name of the subject, field of study and department caused confusion among the public, students and academics.
- The distinction between industrial psychology and human resource management faded, and the layperson came to regard the concepts as synonyms.
- The pressure of operational relevance had a negative effect on scientific practice.
- The basic frame of reference for teaching was the corporate environment with management as the primary consumer of industrial psychology knowledge and practice.
- The subject content of a core field such as personnel psychology began to incorporate the subject content of human resource management. The prescribed material for human resource management which was probably more suitable for training students of general management became the prescribed material for personnel psychology. In any event, it is generally accepted that books in personnel psychology deal with key topics such as selection, testing, performance evaluation and training in far more detail than books on human resource management ever could, or are supposed to. However, human resource specialists still require an even more in-depth knowledge than their colleagues in general management. The question here is whether this approach does not wrongly favour pragmatism at the expense of the scientific spirit, and if did not in fact cause the teaching of the subject to become somewhat superficial.
- A subject such as research methodology is increasingly being excluded at undergraduate level. It is probably not regarded as a key subject in human resource management. The development of a scientific approach to problems is hampered by those who plan to make a career in industrial psychology.
- Consumer psychology and ergonomics were eventually removed from the curriculum, probably because it is difficult to justify the inclusion of the two subdisciplines in a degree in human resource management. Consumer psychology is the study of behaviour that consumers manifest when they seek products, services and ideas, and buy, use or evaluate them. It therefore stands to reason that the consumer psychologist through a knowledge of processes such as observation, motivation, attitude and decision making can make a significant contribution to a better understanding, prediction and influencing of consumer behaviour as a complex phenomenon. By excluding consumer psychology from the curriculum, the content of the subject is impoverished and the application potential of industrial psychologists limited. Because industrial psychologists lack this knowledge, there is a vacuum, and it is therefore not surprising that marketing specialists are increasingly making this their domain.
- The same applies to ergonomics which is indisputedly an applied field of industrial psychology (Blignaut, 1988; Chapanis, 1976; Muchinsky, 1997). Because ergonomics is regarded as a multidisciplinary and interdisciplinary field of study, there are specialists in other fields of study such as industrial hygiene, industrial sociology and engineering who regard ergonomics as a subsection of their respective fields of study. However, ergonomics focuses on people and holistically examines the interaction between people, technology, work space and the physical and psychological environment in which the job is done. It is also the only field of industrial psychology that studies the effect of the physical aspects of the work environment on human behaviour. Apathy to teach the subject therefore has far-reaching consequences for the subject and external environment. A plea is being made to restore these subdisciplines of industrial psychology to their rightful place in the curriculum so that justice can be done, firstly, to the nature and scope of the subject, and secondly, to the original brief to render a full-fledged service to the management sciences, and thirdly, to improve the career opportunities of students in an already limited labour market.

## THE INFLUENCE OF THE ENVIRONMENT ON INDUSTRIAL PSYCHOLOGY

Drastic changes are currently taking place in political, economic and social areas. The fact that these changes were evident for quite a while in the run-up to the year 2000, which has long been held up as a symbol for the future, was quite coincidental. The world is in a period of transition which will probably continue until 2020 (Drucker, 1993). Vacler Havel (Howard, 1995, p.514) puts it as follows: "Many things indicate that we are going through a transitional period, when it seems that something is on the way out and something else is painfully being born."

Some of the confused signals emanating from the current political-economic situation make sense if one examines them in the context of the complexity theory (Waldrop, 1992). This theory asserts that individual components (say, businesses and industries in a world economy) interact according to a few simple rules. The system works upwards without a central control mechanism but a global characteristic comes to the fore and in turn influences the behaviour of the individual components.

Complex systems do not make gradual progress – they progress by means of what paleontologists refer to as "punctuated equilibrium". This means that a period of stability is interrupted by a shock from the environment which allows the system to move into a state of chaos. Such a shock from the environment could be sudden technological progress, or the utilisation of a knowledge explosion as a new economic source, or rapid globalisation. During a period of chaos, there is a flood of change and a burst of differentiation. Punctuated equilibrium is also the pattern according to which innovation takes place, namely in fits and starts rather than in a smooth flow.

Complex systems develop through self-organisation up to the edge of chaos. They achieve a point of equilibrium between stagnation and anarchy where the system may be spontaneous and adaptable

– it is not clamped down or in a state of confusion. It is a point where optimal differentiation and integration occur, where the structure and function of the parts differ considerably from one another, but where they still communicate and promote one another's objectives (Howard, 1995).

Howard's (1995) model of organisations which survive on the edge of chaos by continually adapting, are relevant here. While the 1950s and subsequent decades were characterised by hierarchical organisation, bureaucracy, job security, slow-moving technology, mass production, repetitive work and conformity, features of the 1990s were mergers, scaling down, temporary and new psychological contracts, rapidly developing technology, competition, information overload and work overload. The cares of the present are anxiety, uncertainty, cynisism and the disappearance of stable blue-collar work. The industrial psychologist must be able to serve such an environment, if it still wants to be relevant in the 21st century.

Work in the adapting organisation will become more difficult – more cognitive and complex. It will be more abstract; the demarcation of work will become more fluid as the environment becomes more uncertain; work becomes increasingly invisible as computer symbols actually replace manual labour; the office moves to the home and/or the road; and organisations become virtual partners (Howard, 1995).

## THE ROLES OF THE INDUSTRIAL PSYCHOLOGIST

Working on the edge of chaos probably requires different roles and skills on the part of the worker corps which does not exclude the industrial psychologists and human resource practitioners. The difference between the two professions is briefly explained. (The male pronoun is used merely for grammatical ease but it also includes the female gender).

The industrial psychologists fulfils a professional role and usually operates in one of the fields of application of his science. He acts as an internal/external consultant for management and the human resource manager. His role is primarily to diagnose and intervene. His anchor is mainly theoretical knowledge and research expertise, and his knowledge base fundamentally industrial psychology, general psychology, personality psychology, social psychology, sociology, anthropology and the economic sciences.

Human resource practitioners are predominantly responsible for the organisation's effective daily utilisation and management of human resources through the implementation of behavioural science knowledge. They design and implement systems, practices and policies to improve the general effectiveness of the organisation within the strategy of business. Their knowledge base is mainly industrial psychology, management sciences and labour law.

Industrial psychology as a major has always been the field of study that has served as a prerequisite for the practice of both human resource management and practising as an industrial psychologist – hence the need to ensure that degrees in human resource management are not introduced without including key modules in industrial psychology.

The professional distinction between the human resource practitioner and the industrial psychologist probably lies in the various roles they fulfil. Following, the roles of the industrial psychologist are focused on.

The roles of industrial psychologists in the 1970s, 1980s and early 1990s were probably more simplistic. They were predominantly affiliated to large corporate institutions with management as the only interest group. The assumption is made that during this period, industrial psychologists kept themselves busy with the establishment of human resource departments, formulation of policies, development of systems and procedures and the performance of daily concrete actions. Instead of their work being primarily professional, it was performed mainly at a practitioner's and technician's level. Administrative ability was often more highly rated than professional expertise. Verster (1979) also confirms that during this period, more time, money and human resources were devoted to administrative matters than professional skill.

Hence the role of the industrial psychologists was regarded more as that of a technical expert who acted in an advisory capacity. The nature of the work was mainly reactive, intradisciplinary and intra-organisational. The work projected an image of unprofessionalism and was aimed mainly at maintaining existing systems. Industrial psychologists were instrumental in a passive role in an authoritarian system. Problem solving was frequently reactive and on a concrete level, for example finding solutions to the problem of high labour turnover. There was little emphasis on group work, probably because the always popular humanistic paradigm emphasises rather the individual, self-actualisation and self-development.

In the field of research, the industrial psychologist's role was to solve problems, which were often diagnosed by management. Quantitative research with forecasts of behaviour, opinion and attitude surveys predominated. His work spanned the broad spectrum of theories and concepts, principles and models, policies, systems and procedures and daily concrete actions. His utilisation of theoretical knowledge as opposed to practical wisdom varied, depending on the level at which the industrial psychologist worked (Veldsman, 1997).

Although the training offered by different universities varied, students were adequately prepared for their roles and probably did a good job. However, if industrial psychologists are to exist and work on the edge of chaos, they will have to adopt other roles and master appropriate skills.

Industrial psychologists are increasingly taking on the role of internal consultant. In this regard, the challenge is for them to ensure that management tap the wealth of the body of knowledge of industrial psychology on a daily basis in order to manage the organisation effectively. The industrial psychologist's anchor is theoretical knowledge – a framework of principles, models, theories and professional concepts. He will have to provide the organisation with solutions on issues such as change, the transference of knowledge and how to integrate it, doing tasks faster, allowing employees to work effectively in teams, understanding the client better, designing the organisation, affecting interaction between people and technology, creating an organisational culture and implementing strategy.

As organisations concentrate increasingly on their core business, industrial psychologists will increasingly take on the role of external consultants, rather than internal staff. Some organisations outsource their human resource functions to firms of consultants – hence industrial psychologists are compelled to work with total systems, rather than product or programme implementation only. In this capacity, industrial psychologists are also increasingly starting to fulfil a role in smaller organisations. There are small numbers of people in jobs in these organisations, which is posing a particular challenge to make the implementation of industrial psychology programmes cost effective. The challenge here is to find creative solutions and at the same time guarantee the integrity, effectiveness and justifiability of the solutions. In the informal sector the industrial psychologist will often have to fulfil the role of messenger or harbinger to establish common values (Veldsman, 1997).

Industrial psychologists are increasingly being required to assume the role of agents of change. They must be able to understand and facilitate change. Their role in organisational transformation is necessary to create a new vision and missions and to play a leading part in the repositioning of the business. As agents of change they need to break down resistance to change and foster excitement about new possibilities. Recent research in South Africa also confirms that industrial psychologists visualise this as an important future role (Pienaar, 1999).

The forces referred to earlier also drive industrial psychology in chaos and pose challenges for the traditions of the subject. Organisations

without boundaries, the concept "job" is beginning to take on a new shape, the changing psychological contract, and increasing diversity allows industrial psychologists to reflect upon the way in which they think about their work and do it (Howard, 1997). Industrial psychologists will need to create order in this chaos, indicate direction and become involved in shaping the theory. If industrial psychology is to survive, it should be client focuses and adaptable. Industrial psychology practices, like the new environment will be more complex, vary and continually change.

The industrial psychologist should also fulfil the role of an agent of development for the individual, the group and the organisation. As consultant for the individual, he should encourage career growth, facilitate learning opportunities for the group and foster organisational growth by giving feedback to management on what is happening in the system.

Industrial psychologists need to move beyond their specialised training and show a better understanding of how organisations work in the new economy. Human resource departments are increasingly expected to play a role in organisational strategy and industrial psychologists must be prepared to fulfil this role. Recent research in South Africa has confirmed that industrial psychologists are becoming more involved in corporate strategic management (Pienaar, 1999).

Industrial psychologists are playing an increasing facilitating reconciliation role in order to place organisational effectiveness and individual needs in equilibrium. They are therefore striving to maintain equity in the workplace.

Industrial psychologists will have to act more as impartial appraisers of organisational dynamics in order to give impartial feedback to rivals.This is followed up by the implementation of specific intervention strategies to promote organisational optimality. In this process, there is continuous role shifting in which the industrial psychologist's expertise is supported by inter- and intra-personal abilities to operationalised research skill theories and techniques.

Against the background of increasing complexity in enterprises and the accurate gauging of problem situations, it would seem that the industrial psychologist should at least function as a competent action researcher at enterprise level. This has far-reaching consequences. On the one hand, they should have the ability to communicate research findings to the client group instead of the academic community, in a comprehensible manner. On the other hand, they should be able to remain objective despite their involvement in the dynamic process of the enterprise. As a pure researcher, the industrial psychologist has a significant role to play in giving credibility to personnel practices by means of, say, validation studies.

Industrial psychologists should prepare themselves to occupy positions in general management. Management is increasingly becoming a "people's business", for which industrial psychologists have been pre-eminently trained. There is increasing recognition of the need for managers to have strong interpersonal and communications skills – skills that industrial psychologists do acquire during tertiary training. General management can be a challenging and satisfying career for industrial psychologists – one that flows naturally from their training (Fowler, 1999).

In a nutshell, the above roles require the following generic skills: intra- and interpersonal, professional, change management, contextual, ethical and professional skills.

Finally, at this point it would be appropriate to look at guidelines for training requirements. In the development of curricula, often too little attention is paid to the learning process and those skills that lead to effective performance. Departments probably are still not living out their responsibilities to the full by nurturing in industrial psychologists those skills that guarantee greater success in the business world. Two points are relevant here: firstly the content of the programme – in other words, what it should involve in terms of knowledge and areas of skill to develop effective performance; and secondly, the learning processes that enable industrial psychologists to develop and improve their respective industrial psychology roles. Where departments usually specialise outstandingly according to their areas of knowledge, it is critical that there should also be more specialisation in the learning process. An important ideological stumbling block that has to be overcome is educators' unbalanced orientation towards subject content. Educators often place too much emphasis on the creation of content, rather than ensuring that students actually master skills. This emphasis may presuppose that knowledge can be transformed into skills (Sims & Sauer, 1985). It is probably more important now than ever before that departments should revise their training models to equip industrial psychologists better.

Such an attempt will probably require the following:

- to identify those skills that are critical to industrial psychologists to survive on the edge of chaos
- to create the necessary structure and climate in which these skills can be acquired
- to reflect on the composition of the curriculum. The roles provided for the future will probably require industrial psychologists to rely more heavily on their mother science, psychology. Fields such as personality psychology and social psychology, will probably also receive greater prominence. The content of disciplines such as personnel psychology, organisational psychology, consumer psychology, ergonomics and psychometrics, will have to be such that the graduate will have a competitive advantage over his colleagues in business and demand their respect
- to prepare students as lifelong learners and create a culture for continuous learning
- Extend the existing selection model for postgraduate students to a full-fledged assessment centre. At the same time, it can also be applied as a development instrument. A training model, aimed at the development of professional and ethical skills, can emanate from this and be required as part of the internship programme. In the initial assessment, a learning contract can be concluded with the student. Assessment can be repeated at the end and the degree of progress can determine the student's suitability.
- The future roles predicted for the industrial psychologist also place a greater responsibility on the shoulders of lecturers. Lecturers who are not in touch with the challenges that organisations take on daily from an industrial psychology point of view, will in time probably find it extremely difficult to teach at postgraduate level. The selective utilisation of internal and external expertise will become decisive in the success of training at this level. Professional socialisation and skills training are becoming increasingly important and lecturers will primarily have to assume the role of learning facilitators.

## CONCLUSION

In conclusion, an appeal is made to Departments of Industrial Psychology to commit themselves to satisfy the needs and aspirations of their students and undertake to extend their tuition model to equip their students with those skills that are required to survive on the edge of chaos.

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