An Introduction to Contemporary Work Psychology is the first textbook to provide a comprehensive overview of work psychology. Moving beyond the terrain of introductory industrial/organizational psychology textbooks, this book examines the classic models, current theories and contemporary issues affecting the twenty-first-century worker.

This text covers all aspects of the psychology of working, including topics such as safety at work, working times, work-family interaction, recovery from work, technology, job demands and job resources, working in teams and sickness absence. While many books in the field focus on the adverse effects of work, this one is unique in emphasizing also the positive aspects and outcomes of work, including motivation, performance, creativity and engagement. The book also contains chapters on job-related prevention and intervention strategies with a special focus on positive interventions and proactive techniques, such as job crafting and promoting positive work behaviours.

Edited by respected leaders in the field and with chapters written by a global team of experts, this is the textbook for advanced undergraduate and graduate courses focusing on work psychology.

Maria C. W. Peeters is Associate Professor of Work and Organizational Psychology at Utrecht University, The Netherlands, and a licensed occupational health psychologist. Her research interests include job stress, work motivation, job performance, work–home interaction and ageing at work. She has published many book chapters as well as articles on these topics in leading scientific journals.

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An Introduction to Contemporary
Work Psychology
An Introduction to Contemporary Work Psychology

Edited by

Maria C. W. Peeters, Jan de Jonge and Toon W. Taris

WILEY Blackwell
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Part A

Introduction
1

Introduction

People at Work

MARIA C. W. PEETERS, TOON W. TARIS
AND JAN DE JONGE

Chapter Objectives

After studying this chapter, you should be able to:

• describe the key elements of work;
• explain what work psychology is about and what is meant by contemporary work psychology;
• specify some main features of the world’s labour force;
• understand the selection bias in contemporary work psychology;
• understand what working means to workers;
• summarize the history of work psychology;
• explain five important changes in the world of work;
• explain the crucial role of task analysis in contemporary work psychology;
• understand the general outline and structure of the current book.

For as long as mankind has existed, people have worked. Needless to say the nature of work has changed tremendously: our ancestors were mostly hunters and collectors, nowadays people work with data, ‘goods’ or other people, or provide services. What has not changed is that we still spend a substantial part of our lives working. It is therefore not surprising that some people’s work is about
understanding the nature and conditions of the work of others in an attempt to predict and improve it. These are work psychologists, teachers, trainers and practitioners in work psychology and those who study the phenomenon of work and worker behaviour: the researchers. This book is aimed at everyone who would like to learn more about work psychology. The primary intended readership consists of advanced (second and third year) BA students as well as MA students in work and organizational psychology programmes. However, this textbook will also be useful for advanced students in related fields, including ergonomics and human factors, (applied) social psychology, clinical psychology, (psycho-)social medicine, occupational health, epidemiology, health sciences, industrial engineering, business administration and management science. Finally, researchers who would like to familiarize themselves quickly with state-of-the-art issues in the area of work psychology will also be interested in this volume.

This chapter starts with a brief introduction to what work involves and what work psychology aims to achieve. Next, we consider the world’s labour force and discuss what having work means for individuals. After describing the history of the field of work psychology, we describe some important changes that the world of work has witnessed over the last decennia. Finally, we explain the crucial role of task analysis in contemporary work psychology and the chapter ends by explaining the general outline and structure of the book.

1.1 What We Talk About When We Talk About Work Psychology

This book is about work. According to the Merriam-Webster dictionary (2013), in everyday life the term ‘work’ refers to an ‘activity in which one exerts strength or faculties to do or perform something; sustained physical or mental effort to overcome obstacles and achieve an objective or result; the labour, task, or duty that is one’s accustomed means of livelihood; a specific task, duty, function, or assignment often being a part or phase of some larger activity’. That is, work is about performing activities to achieve a particular objective, and these activities are conducted to obtain some form of income. More formally, work can be defined as a set of coordinated and goal-directed activities that are conducted in exchange for something else, usually (but not necessarily and often not exclusively) some form of monetary reward. Three key elements of this definition are as follows:

1. Work consists of a set of goal-directed activities, that is, actions at work are intended to bring about a particular previously specified result. After all, the goal of work is to produce a good or to deliver a particular service (Frese & Zapf, 1994).

2. Work consists of a set of coordinated activities. To achieve the intended goal, workers do not act randomly. Rather, successful task accomplishment often requires that workers execute a series of interrelated activities following particular work routines, procedures and guidelines, and often using tools and machinery especially devised to bring about the intended goal. Even the
simplest jobs require incumbents to coordinate their activities. Without coordination, the intended goal will be difficult to achieve, if it is achieved at all.

3. The activities involved in working require some degree of physical, emotional and/or mental effort, and this effort is usually compensated in some way. That is, work is conducted in exchange for something else. Few of us would go to work without getting anything in return. Rather, for many people working is a necessary evil: it is easy to think of more attractive, interesting and enjoyable activities, but working is often simply essential for earning a living.

This book is also about psychology. Psychology refers to people’s behaviour, motivations, thoughts and emotions related to a particular topic. Work psychology thus relates to these concepts in the context of work (Arnold, 2005). As the goal of work is to produce something (goods, services or knowledge), one central aim of work psychology is to facilitate obtaining that goal: how can we use the knowledge and insights of psychology to help workers achieve their work goals in an optimal manner? Or, from an organizational point of view, how can we help organizations achieving their goals?

Note that work psychologists are not only interested in pushing workers’ performance to (and perhaps even beyond) their upper limit. On the contrary, at present many work psychologists are primarily interested in maximizing worker health and well-being (this used to be different in the early days of work psychology, see Section 1.3). This interest partly follows from the idea that happy, satisfied workers are presumed to be productive workers (see Chapter 13 for a discussion). In this view, maximizing well-being is the same as maximizing work performance. Additionally, work psychologists are often genuinely interested in workers’ health and well-being. After all, as psychologists their task is to improve people’s lives. For example, the American Psychological Association (American Psychological Association, 2013), the largest professional organization of psychologists, says in its mission statement that it ‘… seeks to advance the creation, communication and application of psychological knowledge to benefit society and improve people’s lives’ (authors’ italics). Similarly, the British Psychological Society (2013) states that it is ‘responsible for the development, promotion and application of psychology for the public good’ (authors’ italics). Similar statements can be found on the web sites of other professional organizations for psychologists. Clearly, work psychologists are not solely there for the benefit of organizations or employers, but surely also for the benefit of workers. This is not to say that a focus on employee health and well-being may not also be beneficial for organizations. It is by now well accepted that work can have adverse effects on employee health and well-being (e.g. consider the potential effects of working with harmful and even carcinogenous substances, or of being chronically bullied by your supervisor and co-workers). Since many organizations frequently face difficulties in finding suitably trained personnel, it is important to them that their current staff remain healthy and motivated. Moreover, the costs of replacing sick employees are high, which also underlines the need for organizations to make sure that the workability of their current staff remains high. Stated differently, contemporary work psychology aims to promote what might be called sustainable performance, maximizing work performance as well as worker health and well-being.
This book is about *work psychology*, that is, the way workers’ behaviours, motivations, thoughts, emotions, health and well-being relate to each other, and about ways to influence these concepts. As we have defined work in terms of the specific *activities* that are conducted by workers, work psychology is *not* about the context in which these activities are conducted (e.g. the organization, the work team, leadership) – that is the realm of *organizational psychology*, not work psychology. Similarly, work psychology is *not* about the characteristics of the person conducting a particular work task (e.g. gender, age, ethnicity, level of education, experience, personality) or selecting or hiring new staff – that is the domain of *personnel psychology*. Work psychology is about the tasks that are carried out at work, that is, the specific activities that are conducted to achieve a particular goal. Of course, these activities are accomplished by workers having specific characteristics within a particular context, and in this sense work psychology is inevitably and often strongly related to the other strands of what is often called ‘work and organizational’, ‘personnel’ or ‘industrial’ psychology. We therefore pay brief attention to some of these subjects in this book. In the present introduction we define work psychology in a considerably narrower sense, namely, in terms of the *psychological study of work activities*. For introductions to other subfields of work and organizational psychology we refer to standard texts in these areas, such as Cartwright and Cooper (2008), Doyle (2003) and Jex and Britt (2008).

**Replay**

- Work can be defined as a set of coordinated and goal-directed activities that are conducted in exchange for something else, usually (but not necessarily and often not exclusively) some form of monetary reward.
- Work psychology refers to people’s behaviour, motivations, thoughts and emotions in the context of work.
- Work psychologists aim to simultaneously maximize work performance and worker health and well-being. In that sense they aim to promote sustainable performance.
- Work psychology focuses on the specific activities conducted to achieve work goals. It does not (or at least not primarily) focus on the work context or on worker characteristics; these are the domains of other subfields of what is known as work and organizational psychology (i.e. organizational and personnel psychology, respectively).

### 1.2 Who Do We Mean When We Talk About *Workers*?

We now have an impression about what we conceive as *work* and what contemporary *work psychology* is about. Next, we turn to the *workers*. There is probably no group in the world that is as heterogeneous and diverse as the world’s workforce. This makes it hard to describe this group. For instance, just think about the differences between an elderly woman working in the rice fields in Indonesia and a young urban professional working in Wall Street, New York and you will understand the enormous diversity within the world’s workforce.
The world’s workforce

In order to have an impression of who we are talking about in the remainder of this book we will present some general figures about the world’s workforce. First, however, what do we mean by the workforce of the world? The world labour force comprises people aged 15 and older who meet the International Labour Organization (ILO) definition of the economically active population: all people who supply labour for the production of goods and services during a specified period. It includes both the employed and the unemployed (World Bank, 2013). While national practices vary, in general the labour force includes the armed forces, the unemployed and first-time job-seekers, but excludes homemakers and other unpaid caregivers and workers in the informal sector.

To understand the number of people that are really at work we have to consider unemployment rates. Unemployment rates refer to the share of the labour force that is without work but available for and seeking employment (World Bank, 2013). In 2011 the average unemployment rate in the world was around 6%. In comparison, in the United States the unemployment rate in 2011 was 9%. The average unemployment rate in the 27 EU Member States (EU27) increased from 7% in 2008 to nearly 11% in 2012 (Eurostat, 2012). Taken together, out of a world population of slightly more than 7 billion people, 3 billion are employed and 205 million are unemployed (International Labour Office, 2012).

When considering international labour statistics a distinction is generally made between three different work sectors: (i) agriculture, including forestry, hunting and fishing, (ii) industry, including manufacturing, mining and construction, and (iii) services, including transportation, communication, public utilities, trade, finance, public administration, private household services and miscellaneous other services. Figures from 2007 show that 36.1% of the total labour force was working in agriculture, 21.5% in industry and 42.4% in services (World Bank, 2013). Note that these statistics have been subject to tremendous change during the last decennia and that they differ substantially between countries and regions. For instance, in 1980 agriculture accounted for only 3.4% of employment in the United States, Germany, Canada and the United Kingdom, and that share fell to 1.6% by 2011. Although over the 1999–2008 period the share of agricultural shows generally a declining trend, it remained high in Sub-Saharan Africa, only diminishing from 62.4% to 59%, in South-East Asia and the Pacific, where it declined from 49.3% to 44.3% and in Latin America, where it declined from 21.5% to 16.3%. Employment in industry also declined as a share of total employment in many countries. At the same time, services accounted for a very large share of employment in many Western developed countries. In 2011, about 8 in 10 workers in the United States, Canada, the United Kingdom and France were employed in services and about 7 in 10 workers in Germany, Japan and South Korea.

Selection bias in contemporary work psychology

Does contemporary work psychology really focus on the work of all employed workers around the world? Unfortunately the answer to this question is still an undisputed ‘no’. One of the major drawbacks of contemporary work psychology
is its narrow scope. Work psychological research is predominantly conducted in Western-oriented economies (e.g. the United States, Europe, Japan and Australia). Countries in Africa, South America and South-East Asia (especially the developing countries) are largely neglected. In addition, even within the countries where work psychology is flourishing, there is an inclination to focus on white-collar, professional and middle to highly educated employees working in large organizations. Although historically work psychology is committed to blue-collar workers in large industries with poor working conditions, it is nowadays more common to focus on middle and highly educated workers: these groups are easier to gain access to, response rates are higher and researchers are spared the difficulties of translating instruments and establishing their cultural equivalence. As a result, with some exceptions, there is comparatively little research on the lower segment of the labour market and on ethnic/racial minorities.

The consequences of the choice to focus mainly on specific groups in specific parts of the world may be serious. It limits our ability to generalize findings and hampers the development of adequate theory by ignoring important issues that may be especially pertinent for vulnerable workers in less developed regions of the world. Last but not least, because we have serious restricted ranges in our critical variables we may not appreciate the full impact that work has on the lives of workers around the world and their families. Thus, instead of targeting our research arrows predominantly on the ‘happy few of contemporary work psychology’, it is critical to extend the next generation of work psychological research to under-studied groups of workers and their families in all parts of the world.

Replay

- Around the world 3 billion people are at work (out of a total population of slightly more than 7 billion).
- The global unemployment rate was about 6% in 2011; this figure differs widely across countries.
- The number of people working in the service sector is growing fast.
- Worldwide, the agricultural sector is still the second largest source of employment after services.
- There is an inclination in work psychology to focus predominantly on high-status workers and ethnic majorities in well-developed parts of the world.

1.3 The Meaning of Working

In the preceding sections we argued that work psychologists should aim to simultaneously maximize work performance and worker health and well-being (i.e. strive towards promoting sustainable work performance). However, in spite of these efforts, workers do not always (or ‘normally’, or even ‘frequently’) enjoy their work. Popular culture (songs, movies, books, TV series) provides many examples of jobs that are not particularly satisfying, suggesting that the sole reason for working is the fact that it yields the money needed to subsist.
Research on what working means to people has found that people do not just work for money, but that work serves many other functions as well. One way of examining the functions of working is to compare the effects of having a job to those of not having a job, especially being unemployed. In a sense, the history...
of mankind can be construed as a continuous and ongoing pursuit to make working life easier, that is, to reduce the effort needed to subsist. For example, the introduction of new technologies (ranging from the wheel in the distant past to the industrial revolution of the eighteenth century and the rise of information and communication technology (ICT) during the 1980s) all made it easier to accomplish the work tasks of the day – or even made these superfluous, promising to free time and energy to be invested in other, more pleasurable, activities (cf. Basalla, 1988). From the perspective of the individual worker, an important driver of the acceptance of these innovations was the desire to spend less time on work.

What would a world without work look like? Would people be happier without having to work? In many Western societies, unemployed workers receive an unemployment benefit that allows them to subsist (although often only barely) without having to work. Research comparing the quality of life of unemployed and employed people shows that the latter are usually considerably happier than the former. For example, levels of suicide, mortality, long-term illness, anxiety, depression and risky behaviours (drinking and smoking) tend to be higher among unemployed than employed people, whereas for the first group lower levels of life satisfaction and general health have been found (e.g. Paul & Moser, 2009; Wanberg, 2012). The relation between unemployment and health runs both ways: whereas lack of health increases the chances of becoming unemployed, unemployment also contributes to the emergence of health problems.

Apparently, having a job contributes positively to people’s health and well-being. But why would this be the case? Obviously, being without a job often negatively impacts on one’s income, meaning that it is difficult to spend money on goods and activities that go beyond the bare necessities for survival. However, research into unemployment has generated several theoretical perspectives on the reasons why being unemployed yields these negative consequences. The most influential of these is Marie Jahoda’s (1982) Relative Deprivation Model. Born in Vienna in 1907, Jahoda examined the impact of unemployment on the 478 families living in the small community of Marienthal (now in Germany) during the Great Depression of the 1920s. At the time, the only factory in town was heavily hit by the depression, and Jahoda and her colleagues showed that the often devastating psychological consequences of unemployment went beyond the obvious hardships of financial deprivation. Based on these observations, Jahoda concluded that apart from providing an income, having employment also provides five classes of social benefits: time structure, opportunities for social contact, sharing of a common purpose, social identity or status, and regular activity. Without work, people are deprived of all five benefits, accounting for many of the adverse consequences of unemployment for health and well-being. Of course, this does not imply that having a job is necessarily fun; rather one might say that being unemployed – especially in the dire circumstances of the 1920s – is worse. In this sense, the insights presented in this section can be summarized by paraphrasing Matt Groening’s (1987) famous dictum: ‘work is hell – but it beats unemployment’.
Replay

- Examining the artefacts of popular culture may provide some insights into what working ‘means’ to people, that is, what they think of it and what function it has in their lives.
- Popular culture frequently depicts work and working life as something that is unpleasant and may have adverse consequences for health and well-being.
- Contrary to this popular view, research strongly suggests that having a job contributes positively to health and well-being, at least when compared to having no job (i.e. being unemployed).
- According to Marie Jahoda’s influential relative deprivation theory, the main drivers for these positive consequences of having employment are the fact that working provides people with time structure, opportunities for social contact, sharing of a common purpose, social identity or status, and regular activity.

1.4 The Roots of Work Psychology

As indicated above, contemporary work psychology is concerned with promoting sustainable performance, that is, stimulating high work performance as well as maintaining (and even enhancing) worker health and well-being (e.g. Frese & Zapf, 1994). Historically, these two foci of work psychology have not always been emphasized equally strongly by researchers and practitioners in the area of work and work performance. Indeed, when researchers and practitioners started to study work and organizations systematically in the middle of the nineteenth century, the emphasis was on the best way of organizing work and the work organization (with an eye to maximizing productivity and profit, leading to what has come to be known as industrial capitalism), and on the socio-political implications of this (e.g. consider the criticism of industrial capitalism by scholars such as Karl Marx and Friedrich Engels).

Systematic thinking about the organization of work

However, far before this era, scholars had already considered how particular tasks should be conducted. For example, Ancient Greek medical knowledge is documented in what is known as the Hippocratic collection, a collection of about 60 books written by various authors during the fifth to third centuries BC. The Hippocratic collection provided Greek doctors with detailed guidelines on how particular types of complaints were to be treated, and is basically a collection of routines and guidelines prescribing how the tasks of a medical doctor should be accomplished. As an example, here is how doctors were expected to start their examinations:

First of all the doctor should look at the patient’s face. The following are bad signs – sharp nose, hollow eyes, dry skin, strange colour of face such as green, black or leaden. If the face is like this, the doctor must ask the patient if he has lost sleep, or had diarrhoea, or not eaten. (Lloyd, 1982)
Another early example of systematic thinking is seen in the Roman army, which was organized according to simple and clear rules. Positions in this organization were relatively well-defined in that it was clear what tasks were required of these positions and how these should be conducted. This applied especially to the operation of the army during times of war. The Roman army used several military manuals describing how the various parts of the army could operate in specific situations. For example, based on earlier sources, the Roman writer Vegetius compiled his *De Re Militari* (*On military matters*) around 390 AD, in which he discussed the organization, equipment and drill of the Roman legions, the strategies to be followed, the maintenance of supply lines and logistics, and leadership. Vegetius proposes that Roman soldiers should learn to use their swords as follows:

> [Roman soldiers were] taught not to cut but to thrust with their swords … A stroke with the edges, though made with ever so much force, seldom kills, as the vital parts of the body are defended both by the bones and armor. On the contrary, a stab, though it penetrates but two inches, is generally fatal. Besides in the attitude of striking, it is impossible to avoid exposing the right arm and side; but on the other hand, the body is covered while a thrust is given, and the adversary receives the point before he sees the sword. (Vegetius, 390 AD)

Interestingly, Vegetius also understood that psychological processes could affect the execution of soldiers’ tasks. For instance, he argues that a defeated enemy should always be offered an easy escape route, since in a situation ‘where no hopes remain, fear itself will arm an enemy and despair inspires courage. When men find they must inevitably perish, they willingly resolve to die with their comrades and with their arms in their hands’. However, if offered an escape, they would ‘think of nothing but how to save themselves by flight’, for convenience throwing away their weaponry, meaning that they could be slaughtered easily during the flight. Elsewhere he addresses issues such as the recruitment and selection of soldiers, their socialization, how motivation could be fostered, and the relationship between leadership and performance.

As these examples illustrate, early work on how particular tasks should be conducted largely rested on common sense, moral axioms, tradition, long-standing practices and laymen’s psychological insights. A more scientific (i.e. systematic, evidence-based) approach to examining work and its effects and antecedents only emerged much later, after the middle ages had ended.

**The birth of occupational medicine**

The scientific study of work, worker health and well-being, and work performance can be traced back to the 1500s, when Georg Bauer (otherwise known as Agricola) published *De Re Metallica* (*On metal matters*), an influential book on the art and science of mining. Being the town physician in Chemnitz, Saxony (at the time an important mining area in Central Europe), Agricola not only discussed the technical details of mine operation, but also paid attention to miners and their typical diseases: ‘It remains for me to speak about the ailments and accidents of
miners, and of the methods by which they can guard against these’. He recom-
mended wearing personal protective clothing (e.g. elbow-high leather gloves for
work with aggressive minerals, and a veil worn before the face to protect from
dusts, since ‘The dust which is stirred and beaten up by digging penetrates into
the windpipes and lungs and produces difficulty in breathing, and the disease
which the Greeks call asthma. If the dust has corrosive qualities, it eats away the
lungs, and implants consumption in the body.’ Furthermore, Agricola stated that
mines should be operated in a 5-day work week with three shifts of 8 hours each
per day, and recommended that miners should not work two shifts per day because
of the increased risk of occupational injury (Weber, 2002). Agricola’s work was
later followed up by Bernardino Ramazzini (1633–1714), an Italian physician
and university professor who wrote a seminal book on the typical diseases encoun-
tered by workers in 52 occupations. These works can be considered the starting
point for the discipline now known as occupational medicine (Gochfeld, 2005).

Work psychology, 1850–1930

The industrial revolution of the 1750–1850s marked a transition towards new
manufacturing processes, in that production processes were increasingly mecha-
nized (using novel technology such as water power, steam power and machine
tools) and industrialized (i.e. production processes changed from artisanal, piece-
by-piece production to mass production). These changes reformed the economic
system into that of industrial capitalism, transforming the social and physical land-
scape in the process. Large mills and factories were built, and canals, roads and
railways were constructed to transport materials to the factories and their prod-
ucts to the stores selling them. Working people found increased opportunities for
employment in the new mills and factories, leading to increased urbanization.
However, the working conditions in the mills and factories were harsh, working
days were long and pay was low.

From a work-psychological perspective, the nature of the tasks conducted in
this new era was different from the pre-industrial (or agrarian) time preceding it.
The emergence of the industrial economy meant that young workers entering the
labour market could seek out, occupy and identify with jobs that were completely
different from the jobs that their fathers and mothers could choose from. However,
this also implied that many young people struggled to find a career that suited
their interests, talents and accomplishments (Porfeli, 2009). Moreover, the tasks
in the factories were characterized by a high level of division of labour and were
usually simple, repetitive and boring, requiring few skills. The important issues in
this era therefore became how can workers be motivated to work hard and how
can they be made more productive?

The then-young science of psychotechnics or applied psychology promised to
provide answers to these issues. Its founders (psychologists such as the Germany-
born Hugo Münsterberg and William Stern, who both obtained professorships
in the United States early in the twentieth century) attempted to apply psycho-
logical insights, obtained through empirical research and rigid measurement, to
the work environment. Both Münsterberg and Stern worked in the field of
vocational psychology – the branch of personnel psychology that focuses on the link between workers’ characteristics and job requirements, assuming that worker well-being and productivity are optimal when there is a good match between the job and the worker.

**Scientific management**

Productivity could also be optimized by not focusing on the match between the worker and the task, but rather by concentrating on the task itself, especially by simplifying it to such a degree that any worker would be able to do it. This idea was worked out in great detail by the American engineer Frederick Taylor (1856–1915), the founder of the *scientific management approach* (or Taylorism). As one of the first management consultants, he sought to maximize industrial efficiency and his ideas were highly influential until at least the 1950s. His ideas were also controversial because they rested on two basic assumptions, namely, workers are both *lazy* and *stupid*. As regards laziness, Taylor (1911) stated that:

... instead of using every effort to turn out the largest possible amount of work, in a majority of the cases [a worker] deliberately plans to do as little as he safely can – to turn out far less work than he is well able to do ... Underworking, that is, deliberately working slowly so as to avoid doing a full day’s work ... is almost universal in industrial establishments ... the writer asserts without fear of contradiction that this constitutes the greatest evil with which the working-people of both England and America are now afflicted.

As regards stupidity, Taylor writes that ‘one of the very first requirements for a man who is fit to handle pig iron as a regular occupation is that he shall be so stupid and so phlegmatic that he more nearly resembles in his mental make-up the ox than any other type’. Taylor proposed to counter the stupidity issue by:

1. *simplifying tasks* using scientific methods: tasks requiring complicated actions were broken down into considerably smaller and simpler subtasks;
2. *examining the best way to conduct these tasks*: it was assumed that for each task there is *one best way* to accomplish this task and that any other approach is suboptimal and should therefore be discouraged;
3. *training* workers in the ‘one best way’ to conduct their simplified task so that even relatively unskilled (or dumb) workers could be trained to perform the task fast and efficiently, resulting in higher productivity;
4. *separating the planning of tasks from their execution*: during the execution of their tasks workers should not think about how they should conduct the tasks, but instead this should be decided for them by their supervisors;
5. *selecting workers* for particular tasks: if a major requirement for a man who is fit to handle pig iron is that he is as stupid as an ox (cf. Taylor, 1911), then there are also workers that are too intelligent for this particular task. Similarly, some tasks would involve great strength, other tasks require high levels of precision, and so forth, meaning that not all workers were equally well-suited for all tasks.
The laziness issue was addressed by introducing high levels of control and supervision, as well as by introducing pay-for-performance systems – you work harder, you get paid more; you work slower, you get fired. Taylorism may be construed as being the start of contemporary work science, with standardization and efficiency as its core concepts.

Work Psychology in Action: Discovering the one best way

A basic assumption of scientific management is that there is one best way for each task to be conducted. However, how can this one best way be discovered? Taylor proposed to analyse tasks thoroughly and systematically (‘scientifically’). For instance, he often selected the employee most successful in his or her task, studied the way this person worked and then trained the other employees to use these work methods. Later on Taylor used the possibilities offered by modern technology – photography and movies – in order to reduce process times.

The possibilities of these new media were fully explored by the US couple Frank and Lillian Gilbreth, who conducted so-called time and motion studies in the 1910s and 1920s. The Gilbreths developed a method based on the analysis of work motions that consisted of filming the details of a worker’s activities while recording the time needed for these activities. In this way they could see how the work had been done, showing where improvement was possible (e.g. which motions were superfluous and could be skipped). In doing this, the Gilbreths sought to make processes more efficient by optimizing the motions involved, rather than by reducing process times, as Taylor had done. After Frank’s death in 1924, Lillian Gilbreth continued working in this area and eventually became the first female engineering professor at Purdue University, where she was granted a full professorship in 1940. Dividing her time between industrial psychology, industrial engineering and home economics, she was one of the first work/industrial psychologists as well as a pioneer of the discipline of human factors or ergonomics. Basically, this discipline involves the study of designing equipment, tools and machines that fit the human body and its cognitive abilities (‘cognitive ergonomics’).

Work psychology, 1930–present

Perhaps not surprisingly, scientific management became quickly popular among the management of the large factories of the early twentieth century, whereas (equally unsurprisingly) workers and worker unions detested this system. The introduction of Tayloristic principles at work often resulted in repetitive, boring
and physically demanding jobs, as the management of these organizations sought to maximize productivity and profit, irrespective of the cost to the workers involved. The heyday of Taylorism was over by the middle of the 1930s. Employers realised that redesigning jobs in line with the principles of scientific management affected worker morale negatively and tended to stimulate conflicts between managers and workers, resulting in the strengthening of the position of labour unions and recurring strikes (e.g. Ingham, 1966). All this neutralized part of the benefits of the productivity gains achieved by the introduction of scientific management, and it was superseded by the human relations movement.

*The human relations movement*

Rather than fitting the worker to the job (as scientific management had attempted), the adage of the human relations movement was to fit the job to the worker, paying special attention to the human side of working. It originated from the series of experiments conducted from 1924 to 1933 by Harvard-based researchers such as Elton Mayo and Fritz Roethlisberger at the Hawthorne plant of Western Electric/AT&T. At the time, some 40,000 people worked at the plant, producing telephones, cables, transmission equipment and switching equipment. Western Electric had adopted the principles of scientific management in the early 1900s, and in the 1920s the company had become aware of its drawbacks for employee well-being and motivation. To promote worker commitment and to discourage worker turnover and unionization, the company’s managers began to focus on the well-being of the workers. Western Electric introduced pensions, sick pay and stock purchase plans, and there was a range of educational and recreational programmes for its employees.

It is against this background that Western Electric became increasingly interested in research on the antecedents of worker productivity, motivation and satisfaction, and it undertook a series of behavioural experiments to examine the effects of contextual factors (such as lighting, rest periods and wage incentives) on worker productivity. These studies provided little, if any, evidence for the systematic effects of the factors of interest (later re-analysis of the original data showed that productivity did not even increase; see Kompier (2006) for a discussion). However, during the course of the experiments Mayo and Roethlisberger became convinced that the intimate atmosphere of the experiments led the participants to develop strong friendships across time, and the fact that they were a *team* was the main driver of the increased productivity witnessed by the researchers: ‘the most important finding of all was unquestionably in the general area of teamwork and cooperation’ (Mayo, 1945, p. 82). Although the evidence for this claim is weak at best, the Hawthorne studies helped develop ground-breaking ideas on social relations at work, motivation, satisfaction, resistance to change, group norms, worker participation and leadership that even today inspire much research on the effects of job characteristics on work performance (Sonnenfeld, 1985).

*Contemporary work psychology*

Work psychology as it is today builds on the notions discussed in this section. It aims to improve productivity by optimizing the organization of work, work methods and job characteristics, but at the same time strives towards